



## **Invitation for Bids**

**IFB-087-23-JJ**

**2023 SRWWTP MAINTENANCE WORK  
ESSD PROJECT NO.9626**

**FOR THE**

**CITY OF HOLLYWOOD, FLORIDA (CITY)**

**IFB Issue Date:** May 10, 2023

**Questions Due Date:** June 7, 2023

**Revised Questions Due Date:** June 14, 2023

**Submittal Due Date:** June 14, 2023, at 3p.m. ET

**Revised Submittal Due Date:** June 21, 2023, at 3p.m. ET

**CITY OF HOLLYWOOD  
IFB 087-23-JJ  
2023 SRWWTP MAINTENANCE WORK  
ESSD PROJECT NO.9626**

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## SECTION I – INTRODUCTION

### 1.1 **Purpose**

The City of Hollywood, Florida (City) is seeking bids from qualified and experienced firms, hereinafter referred to as the Contractor or Bidder, to provide construction services for miscellaneous improvements at the City of Hollywood Southern Regional Wastewater Treatment Plant, including but not limited to, furnishing all labor, tools, machinery, equipment, materials and necessary services as may be required in accordance with the terms, conditions, and specifications contained in this solicitation. Responses to this solicitation are due by **June 14, 2023, by 3:00 PM EST**, and will be opened in a virtual public setting on **June 14, 2023, at 3:00PM EST** at <https://cohfl.webex.com/>.

Submittals shall be received electronically through OpenGov, and/or hard copy through the City Clerk located at the City of Hollywood, City Hall, 2600 Hollywood Blvd., Room 221, Hollywood, FL 33020. Hard copy submittals shall be sealed and labeled with the solicitation number, name, and due date, and shall be submitted as one (1) original, five (5) copies and one (1) electronic copy on a USB drive.

Submittals shall be considered an offer on the part of the bidder/proposer, which offer shall be deemed accepted upon approval of the City, and in case of default, the City reserves the right to accept or reject any or all bids/proposals, to waive irregularities and technicalities, and request new bids/proposals. The City also reserves the right to award any resulting agreement as it deems will best serve the interests of the City.

### 1.2 **Pre-bid Conference and/or Site Visit (Mandatory)**

There will be a mandatory pre-bid conference and site visit scheduled for this solicitation. Attendance is required if the event is mandatory, and in the event that it is non-mandatory, it is strongly suggested that all Contractors attend the pre-bid conference and/ site visit to receive information that may be critical to their understanding of this solicitation.

The mandatory pre-bid conference will be held on:

**May 24, 2023 at 2:00 pm**  
**Southern Regional Wastewater Treatment Plant**  
**1621 N. 14<sup>th</sup> Avenue**  
**Hollywood, Florida 33021**  
**First Floor Conference Room**

Please keep in mind that site visits at other times might not be available. It is the sole responsibility of the Contractor to become familiar with the scope of the City's requirements prior to submitting a bid. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a bid will be considered evidence that the Bidder has familiarized themselves with the nature and extent of the work, equipment, materials, and labor required.

### 1.3 **OpenGov**

The City of Hollywood uses OpenGov (<https://procurement.opengov.com/portal/hollywoodfl>) to administer the competitive solicitation process, including but not limited to soliciting bids, issuing addenda, posting results and issuing notification of an intended decision.

The City shall not be responsible for a Bidders inability to submit a bid by the bid end date and time for any reason, including issues arising from the use of OpenGov.

#### **1.4 Point of Contact**

For information concerning procedures for responding to this solicitation, contact the Point of Contact within the Office of Procurement Services, Jean Joinville, Senior Purchasing Agent at [jjoinville@hollywoodfl.org](mailto:jjoinville@hollywoodfl.org) or by phone at (954) 921-3290, or Staci Alli, Office Assistant I at [salli@hollywoodfl.org](mailto:salli@hollywoodfl.org) or by phone at 954-921-3222. Such contact is to be for clarification purposes only. All questions must be submitted in writing via OpenGov by **June 7, 2023 by 3:00 PM EST** in order to receive a response.

Project Manager: Marta P. Alonso, Department of Public Utilities, email at: [malonso@hollywoodfl.org](mailto:malonso@hollywoodfl.org) or by phone: (954) 921-3930.

For information concerning technical specifications, please utilize the question / answer feature provided by OpenGov at <https://procurement.opengov.com/portal/hollywoodfl>. Questions of a material nature must be received prior to the cut-off date specified in the solicitation schedule. Material changes, if any, to the scope of services or bidding procedures will only be transmitted by written addendum. (See addendum section of OpenGov Site). Bidders please note: No part of your bid can be submitted via FAX. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a bid will be considered evidence that the Bidder has familiarized themselves with the nature and extent of the work, and the equipment, materials, and labor required. The entire bid response must be submitted in accordance with all specifications contained in this solicitation. The questions and answers submitted in OpenGov shall become part of any contract that is created from this solicitation.

It is the sole responsibility of the Bidder to ensure that their bid is submitted electronically through OpenGov at <https://procurement.opengov.com/portal/hollywoodfl>.

#### **1.5 Cone of Silence**

The City of Hollywood City Commission adopted Ordinance No. O-2007-05, which created Section 30.15(F) imposing a Cone of Silence for certain City purchases of goods and Services.

The Cone of Silence refers to limits on communications held between vendors and vendor's representatives and City elected officials, management and staff during the period in which a Formal Solicitation is open.

The Ordinance does allow potential vendors or vendor's representatives to communicate with designated employees for the limited purpose of seeking clarification or additional information. The names and contact information of those employees that may be contacted for clarification or additional information are included in the solicitation.

The Cone of Silence does not prohibit a vendor or vendor's representative from communicating verbally, or in writing with the City Manager, the City Manager's designee, the City Attorney or the City Attorney's designee on those procurement items to be considered by the City Commission.

The Cone of Silence does not prohibit a vendor or vendor's representative from making public presentations at a duly noticed pre-bid conference or duly noticed evaluation committee meeting or from communicating with the City Commission during a duly noticed public meeting.

The Cone of Silence shall be imposed when a formal competitive solicitation has been issued and shall remain in effect until an award is made, a contract is approved, or the City Commission takes any other action which ends the solicitation.

To view the Cone of Silence, go to the City of Hollywood Code of Ordinance online, and view [Section 30.15F](#).

All communications regarding this bid should be sent in writing to the Procurement Services Division as identified in this bid.

*END OF SECTION*

## **SECTION II - SPECIAL TERMS AND CONDITIONS**

### **2.1 Addenda, Changes, and Interpretations**

It is the sole responsibility of each firm to notify the Point of Contact utilizing the question / answer feature provided by OpenGov and request modification or clarification of any ambiguity, conflict, discrepancy, omission or other error discovered in this competitive solicitation. Requests for clarification, modification, interpretation, or changes must be received prior to the Question and Answer (Q & A) Deadline. Requests received after this date may not be addressed. Questions and requests for information that would not materially affect the scope of services to be performed or the solicitation process will be answered within the question / answer feature provided by OpenGov and shall be for clarification purposes only. Material changes, if any, to the scope of services or the solicitation process will only be transmitted by official written addendum issued by the City and uploaded to OpenGov as a separate addendum to the solicitation. Under no circumstances shall an oral explanation given by any City official, officer, staff, or agent be binding upon the City and should be disregarded. All addenda are a part of the competitive solicitation documents and each firm will be bound by such addenda. It is the responsibility of each to read and comprehend all addenda issued.

### **2.2 Dimensions, Quantities and Subsurface Information**

Dimensions, quantities, and subsurface information supplied by the City are in no way warranted to indicate true amounts or conditions. Bidders/Contractors shall neither plead misunderstanding or deception nor make claims against the City if the actual amounts, conditions, or dimensions do not conform to those stated. Any "Outside" reports made available by the Engineer are neither guaranteed as to accuracy or completeness, nor a part of the Contract Documents.

### **2.3 Trench Safety Form**

The Trench Safety Form included in the Bid Documents must be completed and signed. Noncompliance with this requirement may invalidate the bid.

### **2.4 Changes and Alterations**

Bidder may change or withdraw a Bid at any time prior to Bid submission deadline; however, no oral modifications will be allowed. Modifications shall not be allowed following the Bid deadline.

### **2.5 Bidder's Costs**

The City shall not be liable for any costs incurred by Bidders in responding to this solicitation.

### **2.6 Pricing/Delivery**

All pricing must include delivery and installation and be quoted FOB: Destination, unless specified otherwise in Section III.

### **2.7 Price Validity**

Prices provided in this solicitation shall be valid for at least One-Hundred and Twenty (120) days from time of solicitation opening unless otherwise extended and agreed upon by the City and Bidder.

### **2.8 No Exclusive Contract**

Bidder agrees and understands that the contract shall not be construed as an exclusive arrangement and further agrees that the City may, at any time, secure similar or identical services from another vendor at the City's sole option.

### **2.9 Responsive**

In order to be considered responsive to the solicitation, the firm's bid shall fully conform in all material respects to the solicitation and all of its requirements, including all form and substance.

**2.10 Responsible**

In order to be considered as a responsible firm, firm shall be fully capable to meet all of the requirements of the solicitation and subsequent contract, must possess the full capability, including financial and technical, to perform as contractually required, and must be able to fully document the ability to provide good faith performance.

**2.11 Minimum Qualifications**

To be eligible for award of a contract in response to this solicitation, the Bidder must demonstrate that they have successfully completed services, as specified in Section III of this solicitation, are normally and routinely engaged in performing such services, and are properly and legally licensed (if required) to perform such work. Bidder must possess and be able to provide the City with any and all required Federal, State, County and/or municipal licenses, and occupational licenses. Bidder must be able to provide proof of valid licensing for all subcontractors and/or material suppliers hired by the contractor, if requested. In addition, the Bidder must have no conflict of interest with regard to any other work performed by the Bidder for the City.

**2.12 Award of Contract**

Award may be in the aggregate, or by line Item, or by group, whichever is determined to be in the best interest of the City.

The Contract will be awarded only to a Bidder, who in the opinion of the City, is fully qualified to undertake the work, quoting the lowest price, for that product/service that will best serve the needs of the City. The City reserves the right before awarding the Contract to require a Bidder to submit such evidence of his qualifications as it may deem necessary and may consider any available evidence of his financial status, technical qualifications, and other qualifications and abilities.

The City also reserves the right to accept or reject any or all bids, part of bids, and to waive minor irregularities or variations to specifications contained in bids, and minor irregularities in the bidding process. The City also reserves the right to award the contract on a split order basis, lump sum basis, individual item basis, or such combination as shall best serve the interest of the City.

The City, in all solicitations or advertisements for purchasing of goods, supplies, materials, equipment and services, will receive consideration from qualified businesses without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

**2.13 Execution Of Contract**

The Bidder (s) to whom the Contract is awarded shall, within ten days of the date of award, execute and deliver three (3) copies of the following to the Engineer.

- A. The Contract
- B. Performance and Payment Bond
- C. Evidence of required Insurance
- D. Proof of authority to execute the Contract
- E. Proof of authority to execute the Bond on behalf of the Awardee
- F. List of Subcontractors, estimated Contract Value for each and proof that such subcontractors possess all required Federal, State, County and/or municipality licenses, including but not limited to certified of competency and occupational license

The above documents must be furnished, executed and delivered before the Contract will be executed by the City. The Contract shall not be binding upon the City until it has been executed by the City and a copy of such fully executed Contract is delivered to the Contractor.

**2.14 Failure To Execute Contract, Bid Guaranty Forfeited**

Should the Bidder (s) to whom the Contract has been awarded refuse or fail to complete the requirements of Section 2.13 above within ten (10) days after Notice of Award, the additional time in days (including weekends) required to CORRECTLY complete the documents will be deducted, in equal amount, from the Contract Time, or the City may elect to revoke the Award. The Bid Guaranty of any Bidder failing to execute the awarded Contract shall be retained by the City and the Contract awarded as the Commission desires.

**2.15 Manufacturer/Brand/Model Specific Request**

This is a manufacturer/brand/model specification. No substitutions will be allowed unless specified in Form 3 or Attachment D, – Technical Specifications.

**2.16 Permits and Fees** Refer to Attachment D – Technical Specifications (Section 01025 Basis of Payment).

**2.17 Contract Security**

When the awarded bidder (s) delivers the executed contract to the City, it must be accompanied by the required bonds.

**2.18 Contract Period**

The Contract Period is one year (365 days) to substantial completion, plus 30 days to final completion.

**2.19 Bid Guaranty**

A Bid Guaranty in the form of a Cashier's Check, Certified Check or Bid Bond executed by the Bidder and a qualified Surety in the amount of 5% of the Bid is required for this project.

**2.20 Warranties of Usage**

Any estimated quantities listed are for information and tabulation purposes only. No warranty or guarantee of quantities needed is given or implied. It is understood that the Contractor will furnish the City's needs as they arise.

**2.21 Rules and Submittals of Bids**

The signer of the bid must declare that the only person(s), company or parties interested in the proposal as principals are named therein; that the bid is made without collusion with any other person(s), company or parties submitting a bid; that it is in all respects fair and in good faith, without collusion or fraud; and that the signer of the bid has full authority to bind the principal bidder.

**2.22 Tie Breaker**

In cases where there is a tie for the bid award, the award shall be made by giving preference to the low bidder(s) with the following items (in this order): (1) maintenance of a drug-free workplace in accordance with the requirements of Florida Statutes Section 287.087, (2) local Hollywood vendor preference, (3) closest proximity/location to project site or City Hall, and/or (4) minority-owned or disadvantaged business status. If a tie still exists after the aforementioned tiebreakers are utilized, the Chief Procurement Officer will make a recommendation for award among the tied bidders.

**2.23 Conflict of Interests Prohibited**

Any respondent submitting a response to this solicitation is responsible for being aware of, and complying with [Section 34.02](#) of the City Code of Ordinances. If you have questions concerning whether you may or may not need to comply with the ordinance, please contact the City of Hollywood, City Clerk's Office at 954-921-3211.

**2.24 Protest Procedure**

Any respondent who is not recommended for award of a contract and who alleges a failure by the City to follow the City's [Procurement Code](#) or any applicable law may protest to the CPO, by delivering a letter of protest to the CPO in accordance with [Section 38.52](#) of the City's [Procurement Code](#) within five days after a notice of intent to award is posted on the City's web site, OPENGOV, City Clerk's Office, Open Government, and/or City's Sunshine Board (<https://www.hollywoodfl.org/Archive.aspx?AMID=140>).

**2.25 Insurance Requirements**

Contractor shall maintain, at its sole expense, during the term of this agreement the following insurances:

**The insurance policy shall not contain any exceptions that would exclude coverage for risks that can be directly or reasonably related to the scope of goods or services in this bid/proposal. A violation of this requirement at any time during the term, or any extension thereof shall be grounds for the immediate termination of any contract entered in to pursuant to this bid/proposal. In order to show that this requirement has been met, along with an insurance declaration sheet demonstrating the existence of a valid policy of insurance meeting the requirements of this bid/proposal, the successful proposer must submit a signed statement from insurance agency of record that the full policy contains no such exception.**

The insurance required by Article 5.6 of the General Conditions shall be as follows:

Any Sub-Contractor used by the contractor shall supply such similar insurance required of the contractor. Such certificates shall name the City of Hollywood as an Additional Insured.

**1. BUILDERS RISK (BR 1) – Installation Floater: (Not Applicable)**

**2. GENERAL LIABILITY (GL3):**

Prior to the commencement of work governed by this contract, the Contractor shall obtain General Liability Insurance. Coverage shall be maintained throughout the life of the contract and include, as a minimum:

- Premises Operations
- Products and Completed Operations
- Blanket Contractual Liability
- Personal Injury Liability
- Expanded Definition of Property Damage

The minimum limits acceptable shall be:

\$2,000,000 Combined Single Limit (CSL)

If split limits are provided, the minimum limits acceptable shall be:

\$1,000,000 per Person  
\$2,000,000 per Occurrence  
\$100,000 Property Damage

An Occurrence Form policy is preferred. If coverage is provided on a Claims Made policy, its provisions should include coverage for claims filed on or after the effective date of this contract. In addition, the period for which claims may be reported should extend for a minimum of twelve (12) months following the acceptance of work by the City.

The City of Hollywood shall be named as Additional Insured on all policies issued to satisfy the above requirements.

**3. GENERAL LIABILITY (GLXCU):**

Recognizing that the work governed by this contract involves either underground exposures, explosive activities, or the possibility of collapse of a structure, the Contractor's General Liability Policy shall include coverage for the XCU (explosion, collapse, and underground) exposures with limits of liability equal to those of the General Liability Insurance policy.

**4. VEHICLE LIABILITY (VL3):**

Recognizing that the work governed by this contract requires the use of vehicles, the Contractor, prior to the commencement of work, shall obtain Vehicle Liability Insurance. Coverage shall be maintained throughout the life of the contract and include, as a minimum, liability coverage for:

- Owned, Non-Owned, and Hired

Vehicles The minimum limits acceptable

shall be:

\$1,000,000 Combined Single Limit (CSL)

If split limits are provided, the minimum limits acceptable shall be:

- \$500,000 per Person
- \$1,000,000 per Occurrence
- \$100,000 Property Damage

The City of Hollywood shall be named as Additional Insured on all policies issued to satisfy the above requirements.

**5. WORKERS' COMPENSATION (WC2):**

Prior to the commencement of work governed by this contract, the Contractor shall obtain Workers' Compensation Insurance with limits sufficient to respond to the applicable state statutes.

In addition, the Contractor shall obtain Employers' Liability Insurance with limits of not less than:

- \$500,000 Bodily Injury by Accident
- \$500,000 Bodily Injury by Disease, policy limits
- \$500,000 Bodily Injury by Disease, each employee

Coverage shall be maintained throughout the entire term of the contract.

## 6. POLLUTION LIABILITY INSURANCE

The minimum limits of liability shall be:

\$1,000,000 per each claim / \$2,000,000 aggregate

Coverage shall be provided by a company or companies authorized to transact business in the state of Florida and the company or companies must maintain a minimum rating of A-VI, as assigned by the A.M. Best Company.

The policy must be endorsed to provide the City with (30) days' notice of cancellation.

If the Contractor has been approved by the Florida's Department of Labor, as an authorized self-insurer, the City shall recognize and honor the Contractor's status. The Contractor may be required to submit a Letter of Authorization issued by the Department of Labor and a Certificate of Insurance, providing details on the Contractor's Excess Insurance Program.

If the Contractor participates in a self-insurance fund, a Certificate of Insurance will be required. In addition, the Contractor may be required to submit updated financial statements from the fund upon request from the City.

Any sub-consultant shall supply such similar insurance required of the Consultant. Such certificates shall name the City as additional insured in the general liability and auto liability policies.

### 2.26 Uncontrollable Circumstances (Force Majeure)

The City and Contractor will be excused from the performance of their respective obligations under this agreement when and to the extent that their performance is delayed or prevented by any circumstances beyond their control including, fire, flood, explosion, strikes or other labor disputes, acts of God or public emergency, war, riot, civil commotion, malicious damage, act or omission of any governmental authority, delay or failure or shortage of any type of transportation, equipment, or service from a public utility needed for their performance, provided that:

- 2.26.1 The non performing party gives the other party prompt written notice describing the particulars of the Force Majeure including, but not limited to, the nature of the occurrence and its expected duration, and continues to furnish timely reports with respect thereto during the period of the Force Majeure;
- 2.26.2 The excuse of performance is of no greater scope and of no longer duration than is required by the Force Majeure; and
- 2.26.3 No obligations of either party that arose before the Force Majeure causing the excuse of performance are excused as a result of the Force Majeure; and
- 2.26.4 The non-performing party uses its best efforts to remedy its inability to perform. Notwithstanding the above, performance shall not be excused under this Section for a period in excess of two (2) months, provided that in extenuating circumstances, the City may excuse performance for a longer term. Economic hardship of the Contractor will not constitute Force Majeure. The term of the agreement shall be extended by a period equal to that during which either party's performance is suspended under this Section.

**2.27 Supplier Portal (Oracle) Payment Method**

The City has implemented software that contains a supplier portal allowing suppliers to submit and update their information via the supplier portal. New suppliers will be required to register; and current suppliers will need to confirm and update their information.

Firms are responsible for ensuring that all contact, payment, and general information is updated at all times, and will not hold the City liable for any inaccurate information.

**2.28 Debarred or Suspended Bidders or Proposers**

Firm(s) certifies, by submission of a response to this solicitation, that neither it nor its principals and subcontractors are presently debarred or suspended by any federal, state, county or municipal department or agency.

**2.29 Payment and Performance Bond**

A Performance Bond and a Payment Bond each equal to 100 percent of the total Bid will be required of the Awardee. The Bond must be written through a company licensed to do business in the State of Florida and be rated at least "A", Class X, in the latest edition of "Best's Key Rating Guide", published by A.M. Best Company. As per Florida Statute Section 255.05, the Contractor shall be required to record the payment and performance bonds in the public records of Broward County

**2.30 Public Records**

**A. Public Records/Trade Secrets/Copyright:**

**All responses will become the property of the City. The Consultant's response to the solicitation is a public record pursuant to Florida law and is subject to disclosure by the City pursuant to Chapter 119.07, Florida Statutes ("Public Records law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this solicitation and the Contract to be executed for this solicitation, subject to the provisions of Chapter 119, Florida Statutes.**

Any language contained in the Consultant's response to the solicitation purporting to require confidentiality of any portion of the Consultant's response to the solicitation, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Consultant submits any documents or other information to the City that the Consultant claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 ("Public Records Laws"), the Consultant shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Consultant must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Consultant's response to the solicitation constitutes a Trade Secret. The City's determination of whether an exemption applies shall be final, and the Consultant agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agent, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as public records. In the event of Contract award, all documentation produced as part of the Contract shall become the exclusive property of the City. Proposals purporting to be subject to copyright protection in full or in part will be rejected.

EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE SOLICITATION AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE SOLICITATION OR ANY PART THEREOF AS COPYRIGHTED.

## **B. PUBLIC RECORDS GENERAL**

**IF THE CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONSULTANT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT: (954-921-3211), pcerny@hollywoodfl.org, CITY CLERK'S OFFICE, 2600 HOLLYWOOD BLVD, HOLLYWOOD, FLORIDA 33020)**

Consultant shall:

1. Keep and maintain public records that ordinarily and necessarily would be required by the City in order to perform the service.
2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes.
3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of this contract if the Consultant does not transfer the records to the City.
4. Upon completion of the Contract, transfer, at no cost, to the City all public records in possession of the Consultant or keep and maintain public records required by the City to perform the service. If the Consultant transfers all public records to the City upon completion of this Contract, the Consultant shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Consultant keeps and maintains public records upon completion of this Contract, the Consultant shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City. It is solely and exclusively the Contractor's responsibility to familiarize itself with Chapter 119, Florida Statutes, and to ensure compliance with its requirements.

*END OF SECTION*

## SECTION III - SCOPE OF SERVICES

### 3.1 **Project Description**

Work under this Contract consists of furnishing all labor, tools, materials, and equipment needed to conduct the following improvements at the Southern Regional Wastewater Treatment Plant as specified herein:

#### Improvements at Dewatering Building

1. Sludge Feed Pump Replacement (Including Valves and Piping)
2. Polymer Dosing Skid Replacement

#### Grit Chamber Improvements

1. Grit Removal at Grit Chambers and Grit Classifiers, Including Interconnecting Pipe
2. Grit Pump Replacement (with City Approval)
3. Grit Pipe Replacement (with City Approval)

#### OTFD Box Gate Repair

1. Pressure Cleaning – Box 2 and 3
2. Concrete Repair – Box 2 and 3
3. Gate Repair – Box 2 and 3
4. New Gate Installation – Box 2 and 3 (with City Approval)

The Contractor agrees to cooperate and work with other projects in the same construction area.

### 3.2 **Technical Specifications**

Refer to Appendix D.

### 3.3 **Contractor Qualifications**

The contract will be awarded only to a responsive contractor qualified by experience to do the Work specified. The bidder shall submit, prior to award of contract, satisfactory evidence of his experience in like Work and that he is fully prepared with the necessary organization, capital, equipment and machinery to complete the Work to the satisfaction of the City within the time limit stated. In addition to the above, the Contractor shall satisfy the following criteria:

- A. The Bidder shall have extensive experience in dewatering facility, grit removal facility, concrete repair in WWTP headworks, and oxygenation train distribution box gate replacement.
- B. Bidder shall submit proof of having successfully completed a minimum of three (3) relevant projects demonstrating experience with wastewater treatment plant work with a construction budget of \$5,000,000 (or larger). These projects shall have been performed within the past five (5) years from the date of the Invitation to Bid.
- C. Provide at least three (3) verifiable references for projects similar in size and scope or types of work as listed in this solicitation using the attached vendor reference form.

**NOTE: REFERENCES SHALL NOT INCLUDE ONLY CITY OF HOLLYWOOD EMPLOYEES OR WORK PERFORMED FOR THE CITY. THE CITY IS ALSO INTERESTED IN WORK EXPERIENCE AND REFERENCES FROM ENTITIES OTHER THAN THE CITY OF HOLLYWOOD.**

- D. Shall be fully qualified and holds the Federal, State, County and/or municipal licenses, including but not limited to certificates of competency and occupational licenses to perform the scope of work described in the solicitation.
- E. Be properly licensed to perform work as a General Contractor in the State of Florida, Broward County, and the City of Hollywood.
- F. Possession of Underground Contractor's licenses is required for this Project.
- G. Have been licensed General Contractor in the State of Florida and Broward County under the present name of the organization for previous ten (10) years (minimum).

Form 15 – Information Required from Bidders, shall be completed fully and accurately by the Contractor and submitted with the bid. Information included on the questionnaire will be used in evaluating the qualifications of the Contractor. The City reserves the right to request additional information not identified on the questionnaire.

### **3.4 Subcontractors**

For the City to be assured that only competent and qualified subcontractors will be employed on this project, each Bidder shall submit in the bid a list of the subcontractors performing work on this project. This subcontractors list shall include each firm's name, address, telephone number, contact person and work to be performed. Subcontractors shall be properly registered or licensed with the State of Florida, Broward County, and the City of Hollywood. Subcontractors shall, in the City's opinion, be qualified both technically and financially to perform the work.

The City reserves the right to reject any subcontractor who is deemed by the City to be unacceptable technically or financially or has previously performed work which the City believes to be unsatisfactory. No change may be made to this list of subcontractors by the Contractor, before or after contract award, without the express written consent of the City.

If, prior to award, the City rejects any subcontractor, the Contractor shall be afforded the opportunity to submit qualifications for an alternate subcontractor with no attendant increase in the base lump sum bid amount, adjustment of contract time or alteration of the bid documents. Such qualifications will be due within ten (10) days of receipt of notification of subcontractor rejection. Failure to submit an acceptable alternate subcontractor may result in rejection of the bid. In this event, the bid bond shall be returned to Contractor without claim by the City and with forfeiture of all claim rights by the Contractor.

### **3.5 Deliverables and Objectives**

Refer to Attachment B General Conditions, Attachment C Supplementary General Conditions, Attachment D Technical Specifications.

### **3.6 Project Schedule / Timeline**

Refer to Appendix C, Supplementary conditions, Section 1, Project Schedule.

### **3.7 Questions**

Refer to Form 15, Information Required from Bidders.

### **3.8 Substantial Completion**

Refer to Appendix C, Supplementary conditions, Section 1, Project Schedule.

*END OF SECTION*

## **SECTION IV – GENERAL TERMS AND CONDITIONS**

### **1.1 INTENT**

It is the policy of the City to encourage full and open competition among all available qualified vendors. All vendors regularly engaged in the type of Work specified in the Bid Solicitation are encouraged to submit bids. To receive notification and to be eligible to bid vendor should be registered with OpenGov. Vendors may register with the OpenGov (registration is free) to be included on a mailing list for selected categories of goods and Services. In order to be processed for payment, any awarded vendor must register with the City by completing and returning a Vendor Application and all supporting documents. For information and to apply as a vendor, please visit our website at [hollywoodfl.org](http://hollywoodfl.org) to download an application and submit it to Procurement Services Division.

It is the intent of the City of Hollywood, FL ("the City"), through this solicitation and the contract conditions contained herein, to establish to the greatest possible extent complete clarity regarding the requirements of both parties to the agreement resulting from this solicitation.

Before submitting a bid, the Vendor shall be thoroughly familiarized with all contract conditions referred to in this document and any addenda issued before the bid/proposal submission date. Such addenda shall form a part of the SOLICITATION and shall be made a part of the contract. It shall be the Vendor's responsibility to ascertain that the bid/proposal includes all addenda issued prior to the bid/proposal submission date. Addenda will be posted on the City's internet site along with the SOLICITATION.

The terms of the SOLICITATION and the selected Vendor's bid and any additional documentation (e.g. questions and answers) provided by the Vendor during the solicitation process will be integrated into the final contract for services entered into between the City and the selected Vendor. The Vendor shall determine, by personal examination and by such other means as may be preferred, the conditions and requirements under which the agreement must be performed.

### **1.2 PROPOSER'S RESPONSIBILITIES**

Proposers are required to submit their bids upon the following express conditions:

- A. Proposers shall thoroughly examine the drawings, specifications, schedules, instructions and all other contract documents.
- B. Proposers shall make all investigations necessary to thoroughly inform themselves regarding delivery of material, equipment or services as required by the SOLICITATION conditions. No plea of ignorance, by the proposer, of conditions that exist or that may hereafter exist as a result of failure or omission on the part of the proposer to make the necessary examinations and investigations, or failure to fulfill in every detail the requirements of the contract documents, will be accepted as a basis for varying the requirements of the City or the compensation due the proposer.
- C. Proposers are advised that all City contracts are subject to all legal requirements provided for in the City of Hollywood Charter, Code of Ordinances and applicable County Ordinances, State Statutes and Federal Statutes.

### **1.3 PREPARATION OF BIDS/PROPOSALS**

Bids/proposals shall be prepared in accordance with the bid/proposal response format. Bids/proposals not complying with this format may be considered non-responsive and may be removed from consideration on this basis. Each proposer, by making a bid/proposal, represents that this document has been read and is fully understood.

Bids/proposals will be prepared in accordance with the following:

- A. The City's enclosed bid/proposal Forms, in their entirety, are to be used in submitting your bid/proposal. **NO OTHER FORM WILL BE ACCEPTED.**
- B. All information required by the bid/proposal form shall be furnished. The proposer shall sign each continuation sheet (where indicated) on which an entry is made.

C. Prices shall be shown and where there is an error in extension of prices, the unit price shall govern.

The City of Hollywood is exempt from payment to its vendors of State of Florida sales tax and, therefore, such taxes should not be figured into the SOLICITATION. However, this exemption does not apply to suppliers to the City in their (supplier) purchases of goods or services, used in work or goods supplied to the City. Proposers are responsible for any taxes, sales or otherwise, levied on their purchases, subcontracts, employment, etc. An exemption certificate will be signed where applicable, upon request. The City will pay no sales tax.

#### **1.4 DESCRIPTION OF SUPPLIES (As Applicable)**

Any manufacturer's names, trade names, brand names, or catalog numbers used in these applications are for the purpose of describing and establishing minimum requirements or level of quality, standards of performance, and design required, and are in no way intended to prohibit the bidding of other manufacturers' items of equal material, unless specifications state "NO SUBSTITUTIONS."

Proposers must indicate any variances to the specifications, terms, and conditions, no matter how slight. If variations are not stated in the bid/proposal, it shall be construed that the bid/proposal fully complies with the Specifications, Terms and Conditions.

Proposers are required to state exactly what they intend to furnish; otherwise they shall be required to furnish the items as specified.

Proposers will submit, with their bid/proposal, necessary data (factory information sheets, specifications, brochures, etc.) to evaluate and determine the quality of the item(s) they are proposing.

The City shall be the sole judge of equality and its decision shall be final.

#### **1.5 ADDENDA**

The Procurement Services Division may issue an addendum in response to any inquiry received, prior to bid/proposal opening, which changes, adds to or clarifies the terms, provisions or requirements of the solicitation. The Proposer should not rely on any representation, statement or explanation, whether written or verbal, other than those made in this solicitation document or in any addenda issued. Where there appears to be a conflict between this solicitation and any addendum, the last addendum issued shall prevail. It is the proposer's responsibility to ensure receipt of all addenda and any accompanying documents. Proposer(s) shall acknowledge receipt of any formal Addenda by signing the addendum and including it with their bid/proposal. Failure to include signed formal addenda in its bid/proposal shall cause the City to deem the bid/proposal non-responsive provided, however, that the City may waive this requirement in its best interest.

#### **1.6 REJECTION OF BIDS/PROPOSALS**

To the extent permitted by applicable state and federal laws and regulations, the City reserves the right to reject any and all bids/proposals, to waive any and all informalities, irregularities and technicalities not involving price, time or changes in the commodities and/or services, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional bids/proposals. Bids/proposals will be considered irregular and may be rejected if they show serious omissions, alterations in form, additions not called for, conditions or unauthorized alterations or irregularities of any kind.

The City also reserves the right to waive minor technical defects in a bid/proposal. The City reserves the right to determine, in its sole discretion, whether any aspect of a bid/proposal satisfies the criteria established in this Solicitation.

The City reserves the right to reject, in whole or in part, the bid/proposal of any Proposer if the City believes that it would not be in the best interest of the City to make an award to that Proposer, whether because the bid/proposal is not responsive, or the Proposer is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criterion established by City.

The foregoing reasons for rejection of bids/proposals are not intended to be exhaustive.

The City may reject a bid/proposal if:

A. The Proposer fails to acknowledge receipt of an addendum, or if

- B. The Proposer misstates or conceals any material fact in the bid/proposal, or if
- C. The bid/proposal does not strictly conform to the law or requirements of the SOLICITATION, or if
- D. The City is under a pre- lawsuit claim or current litigation with the proposer.

Additionally, any one of the following causes (not limited to) may be considered as sufficient justification to disqualify a Bidder and reject his/her Bid:

- A. Submission of more than one Bid for the same work by an individual, firm, partnership or corporation under the same or different names.
- B. Evidence of collusion.
- C. Previous participation in collusive Bidding on work for the City of Hollywood, Florida.
- D. Submission of an unbalanced Bid in which the prices Bid for some items are out of proportion to the prices Bid for other items.
- E. Lack of competency. The Engineer may declare any Bidder ineligible, at any time during the process or receiving Bids or awarding the Contract, if developments arise which, in his opinion, adversely affects the Bidder's responsibility. The Bidder will be given an opportunity, by the Engineer, to present additional evidence before final action is taken.
- F. Lack of responsibility as shown by past work judged by the Engineer from the standpoint of workmanship and progress.
- G. Uncompleted work for which the Bidder is committed by Contract, which is in the judgment of the Engineer, might hinder or prevent the prompt completion of work under this Contract

The City may reject all bids whenever it is deemed in the best interest of the City to do so, and may reject any part of a bid unless the bid has been qualified as provided in herein.

#### **1.7 WITHDRAWAL OF BIDS**

- A. Bids may not be withdrawn and shall be deemed enforceable for a period of 180 days after the time set for the SOLICITATION opening.
- B. Bids may be withdrawn prior to the time set for the SOLICITATION opening. Such request must be in writing.
- C. The City will permanently retain as liquidated damages and the bid deposit furnished by any Bidder who requests to withdraw a bid after the SOLICITATION opening.

#### **1.8 BIDS TO REMAIN OPEN**

All bids shall remain open for 180 calendar days after the day of the bid opening, but the City may, at its sole discretion, release any bid and return the bid Security prior to that date.

Extensions of time when bids shall remain open beyond the 180 day period may be made only by mutual written agreement between the City, the successful Bidder and the surety, if any, for the successful Bidder.

#### **1.9 LATE BIDS OR MODIFICATIONS**

Only bids received as of the opening date and time will be considered timely. Bids and modifications received after the time set for the opening will be returned un-opened to the sender and rejected as late.

#### **1.10 CONFLICTS WITHIN THE SOLICITATION**

Where there appears to be a conflict between the General Terms and Conditions, Special Conditions, the Technical Specifications, the SOLICITATION Submittal Section, or any addendum issued, the order of precedence shall be the last addendum issued, the SOLICITATION Submittal Section, the Technical Specifications, the Special Conditions, and then the General Terms and Conditions.

### **1.11 CLARIFICATION OR OBJECTION TO BID SPECIFICATIONS**

If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of the specifications or other SOLICITATION documents or any part thereof, they may submit requests for clarification to the Procurement Services Division on or before the date specified for a request for clarification. All such requests for clarification shall be made in writing and the person submitting the request will be responsible for its prompt delivery. Any interpretation of the SOLICITATION, if made, will be made only by Addendum duly issued. A copy of such Addendum will be made available to each person receiving a Solicitation. The City will not be responsible for any other explanation or interpretation of the SOLICITATION given prior to the award of the contract. Any objection to the specifications and requirements as set forth in this SOLICITATION must be filed in writing with the Chief Procurement Officer on or before the date specified for a request for clarification.

### **1.12 COMPETENCY OF PROPOSERS**

Pre-award inspection of the Bidder's facility may be made prior to the award of a contract. Bids will be considered only from firms which are regularly engaged in the business of providing the goods and/or services as described in this SOLICITATION(s); have a record of performance for a reasonable period of time; and have sufficient financial support, equipment and organization to ensure that they can satisfactorily deliver the material and/or services if awarded a Contract under the terms and conditions herein stated. The terms "equipment and organization" as used herein shall be construed to mean a fully equipped and well established company in line with the best business practices in the industry and as determined by the proper authorities of the City.

The City may consider any evidence available to it of the financial, technical and other qualifications and abilities of a proposer, including past performance (experience) in making the award in the best interest of the City. In all cases the City of Hollywood shall have no liability to any proposer for any costs or expense incurred in connection with this SOLICITATION or otherwise.

### **1.13 QUALIFICATIONS OF PROPOSERS**

No Bid will be accepted from, nor will any contract be awarded to any person who is in arrears to the City upon any debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to City, or who is deemed responsible or unreliable by the City.

As part of the bid evaluation process, City may conduct a background investigation including a record check by the Hollywood Police Department. Proposer's submission of a bid constitutes acknowledgment of the process and consent to such investigation. City shall be the sole judge in determining a Bidder's qualifications.

### **1.14 CONSIDERATION OF BIDS**

In cases where an item requested is identified by a manufacturer's name, trade name, catalog number, or reference, it is understood that the Vendor proposes to furnish the item so identified and does not propose to furnish an "equal" unless the proposed "equal" is pre-approved by the City.

References to any of the above are intended to be descriptive but not restrictive and only indicate articles that will be satisfactory. A bid of an "equal" will be considered, provided that the Vendor states in his bid exactly what he proposes to furnish, including sample, illustration, or other descriptive matter which will clearly indicate the character of the article covered by such bid. The designated City representative hereby reserves the right to approve as an "equal", or to reject as not being an "equal", any article proposed which contains major or minor variations from specifications requirements.

### **1.15 AWARD OF CONTRACT**

If the Contract is to be awarded, it will be awarded, after evaluation by the City, to the responsible and responsive Proposer whom the City determines will be in the best interest of the City, and not necessarily to the lowest cost Proposer. A short list of finalists will be determined and presented to either the City Manager or his/her designee or to the City Commission, in accordance with the applicable City of Hollywood Code of Ordinances and will make the final ranking for the purposes of negotiating the contract with the top ranked firm. The successful Proposer shall be required to sign a contract; the refusal or failure of a successful Proposer to execute a contract which contains the mandatory material terms and conditions

contained in the SOLICITATION, shall be grounds for deeming the Proposer and/or the Proposer's bid/proposal non-responsive.

If applicable, the Proposer to whom award is made shall execute a written contract prior to award by the City Commission. If the Proposer to whom the first award is made fails to enter into a contract as herein provided, the Contract may be let to the next highest ranked Proposer who is responsible and responsive in the opinion of the City.

#### **1.16 BASIS FOR AWARD, EVALUATION CRITERIA AND QUESTIONS**

The qualification of bid/proposal responders on this project will be considered in making the award. The City is not obligated to accept any bid/proposal if deemed not in the best interest of the City to do so. The City shall make award to a qualified proposer based on fees submitted and responses to this SOLICITATION.

Failure to include in the bid all information outlined herein may be cause for rejection of the bid.

The City reserves the right to accept or reject any and all bids, in whole or in part, as determined to be in the best interest of the City in its sole discretion.

The City reserves the right to waive any informalities or irregularities in bids.

The City reserves the right to negotiate separately the terms and conditions or all or any part of the bids as deemed to be in the City's best interest in its sole discretion.

Information and/or factors gathered during interviews, negotiations and any reference checks, and any other information or factors deemed relevant by the City, shall be utilized in the final award. The final award of a contract is subject to approval by the City Commission.

#### **1.17 AGREEMENT**

An agreement shall be sent to each awarded proposer to be signed, witnessed, and returned to the City for execution. The City will provide a copy of the fully executed agreement to the awarded proposer.

#### **1.18 NOTICE TO PROCEED**

A signed purchase order, blanket purchase order or fully executed agreement will be the Proposer's authorization to proceed and may substitute for a "Notice to Proceed" form.

#### **1.19 BID PROTESTS**

The City shall provide notice of its intent to award or reject to all Proposers by posting such notice on the City's website.

After a notice of intent to award a contract is posted, any actual or prospective proposer who is aggrieved in connection with the pending award of the contract or any element of the process leading to the award of the contract may protest to the Director of Procurement Services. A protest must be filed within five business days after posting or any right to protest is forfeited. The protest must be in writing, must identify the name and address of the protester, and must include a factual summary of, and the basis for, the protest. Filing shall be considered complete when the protest, including a deposit, is received by the Procurement Services Division. Failure to file a protest within the time-frame specified herein shall constitute a full waiver of all rights to protest the City's decision regarding the award.

The written protest shall state in detail the specific facts and law or ordinance upon which the protest of the proposed award is based, and shall include all pertinent documents.

A written protest may not challenge the relative weight of evaluation criteria or a formula for assigning points.

Upon receipt of a formal written protest, the City shall stop award proceedings until resolution of the protest; unless it has been determined that the award of the contract without delay is necessary to protect substantial interests of the City.

Any and all costs incurred by a protesting party in connection with a bid protest shall be the sole responsibility of the protesting party.

Upon receipt of a protest of the pending award of a contract, a copy of the protest shall promptly be forwarded to the City Attorney. The City Attorney shall thereupon review the charge to determine its sufficiency, including whether the protest was timely filed. If upon review the City Attorney determines that the charge is insufficient, the City Attorney may issue a summary dismissal of the protest. If upon review the City Attorney determines that the charge is sufficient, a hearing of the protest committee shall be scheduled.

A protest committee shall have the authority to review, settle and resolve the protest. The committee shall consist of three members appointed by the City Manager. The committee's review shall be informal.

If the protest committee determines that the pending award of a contract or any element of the process leading to the award involved a significant violation of law or applicable rule or regulation, all steps necessary and proper to correct the violation shall be taken. If the committee determines that the protest is without merit,

The Director shall promptly issue a decision in writing stating the reason for the decision and furnish a copy to the protester and any other interested party, and the process leading to the award shall proceed.

### **1.20 REQUIREMENTS FOR SIGNING BIDS/PROPOSALS**

Requirements for Signing Bid/Proposal:

- A. The bid/proposal must be signed in ink by an individual authorized to legally bind the person, partnership, company, or corporation submitting the bid/proposal. In cases where the bid/proposal is signed by a deputy or subordinate, the principal's proper written grant of authority to such deputy or subordinate must accompany the bid/proposal.
- B. Bids/proposals by corporations must be executed in the corporate name by the President or other corporate officers accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown below the signature.
- C. Bids/proposals by partnerships must be executed in the partnership name and signed by a general partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- D. All manual signatures must have the name typed directly under the line of the signature
- E. The above requirements apply to all SOLICITATION addenda.

### **1.21 EXAMINATION OF BID DOCUMENTS**

Before submitting a bid, each Bidder must: examine the bid Documents thoroughly; consider federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress, performance, or provision of the commodities and/or services; study and carefully correlate Proposer's observations with the bid Documents, and notify the City's agent of all conflicts, errors and discrepancies in the bid Documents.

The submission of a bid/proposal will constitute an incontrovertible representation by the Bidder, that the Bidder has complied with every requirement of this SOLICITATION, that without exception, the bid is premised upon performing the services and/or furnishing the commodities and materials in accordance with such means, methods, techniques, sequences or procedures as may be indicated in or required by the bid/proposal Documents, and that the bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of performance and furnishing of the goods and/or services.

### **1.22 PUBLIC RECORDS LAW**

If applicable, for each public agency contract for services, the Proposer is required to comply with F.S. 119.0701, which includes the following:

- A. Keep and maintain public records that ordinarily and necessarily would be required by the public agency in order to perform the service.

- B. Provide the public with access to public records on the same terms and conditions that the public agency would provide the records and at a cost that does not exceed the cost provided in F.S. Chapter 119 or as otherwise provided by law.
- C. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law.
- D. Meet all requirements for retaining public records and transfer, at no cost, to the public agency, all public records in possession of the proposer upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the public agency.

Public records may be inspected and examined by anyone desiring to do so, at a reasonable time, under reasonable conditions, and under supervision by the custodian of the public record. Sealed Bids become subject to the public records disclosure requirements of F.S. Chapter 119, notwithstanding a proposer's request to the contrary, at the time the City provides notice of a decision or intended decision, or 30 days after the bid/proposal opening, whichever is earlier.

Financial statements submitted in response to a request by the City may be confidential and exempt from disclosure.

Data processing software obtained under a licensing agreement which prohibits its disclosure may also exempt.

Proposers are hereby notified and agree that all information submitted as part of, or in support of SOLICITATION submittals will be available for public inspection after opening of SOLICITATION in compliance with Chapter 119 of the Florida Statutes. The proposer shall not, unless required as part of this SOLICITATION, submit any information in response to this invitation which the proposer considers to be a trade secret, proprietary or confidential. The submission, not required as part of this SOLICITATION, of any information to the City in connection with this invitation shall be deemed conclusively to be a waiver of any trade secret or other protection, which would otherwise be available to the proposer.

### **1.23 INFORMATION**

For information concerning procedure for responding to this Solicitation (SOLICITATION), contact the Point of Contact in the Section 1.4. Such contact shall be for clarification purposes only. **It is preferred that all other questions be submitted in writing via OpenGov at least 10 calendar days prior to the bid/proposal due/opening date.**

### **1.24 N/A – INTENTIONALLY OMITTED**

### **1.25 MODIFICATION AND WITHDRAWAL OF BIDS/PROPOSALS**

Bids must be modified or withdrawn by an appropriate document duly executed in the manner that a bid must be executed and delivered to the place where bids are to be submitted at any time prior to the deadline for submitting bids. A request for withdrawal or a modification must be in writing and signed by a person duly authorized to do so and, in a case where signed by a deputy or subordinate, the principal's proper written grant of authority to such deputy or subordinate must accompany the request for withdrawal or modification. Withdrawal of a bid will not prejudice the rights of a Bidder to submit a new bid prior to the bid date and time. Except where provided in the following paragraph no bid may be withdrawn or modified after expiration of the period for receiving bids.

If, within twenty-four (24) hours after bids are opened, any Bidder files a duly signed written notice with the City and within five (5) calendar days thereafter demonstrates to the reasonable satisfaction of the City by clear and convincing evidence that there was a material and substantial mistake in the preparation of its bid, or that the mistake is clearly evident on the face of the bid but the intended correct bid is not similarly evident, then the Bidder may withdraw its bid and the bid Security will be returned.

### **1.26 N/A – INTENTIONALLY OMITTED**

### **1.27 OPEN END CONTRACT**

No guarantee is expressed or implied as to the total quantity of commodities/services to be purchased under any open end contract. Estimated quantities will be used for bid comparison purposes only. The City reserves the right to issue

purchase orders as and when required, or a blanket purchase order and release partial quantities as and when required or any combination of the preceding.

ORDERING: The CITY reserves the right to purchase commodities/services specified herein through Contracts established by other governmental agencies or through separate procurement actions due to unique or special needs. If an urgent delivery is required within a period shorter than the delivery time specified in the contract, and if the seller is unable to comply therewith, the City reserves the right to obtain such delivery from others without penalty or prejudice to the City or to the Bidder.

### **1.28 AUDIT RIGHTS**

The City reserves the right to audit the records of the successful Bidder for the commodities and/or services provided under the Contract at any time during the performance and term of the Contract and for a period of three (3) years after completion and acceptance by the City. If required by the City, the successful Bidder agrees to submit to an audit by an independent certified public accountant selected by the City. The successful Bidder shall allow the City to inspect, examine and review the records of the successful Bidder in relation to this contract at any and all times during normal business hours during the term of the Contract.

### **1.29 LOCAL, STATE AND FEDERAL COMPLIANCE REQUIREMENTS**

The Bidder shall comply with all local, state and federal directives, orders and laws as applicable to this SOLICITATION and subsequent contract(s) including, but not limited to:

- A. Equal Employment Opportunity (EEO), in compliance with Executive Order 11246 as amended and applicable to this contract.
- B. All manufactured items and fabricated assemblies shall comply with applicable requirements of the Occupation Safety and Health Act of 1970 as amended, and be in compliance with Chapter 442, Florida Statutes. Any toxic substance listed in Section 38F-41.03 of the Florida Administrative Code delivered as a result of this order must be accompanied by a completed Material Safety Data Sheet (MSDS).
- C. The Immigration and Nationality Act prohibits (i) the employment of an unauthorized alien when the employer knows the individual is an unauthorized alien and (ii) the employment of an individual without complying with the requirements of the federal employment verification system. If a proposer commits either of these violations, such violation shall be cause for unilateral cancellation of the contract.
- D. This Section applies only to any contract for goods or services of \$1 million or more: The Proposer certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List and that it does not have business operations in Cuba or Syria as provided in section 287.135, Florida Statutes (2011), as may be amended or revised. The City may terminate this Contract at the City's option if the Proposer is found to have submitted a false certification as provided under subsection (5) of section 287.135, Florida Statutes (2011), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or has engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2011), as may be amended or revised.

### **1.30 FRAUD AND MISREPRESENTATION**

Any individual, corporation or other entity that attempts to meet its contractual obligations with the City through fraud, misrepresentation or material misstatement, may be debarred from doing business with the City. The City as further sanction may terminate or cancel any other contracts with such individual, corporation or entity. Such individual or entity shall be responsible for all direct or indirect costs associated with termination or cancellation, including attorney's fees.

### **1.31 DEBARRED OR SUSPENDED BIDDERS**

The bidder certifies, by submission of a response to this solicitation, that neither it nor its principals and sub bidder are presently debarred or suspended by any Federal department or agency.

### **1.32 COLLUSION**

More than one bid/proposal received for the same work from an individual, firm, partnership, corporation or association under the same or different names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one bid for the same work will cause the rejection of such bid which the Bidder is interested. If there are reasonable grounds for believing that collusion exists among the Bidder, the bids of participants in such collusion will not be considered.

### **1.33 COPELAND "ANTI-KICKBACK"**

The Bidder and all sub bidders will comply with the Copeland Anti-Kickback Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3).

### **1.34 FORCE MAJEURE**

The Agreement which is awarded to the successful proposer may provide that the performance of any act by the City or Bidder hereunder may be delayed or suspended at any time while, but only so long as, either party is hindered in or prevented from performance by acts of God, the elements, war, rebellion, strikes, lockouts or any cause beyond the reasonable control of such party, provided however, the City shall have the right to provide substitute service from third parties or City forces and in such event the City shall withhold payment due the Bidder for such period of time. If the condition of force majeure exceeds a period of 14 days the City may, at its option and discretion, cancel or renegotiate this Agreement.

### **1.35 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 Bidder, supplier, sub bidder, 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 Florida Statutes, Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

### **1.36 DRUG-FREE WORKPLACE PROGRAM**

Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program.

### **1.37 SOLICITATION, GIVING, AND ACCEPTANCE OF GIFTS POLICY**

Bidder shall sign and submit the attached form indicating understanding and compliance with the City's and State's policies prohibiting solicitation and acceptance of gifts by public officers, employees and candidates. Failure to submit the signed form will result in your bid being declared non-responsive; provided, however, that a responsible Bidder whose bid would be responsive but for the failure to submit the signed form in its bid may be given the opportunity to submit the form to the City within five calendar days after notification by the City, if this is determined to be in the best interest of the City.

### **1.38 CONFLICT OF INTEREST**

The Bidder represents that:

No officer, director, employee, agent, or other consultant of the City or a member of the immediate family or household of the aforesaid has directly or indirectly received or been promised any form of benefit, payment or compensation, whether tangible or intangible, in connection with the grant of this Agreement.

There are no undisclosed persons or entities interested with the Proposer in this Agreement. This Agreement is entered into by the Proposer without any connection with any other entity or person making a bid Bidder for the same purpose,

and without collusion, fraud or conflict of interest. No elected or appointed officer or official, director, employee, agent or other consultant of the City, or of the State of Florida (including elected and appointed members of the legislative and executive branches of government), or member of the immediate family or household of any of the aforesaid:

1. Is interested on behalf of or through the Bidder directly or indirectly in any manner whatsoever in the execution or the performance of this Agreement, or in the services, supplies or work, to which this Agreement relates or in any portion of the revenues; or
2. Is an employee, agent, advisor, or consultant to the Proposer or to the best of the Proposer's knowledge, any sub bidder or supplier to the Bidder.

Neither the Bidder nor any officer, director, employee, agent, parent, subsidiary, or affiliate of the Bidder shall have an interest which is in conflict with the Bidder's faithful performance of its obligations under this Agreement; provided that the City, in its sole discretion, may consent in writing to such a relationship, and provided the Bidder provides the City with a written notice, in advance, which identifies all the individuals and entities involved and sets forth in detail the nature of the relationship and why it is in the City's best interest to consent to such relationship.

The provisions of this Article are supplemental to, not in lieu of, all applicable laws with respect to conflict of interest. In the event there is a difference between the standards applicable under this Agreement and those provided by statute, the stricter standard shall apply.

In the event the Bidder has no prior knowledge of a conflict of interest as set forth above and acquires information which may indicate that there may be an actual or apparent violation of any of the above, the Bidder shall promptly bring such information to the attention of the City's ENGINEER. The Bidder shall thereafter cooperate with the City's review and investigation of such information, and comply with the instructions the Bidder receives from the ENGINEER in regard to remedying the situation.

#### **1.39 DISCRIMINATION**

Any 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 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 proposer, supplier, sub bidder, or consultant under contract with any public entity, and may not transact business with any public entity.

#### **1.40 ADVICE OF OMISSION OR MISSTATEMENT**

In the event it is evident to a Vendor responding to this SOLICITATION that the City has omitted or misstated a material requirement to this SOLICITATION and/or the services required by this SOLICITATION, the responding Vendor shall advise the contact identified in the SOLICITATION Clarifications and Questions section above of such omission or misstatement.

#### **1.41 CONFIDENTIAL INFORMATION**

Information contained in the Vendor's bid that is company confidential must be clearly identified in the bid/proposal itself. The City will be free to use all information in the Vendor's bid for the City's purposes, in accordance with State Law. Vendor bids shall remain confidential for 30 days or until a notice of intent to award is posted, which is sooner. The Vendor understands that any material supplied to the City may be subject to public disclosure under the Public Records Law.

#### **1.42 GOVERNING LAW**

This Contract, including appendices, and all matters relating to this Contract (whether in contract, statute, tort (such as negligence), or otherwise) shall be governed by, and construed in accordance with, the laws of the State of Florida. This shall apply notwithstanding such factors which include, but are not limited to, the place where the contract is entered into, the place where the accident occurs and notwithstanding application of conflicts of law principles.

#### **1.43 LITIGATION VENUE**

The parties waive the privilege of venue and agree that all litigation between them in the state courts shall take place in Broward County, Florida and that all litigation between them in the federal courts shall take place in the Southern District of Florida.

#### **1.44 SOVEREIGN IMMUNITY**

Nothing in this agreement shall be interpreted or construed to mean that the city waives its common law sovereign immunity or the limits of liability set forth in Section 768.28, Florida Statute.

#### **1.45 SURVIVAL**

The parties acknowledge that any of the obligations in this Agreement will survive the term, termination and cancellation hereof. Accordingly, the respective obligations of the Proposer and the City under this Agreement, which by nature would continue beyond the termination, cancellation or expiration thereof, shall survive termination, cancellation or expiration hereof.

#### **1.46 INDEMNIFICATION AND HOLD HARMLESS AGREEMENT**

The Contractor shall indemnify and hold harmless the City of Hollywood and its officers, employees, agents and instrumentalities from any and all liability, losses or damages. In addition, the City shall be entitled to attorney's fees and costs of defense, which the City of Hollywood, or its officers, employees, agents or instrumentalities may incur as a result of claims, demands, suits, causes of actions or proceedings of any kind or nature arising out of, relating to or resulting from the performance of this project by the awarded Bidder or its employees, agents, servants, partners, principals or subcontractors. Furthermore, the awarded Bidder shall pay all claims and losses in connection therewith and shall investigate and defend all claims, suits or actions of any kind of nature in the name of the City of Hollywood, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorney's fees which may issue thereon. The awarded Bidder expressly understands and agrees that any insurance protection required by the resulting agreement or otherwise provided by the awarded Bidder shall cover the City of Hollywood, its officers, employees, agents and instrumentalities and shall include claims for damages resulting from and/or caused by the negligence, recklessness or intentional wrongful misconduct of the Contractor and persons employed by or utilized by the Contractor in the performance of the contract.

#### **1.47 PATENT AND COPYRIGHT INDEMNIFICATION**

The Bidder warrants that all deliverables furnished hereunder, including but not limited to: services, equipment programs, documentation, software, analyses, applications, methods, ways, processes, and the like, do not infringe upon or violate any patent, copyrights, service marks, trade secret, or any other third party proprietary rights.

The Bidder shall be liable and responsible for any and all claims made against the City for infringement of patents, copyrights, service marks, trade secrets or any other third party proprietary rights, by the use or supplying of any programs, documentation, software, analyses, applications, methods, ways, processes, and the like, in the course of performance or completion of, or in any way connected with, the work, or the City's continued use of the deliverables furnished hereunder. Accordingly, the Bidder, at its own expense, including the payment of attorney's fees, shall indemnify, and hold harmless the City and defend any action brought against the City with respect to any claim, demand, and cause of action, debt, or liability.

In the event any deliverable or anything provided to the City hereunder, or a portion thereof, is held to constitute an infringement and its use is or may be enjoined, the Bidder shall have the obligation, at the City's option, to (i) modify, or require that the applicable sub bidder or supplier modify, the alleged infringing item(s) at the Bidder's expense, without impairing in any respect the functionality or performance of the item(s), or (ii) procure for the City, at the Bidder's expense, the rights provided under this Agreement to use the item(s).

The Bidder shall be solely responsible for determining and informing the City whether a prospective supplier or sub bidder is a party to any litigation involving patent or copyright infringement, service mark, trademark, violation, or proprietary rights

claims or is subject to any injunction which may prohibit it from providing any deliverable hereunder. The Bidder shall enter into agreements with all suppliers and sub bidder at the Bidder 's own risk. The City may reject any deliverable that it believes to be the subject of any such litigation or injunction, or if, in the City's judgment, use thereof would delay the work or be unlawful.

The Bidder shall not infringe any copyright, trademark, service mark, trade secrets, patent rights, or other intellectual property rights in the performance of the work.

#### **1.48 ADVERTISING**

Vendor shall not advertise or publish the fact that the City has placed this order without prior written consent from the City, except as may be necessary to comply with a proper request for information from an authorized representative of a governmental unit or agency.

#### **1.49 DISCLAIMER**

The Hollywood may, in its sole discretion, accept or reject, in whole or in part, for any reason whatsoever any or all bids; re-advertise this SOLICITATION, postpone or cancel at any time this SOLICITATION process; or, waive any formalities of or irregularities in the bid process. Bids that are not submitted on time and/or do not conform to the City of Hollywood's requirements will not be considered. After all bids are analyzed, organization(s) submitting bid that appear, solely in the opinion of the City of Hollywood, to be the most competitive, shall be submitted to the City of Hollywood's City Commission, and the final selection will be made shortly thereafter with a timetable set solely by the City of Hollywood. The selection by the City of Hollywood shall be based on the bid, which is, in the sole opinion of the City Commission of the City of Hollywood, in the best interest of the City of Hollywood. The issuance of this SOLICITATION constitutes only an invitation to make a bid to the City of Hollywood. The City of Hollywood reserves the right to determine, in its sole discretion, whether any aspect of the bid satisfies the criteria established by the City. In all cases the City of Hollywood shall have no liability to any proposer for any costs or expense incurred in connection with this bid or otherwise.

#### **1.50 TRADEMARKS**

The City warrants that all trademarks the City requests the Vendor to affix to articles purchased are those owned by the City and it is understood that the Vendor shall not acquire or claim any rights, title, or interest therein, or use any of such trademarks on any articles produced for itself or anyone other than the City.

#### **1.51 RIGHT TO REQUEST ADDITIONAL INFORMATION**

The City reserves the right to request any additional information that might be deemed necessary during the evaluation process.

#### **1.52 BID PREPARATION COSTS**

The Vendor is responsible for any and all costs incurred by the Vendor or his/her sub bidders in responding to this solicitation.

#### **1.53 DESIGN COSTS (N/A)**

#### **1.54 ADDITIONAL CHARGES**

No additional charges, other than those listed on the price breakdown sheets, shall be made. Prices quoted will include verification/coordination of order, all costs for shipping, delivery to all sites, unpacking, setup, installation, operation, testing, cleanup, training and Vendor travel charges.

#### **1.55 RIGHTS TO PERTINENT MATERIALS**

All responses, inquires, and correspondence relating to this SOLICITATION and all reports, charts, displays, schedules, exhibits and other documentation produced by the Vendor that are submitted as part of the bid shall become the property of the City upon receipt, a part of a public record upon opening, and will not be returned.

## **1.56 INSURANCE REQUIREMENTS**

See insurance requirements in the main solicitation document.

## **1.57 NATURE OF THE AGREEMENT**

The Agreement incorporates and includes all negotiations, correspondence, conversations, agreements, and understandings applicable to the matters contained in the Agreement. The parties agree that there are no commitments, agreements, or understandings concerning the subject matter of the Agreement that are not contained in the Agreement, and that the Agreement contains the entire agreement between the parties as to all matters contained herein. Accordingly, it is agreed that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written. It is further agreed that any oral representations or modifications concerning this Agreement shall be of no force or effect, and that the Agreement may be modified, altered or amended only by a written amendment duly executed by both parties hereto or their authorized representatives.

The Bidder shall provide the services set forth in the Scope of Services and render full and prompt cooperation with the City in all aspects of the services performed hereunder.

The Bidder acknowledges that the Agreement requires the performance of all things necessary for or incidental to the effective and complete performance of all work and services under this Contract. All things not expressly mentioned in the Agreement but necessary to carrying out its intent are required by the Agreement, and the Bidder shall perform the same as though they were specifically mentioned, described and delineated.

The Bidder shall furnish all labor, materials, tools, supplies, and other items required to perform the work and services that are necessary for the completion of this Contract. All work and services shall be accomplished at the direction of and to the satisfaction of the City's ENGINEER.

The Bidder acknowledges that the City shall be responsible for making all policy decisions regarding the Scope of Services. The Proposer agrees to provide input on policy issues in the form of recommendations.

The Bidder agrees to implement any and all changes in providing services hereunder as a result of a policy change implemented by the City. The Bidder agrees to act in an expeditious and fiscally sound manner in providing the City with input regarding the time and cost to implement said changes and in executing the activities required to implement said changes

## **1.58 AUTHORITY OF THE CITY'S ENGINEER**

The Bidder hereby acknowledges that the City's ENGINEER will determine in the first instance all questions of any nature whatsoever arising out of, under, or in connection with, or in any way related to or on account of, this Agreement including without limitations: questions as to the value, acceptability and fitness of the services; questions as to either party's fulfillment of its obligations under the Contract; negligence, fraud or misrepresentation before or subsequent to acceptance of the Bid; questions as to the interpretation of the Scope of Services; and claims for damages, compensation and losses.

The Bidder shall be bound by all determinations or orders and shall promptly obey and follow every order of the ENGINEER, including the withdrawal or modification of any previous order and regardless of whether the Bidder agrees with the ENGINEER's determination or order. Where orders are given orally, they will be issued in writing by the ENGINEER as soon thereafter as is practicable.

The Bidder must, in the final instance, seek to resolve every difference concerning the Agreement with the ENGINEER. In the event that the ENGINEER and the Bidder are unable to resolve their difference, the Bidder may initiate a dispute in accordance with the procedures set forth in the section below. Exhaustion of these procedures shall be a condition precedent to any lawsuit permitted hereunder.

In the event of such dispute, the parties to this Agreement authorize the City Manager or designee, who may not be the ENGINEER or anyone associated with this Project, acting personally, to decide all questions arising out of, under, or in connection with, or in any way related to or on account of the Agreement (including but not limited to claims in the nature of breach of contract, fraud or misrepresentation arising either before or subsequent to execution hereof) and the decision of each with respect to matters within the City Manager's purview as set forth above shall be conclusive, final and binding

on the parties. Any such dispute shall be brought, if at all, before the City Manager within 10 days of the occurrence, event or act out of which the dispute arises.

The City Manager may base this decision on such assistance as may be desirable, including advice of experts, but in any event shall base the decision on an independent and objective determination of whether the Bidder's performance or any deliverable meets the requirements of this Agreement and any specifications with respect thereto set forth herein. The effect of any decision shall not be impaired or waived by any negotiations or settlements or offers made in connection with the dispute, whether or not the City Manager participated therein, or by any prior decision of others, which prior decision shall be deemed subject to review, or by any termination or cancellation of the Agreement. All such disputes shall be submitted in writing by the Bidder to the City Manager for a decision, together with all pertinent information in regard to such questions, in order that a fair and impartial decision may be made. The parties agree that whenever the City Manager is entitled to exercise discretion or judgment or to make a determination or form an opinion pursuant to the provisions of this Article, such action shall be deemed fair and impartial when exercised or taken. The City Manager shall render a decision in writing and deliver a copy of the same to the Bidder. Except as such remedies may be limited or waived elsewhere in the Agreement, the Bidder reserves the right to pursue any remedies available under law after exhausting the provisions of this Article.

### **1.59 MUTUAL OBLIGATIONS**

This Agreement, including attachments and appendices to the Agreement, shall constitute the entire Agreement between the parties with respect hereto and supersedes all previous communications and representations or agreements, whether written or oral, with respect to the subject matter hereof unless acknowledged in writing by the duly authorized representatives of both parties.

Nothing in this Agreement shall be construed for the benefit, intended or otherwise, of any third party that is not a parent or subsidiary of a party or otherwise related (by virtue of ownership control or statutory control) to a party.

In those situations where this Agreement imposes an indemnity or defense obligation on the Bidder, the City may, at its expense, elect to participate in the defense if the City should so choose. Furthermore, the City may at its own expense defend or settle any such claims if the Bidder fails to diligently defend such claims, and thereafter seek indemnity for costs and attorney's fees from the Bidder.

### **1.60 SUBCONTRACTUAL RELATIONS**

If the Bidder will cause any part of this Agreement to be performed by a sub bidder, the provisions of this Contract will apply to such sub bidder and its officers, agents and employees in all respects as if it and they were employees of the Proposer; and the Proposer will not be in any manner thereby discharged from its obligations and liabilities hereunder, but will be liable hereunder for all acts and negligence of the sub bidder, its officers, agents, and employees, as if they were employees of the Proposer. The services performed by the sub bidder will be subject to the provisions hereof as if performed directly by the Bidder.

The Bidder, before making any subcontract for any portion of the services, will state in writing to the City the name of the proposed sub bidder, the portion of the services which the sub bidder is to do, the place of business of such sub bidder, and such other information as the City may require. The City will have the right to require the Bidder not to award any subcontract to a person, firm or corporation disapproved by the City.

Before entering into any subcontract hereunder, the Bidder will inform the sub bidder fully and completely of all provisions and requirements of this Agreement relating either directly or indirectly to the services to be performed. Such services performed by such sub bidder will strictly comply with the requirements of this Contract.

In order to qualify as a sub bidder satisfactory to the City, in addition to the other requirements herein provided, the sub bidder must be prepared to prove to the satisfaction of the City that it has the necessary facilities, skill and experience, and ample financial resources to perform the services in a satisfactory manner. To be considered skilled and experienced, the sub bidder must show to the satisfaction of the City that it has satisfactorily performed services of the same general type which are required to be performed under this Agreement.

The City shall have the right to withdraw its consent to a subcontract if it appears to the City that the subcontract will delay, prevent, or otherwise impair the performance of the Bidder's obligations under this Agreement. All sub bidder are required to protect the confidentiality of the City and City's proprietary and confidential information. The Bidder shall furnish to the City copies of all subcontracts between the Bidder and sub bidder and suppliers hereunder. Within each such subcontract,

there shall be a clause for the benefit of the City permitting the City to request completion of performance by the sub bidder of its obligations under the subcontract, in the event the City finds the Bidder in breach of its obligations, and the option to pay the sub bidder directly for the performance by such sub bidder. The foregoing shall neither convey nor imply any obligation or liability on the part of the City to any sub bidder hereunder as more fully described herein.

**1.61 PROMPT PAYMENT: LATE PAYMENTS BY BIDDER TO SUB BIDDER AND MATERIAL SUPPLIERS; PENALTY:**

When a Bidder receives from the City of Hollywood any payment for contractual services, commodities, materials, supplies, or construction contracts, the proposer shall pay such moneys received to each sub bidder and material supplier in proportion to the percentage of work completed by each sub bidder and material supplier at the time of receipt. If the Bidder receives less than full payment, then the proposer shall be required to disburse only the funds received on a pro rata basis to the sub bidder and materials Suppliers, each receiving a prorated portion based on the amount due on the payment. If the proposer without reasonable cause fails to make payments required by this section to sub bidder and material suppliers within fifteen (15) working days after the receipt by the Bidder of full or partial payment, the proposer shall pay to the sub bidder and material suppliers a penalty in the amount of one percent (1%) of the amount due, per month, from the expiration of the period allowed herein for payment. Such penalty shall be in addition to actual payments owed. Retainage is also subject to the prompt payment requirement and must be returned to the sub bidder or material supplier whose work has been completed, even if the prime contract has not been completed. The Bidder shall include the above obligation in each subcontract it signs with a sub bidder or material supplier.

**1.62 TERMINATION FOR CONVENIENCE AND SUSPENSION OF WORK**

The City may terminate this Agreement if an individual or corporation or other entity attempts to meet its contractual obligation with the City through fraud, misrepresentation or material misstatement.

The City may, as a further sanction, terminate or cancel any other contract(s) that such individual or corporation or other entity has with the City. Such individual, corporation or other entity shall be responsible for all direct and indirect costs associated with such termination or cancellation, including attorney's fees.

The foregoing notwithstanding, any individual, corporation or other entity which attempts to meet its contractual obligations with the City through fraud, misrepresentation or material misstatement may be debarred from City contracting in accordance with the City debarment procedures. The Bidder may be subject to debarment for failure to perform and any other reasons related to the Bidder's breach or failure of satisfactory performance.

In addition to cancellation or termination as otherwise provided in this Agreement, the City may at any time, in its sole discretion, with or without cause, terminate this Agreement by written notice to the Bidder and in such event:

The Bidder shall, upon receipt of such notice, unless otherwise directed by the City:

1. Stop work on the date specified in the notice ("the Effective Termination Date");
2. Take such action as may be necessary for the protection and preservation of the City's materials and property;
3. Cancel orders;
4. Assign to the City and deliver to any location designated by the City any non-cancelable orders for deliverables that are not capable of use except in the performance of this Agreement and which have been specifically developed for the sole purpose of this Agreement and not incorporated in the services;
5. Take no action which will increase the amounts payable by the City under this Agreement.

In the event that the City exercises its right to terminate this Agreement pursuant to this Article, the Bidder will be compensated as stated in the payment articles herein, for the:

1. Portion of the services completed in accordance with the Agreement up to the Effective Termination Date; and
2. Non-cancelable deliverables that are not capable of use except in the performance of this Agreement and which have been specifically developed for the sole purpose of this Agreement but not incorporated in the services.

All compensation pursuant to this Article is subject to audit.

### **1.63 EVENT OF DEFAULT**

An Event of Default shall mean a breach of this Agreement by the Bidder. Without limiting the generality of the foregoing and in addition to those instances referred to herein as a breach, an Event of Default, shall include the following:

1. The Bidder has not delivered deliverables on a timely basis;
2. The Bidder has refused or failed, except in any case for which an extension of time is provided, to supply enough properly skilled staff personnel;
3. The Bidder has failed to make prompt payment to sub bidder or suppliers for any services;
4. The Bidder has become insolvent (other than as interdicted by the bankruptcy laws), or has assigned the proceeds received for the benefit of the Bidder 's creditors, or the Bidder has taken advantage of any insolvency statute or debtor/creditor law or if the Bidder 's affairs have been put in the hands of a receiver;
5. The Bidder has failed to obtain the approval of the City where required by this Agreement;
6. The Bidder has failed to provide "adequate assurances" as required under subsection "B" below; and
7. The Bidder has failed in the representation of any warranties stated herein.

When, in the opinion of the City, reasonable grounds for uncertainty exist with respect to the Proposer's ability to perform the services or any portion thereof, the City may request that the Proposer, within the time frame set forth in the City's request, provide adequate assurances to the City, in writing, of the Proposer's ability to perform in accordance with terms of this Agreement. Until the City receives such assurances the City may request an adjustment to the compensation received by the Proposer for portions of the services which the Proposer has not performed. In the event that the Proposer fails to provide to the City the requested assurances within the prescribed time frame, the City may:

1. Treat such failure as a repudiation of this Agreement;
2. Resort to any remedy for breach provided herein or at law, including but not limited to, taking over the performance of the services or any part thereof either by itself or through others.

In the event the City shall terminate this Agreement for default, the City or its designated representatives may immediately take possession of all applicable equipment, materials, products, documentation, reports and data.

### **1.64 REMEDIES IN THE EVENT OF DEFAULT**

If an Event of Default occurs, the Proposer shall be liable for all damages resulting from the default, including but not limited to:

- A. Lost revenues;
- B. The difference between the cost associated with procuring services hereunder and the amount actually expended by the City for procurement of services, including procurement and administrative costs; and,
- C. Such other damages that the City may suffer.

The Proposer shall also remain liable for any liabilities and claims related to the Proposer's default. The City may also bring any suit or proceeding for specific performance or for an injunction.

### **1.65 BANKRUPTCY**

The City reserves the right to terminate this contract if, during the term of any contract the Proposer has with the City, the Proposer becomes involved as a debtor in a bankruptcy proceeding, or becomes involved in a reorganization, dissolution,

or liquidation proceeding, or if a trustee or receiver is appointed over all or a substantial portion of the property of the Proposer under federal bankruptcy law or any state insolvency law.

#### **1.66 CANCELLATION FOR UNAPPROPRIATED FUNDS**

The obligation of the City for payment to a Proposer is limited to the availability of funds appropriated in a current fiscal period, and continuation of the contract into a subsequent fiscal period is subject to appropriation of funds, **unless otherwise authorized by law.**

#### **1.67 VERBAL INSTRUCTIONS PROCEDURE**

No negotiations, decisions, or actions shall be initiated or executed by the Proposer as a result of any discussions with any City employee. Only those communications which are in writing from an authorized City representative may be considered. Only written communications from Proposers, which are signed by a person designated as authorized to bind the Proposer, will be recognized by the City as duly authorized expressions on behalf of the Proposer.

#### **1.68 E-VERIFY**

Proposer acknowledges that the City may be utilizing the Proposer's services for a project that is funded in whole or in part by State funds pursuant to a contract between the City and a State agency. The Proposer shall be responsible for complying with the E-Verify requirements in the contract and using the U.S. Department of Homeland Security's E-Verify system to verify the employment of all new employees hired by the Proposer during the Agreement term. The Proposer is also responsible for e-verifying its bidders, if any, pursuant to any agreement between the City and a State Agency, and reporting to the City any required information. The Proposer acknowledges that the terms of this paragraph are material terms, the breach of any of which shall constitute a default under this Agreement.

#### **1.69 BUDGETARY CONSTRAINTS**

In the event the City is required to reduce contract costs due to budgetary constraints, all services specified in this document may be subject to a permanent or temporary reduction in budget. In such an event, the total cost for the affected service shall be reduced as required. The Proposer shall also be provided with a minimum 30-day notice prior to any such reduction in budget.

#### **1.70 COST ADJUSTMENTS (As Applicable)**

The cost for all items as quoted herein shall remain firm for the first term of the contract. Costs for subsequent years and any extension term years shall be subject to an adjustment only if increases occur in the industry. However, unless very unusual and significant changes have occurred in the industry, such increases shall not exceed 3% per year or, whichever is less, the latest yearly percentage increase in the All Urban Consumers Price Index (CPU-U) (National) as published by the Bureau of Labor Statistics, U.S. Dept. of Labor. The yearly increase or decrease in the CPI shall be that latest index published and available ninety (90) days prior to the end of the contract year than in effect compared to the index for the same month one year prior. Any requested cost increase shall be fully documented and submitted to the City at least ninety (90) days prior to the contract anniversary date. Any approved cost adjustments shall become effective upon the anniversary date of the contract. In the event the CPI or industry costs decline, the City shall have the right to receive from the Proposer a reduction in costs that reflects such cost changes in the industry. The City may, after examination, refuse to accept the adjusted costs if they are not properly documented, increases are considered to be excessive, or decreases are considered to be insufficient. In the event the City does not wish to accept the adjusted costs and the matter cannot be resolved to the satisfaction of the City, the contract can be cancelled by the City upon giving thirty (30) days written notice to the Proposer.

#### **1.71 OSHA STANDARDS**

Proposer acknowledges and agrees that as Contractor for the City of Hollywood, Florida, within the limits of the City of Hollywood, Florida, will have the sole responsibility for compliance with all requirements of the Federal Occupational Safety and Health Act of 1970, and all State and local safety and health regulations, and agrees to defend, indemnify and hold harmless the City of Hollywood, Florida, its officials, employees, service providers, and its agents against any and all legal liability or loss the City of Hollywood, Florida may incur due to the Contractor's failure to comply with such act.

*END OF SECTION*

# FORM 1

## SUBMITTAL CHECKLIST FORM

The items below are required components of your solicitation response in order for your bid/proposal/submittal to be considered responsive and responsible. Please complete and submit this submittal checklist form as the cover page of your submittal with all of the items below in the order listed.

Please indicate Yes or No in the "Submitted (Yes/No)" column below to indicate which required components were provided with your submittal.

Submitted (Yes/No)	Required Bid Components
	This Submittal Checklist Form completed and included as the cover page of your submittal.
	A Table of Contents that clearly identifies each section and page number of your submittal.
	Information and/or documentation that addresses and/or meets the requirements outlined in Section III – Scope of Work/Services, including any procedural or technical enhancements/innovations which do not materially deviate from the objectives or required content of the Scope of Work/Services.
	Forms (Completed) Form 1 Submittal Checklist Form* Form 2 Acknowledgement and Signature Page Form 3 Bid Form* Form 4 Vendor Reference Form* Form 5 Hold Harmless and Indemnity Clause Form 6 Non-Collusion Affidavit Form 7 Sworn Statement...Public Entity Crimes Form 8 Certifications Regarding Debarment... Form 9 Drug-Free Workplace Program Form 10 Solicitation, Giving, and Acceptance... Form 11 W-9 (Request for Taxpayer Identification) Form 12 Trench Safety Form Form 13 Bid Guaranty Form Form 14 List of Subcontractors Form 15 Information Required from Bidders Form 16 Proposal
	Certificate(s) of insurance that meet the requirements of Section 2.25
	Proof of State of Florida Sunbiz Registration

This checklist is only a guide, please read the entire solicitation to ensure that your submission includes all required information and documentation.

# FORM 2

## ACKNOWLEDGMENT AND SIGNATURE PAGE

This form must be completed and submitted by the date and the time of bid opening.

Legal Company Name (include d/b/a if applicable): \_\_\_\_\_

If Corporation - Date Incorporated/Organized: \_\_\_\_\_ Federal Tax Identification Number: \_\_\_\_\_

State Incorporated/Organized: \_\_\_\_\_

Company Operating Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Remittance Address (if different from ordering address):

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Company Contact Person: \_\_\_\_\_ Email Address: \_\_\_\_\_

Phone Number (include area code): \_\_\_\_\_ Fax Number (include area code): \_\_\_\_\_

Company's Internet Web Address: \_\_\_\_\_

IT IS HEREBY CERTIFIED AND AFFIRMED THAT THE BIDDER/PROPOSER CERTIFIES ACCEPTANCE OF THE TERMS, CONDITIONS, SPECIFICATIONS, ATTACHMENTS AND ANY ADDENDA. THE BIDDER/PROPOSER SHALL ACCEPT ANY AWARDS MADE AS A RESULT OF THIS SOLICITATION. BIDDER/PROPOSER FURTHER AGREES THAT PRICES QUOTED WILL REMAIN FIXED FOR THE PERIOD OF TIME STATED IN THE SOLICITATION.

Bidder/Proposer's Authorized Representative's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Type or Print Name: \_\_\_\_\_

THE EXECUTION OF THIS FORM CONSTITUTES THE UNEQUIVOCAL OFFER OF BIDDER/PROPOSER TO BE BOUND BY THE TERMS OF ITS PROPOSAL. FAILURE TO SIGN THIS SOLICITATION WHERE INDICATED BY AN AUTHORIZED REPRESENTATIVE SHALL RENDER THE BID/PROPOSAL NON-RESPONSIVE. THE CITY MAY, HOWEVER, IN ITS SOLE DISCRETION, ACCEPT ANY BID/PROPOSAL THAT INCLUDES AN EXECUTED DOCUMENT WHICH UNEQUIVOCALLY BINDS THE BIDDER/PROPOSER TO THE TERMS OF ITS OFFER.

## SUBMISSION

How to submit bids/proposals: Vendor's solicitation response may be submitted electronically through OpenGov, the City's designated electronic bidding system, or by mail or hand delivery to the address noted above. It is the Vendor's sole responsibility to assure its response is submitted and received by the date and time specified in the solicitation. Any timeframe references are in Eastern Standard Time. The official time for electronic submittals is OpenGov 's servers, as synchronized with the atomic clock. All parties without reservation will accept the official time.

### Important Notice:

The Procurement Services Division shall distribute all official changes, modifications, responses to questions or notices relating to the requirements of this document. Any other information of any kind from any other source shall not be considered official, and bidders relying on other information do so at their own risk.

The responsibility for submitting a bid/proposal on or before the time and date is solely and strictly the responsibility of the bidder/proposer, the City will in no way be responsible for delays caused by technical difficulty or caused by any other occurrence. No part of a bid/proposal can be submitted via FAX or via direct Email to the City. No variation in price or conditions shall be permitted based upon a claim of ignorance.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
	1 Mobilization (Max. 3% of Total Items 3-22, 33-47)	1	LS	\$327,000.00	\$327,000.00
	2 Demobilization (Min. 2% of Total Items 3-22, 33-47)	1	LS	\$218,000.00	\$218,000.00
<b>Package 1 - Improvements in Dewatering Building</b>					
	3 Replacement of Sludge Feed Pumps	7	EA	\$100,000.00	\$700,000.00
	4 A Replacement of Sludge Feed Pump 8-inch Plug Valves	7	EA	\$7,500.00	\$52,500.00
	4 B Replacement of Check Valves	7	EA	\$7,500.00	\$52,500.00
	5 Replacement of Sludge Feed Pump Piping Sets (All Piping for Complete Package)	7	SET	\$30,000.00	\$210,000.00
	6 Furnish Spare Sludge Feed Pump	1	EA	\$50,000.00	\$50,000.00
	7 Furnish Spare Plug Valve	1	EA	\$4,000.00	\$4,000.00
	8 Replacement of Polymer Dosing Skids	9	SET	\$75,000.00	\$675,000.00
<b>Package 2 - Grit Pump and Piping Replacement</b>					
	9 Grit Pipe Cleaning from Grit Classifiers to Grit Pumps	3	SET	\$50,000.00	\$150,000.00
	10 Grit Removal and Disposal - Grit Chambers 1, 2, and 3	2000	CY	\$700.00	\$1,400,000.00
	11 Replacement of Grit Pumps	6	EA	\$230,000.00	\$1,380,000.00
	12 Pipe Replacement Inside Grit Chambers and Pump Room (6-inch Glass Lined DIP)	800	LF	\$1,100.00	\$880,000.00
	13 Pipe Replacement (Underground) from Grit Classifiers to Grit Chambers (6-inch Glass Lined)	600	LF	\$350.00	\$210,000.00
<b>Package 3 - Oxygenation Train Flow Distribution Box</b>					
	14 A Box 2 Pressure Cleaning	1	LS	\$20,000.00	\$20,000.00
	14 B Box 2 Sandblasting	1	LS	\$45,000.00	\$45,000.00
	14 C Grit Removal and Disposal – Box 2 and 3	500	CY	\$700.00	\$350,000.00
	15 A Box 3 Pressure Cleaning	1	LS	\$20,000.00	\$20,000.00
	15 B Box 3 Sandblasting	1	LS	\$45,000.00	\$45,000.00
	16 Repair Surface Defects or Cracks Less Than or Equal to 1"	100	SF	\$72.00	\$7,200.00
	17 Repair Surface Defects Greater than 1"	100	SF	\$150.00	\$15,000.00
	18 Box 2 and 3 Concrete Coating	5000	SF	\$40.00	\$200,000.00
	19 Box 2 Gate Repair	1	LS	\$120,000.00	\$120,000.00
	20 Box 3 Gate Repair	1	LS	\$120,000.00	\$120,000.00
	21 Furnish and Replace Gate 2 and Remove Old Gate	1	LS	\$130,000.00	\$130,000.00
	22 Furnish and Replace Gate 3 and Remove Old Gate	1	LS	\$130,000.00	\$130,000.00
<b>General Items/Allowances (AL)</b>					
	23 Owner Contingency (PLEASE PUT \$250,000.00 IN UNIT COST)	1	AL	\$250,000.00	\$250,000.00
	24 Indemnification (PLEASE PUT \$10.00 IN UNIT COST)	1	LS	\$10.00	\$10.00
	25 Testing Allowance (PLEASE PUT \$150,000.00 IN UNIT COST)	1	AL	\$150,000.00	\$150,000.00
	26 Permit and Fees Allowance (PLEASE PUT \$50,000.00 IN UNIT COST)	1	AL	\$50,000.00	\$50,000.00
<b>Miscellaneous Exploration Work</b>					
	27 Field Crew (Superintendent)	80	HR	\$250.00	\$20,000.00
	28 Field Crew (Operator)	200	HR	\$150.00	\$30,000.00
	29 Field Crew (Laborer)	200	HR	\$110.00	\$22,000.00
	29 A Field Crew ( Electrician)	300	HR	\$150.00	\$45,000.00
	30 Equipment, Excavator, Caterpillar 305 CR Mini Excavator	200	HR	\$100.00	\$20,000.00
	31 Equipment, Flat Bed Truck, 12'	300	HR	\$25.00	\$7,500.00
	32 Equipment, Loader	300	HR	\$100.00	\$30,000.00
<b>Package 4 - Oxygenation Train Influent Piping and Flow Meter</b>					
	33 Demolition of Pipeline Including Flow Meter, Couplings, from Flange to Flange	1	LS	\$25,000.00	\$25,000.00
	34 Demolition of Concrete Pipe Supports & Footings	5	EA	\$3,100.00	\$15,500.00
	34 A Demolition of Concrete Encasement	1	EA	\$7,000.00	\$7,000.00
	35 36-inch Flanged Ductile Iron Pipe	300	LF	\$6,500.00	\$1,950,000.00
	36 36-inch Flanged Ductile Iron Pipe 45-Degree Elbows	2	EA	\$42,000.00	\$84,000.00
	37 36-inch Couplings Including Lugs and Tie Rods	4	EA	\$17,000.00	\$68,000.00
	38 36-inch Dismantling Coupling	2	EA	\$26,000.00	\$52,000.00
	39 36-inch Magnetic Flow Meter (Electrical Installation Not Required)	1	EA	\$84,000.00	\$84,000.00
	40 36-inch Magnetic Flow Meter (Electrical Installation Not Required) - City Furnished	1	EA	\$13,600.00	\$13,600.00
	41 24-inch Magnetic Flowmeter (Electrical Installation Not Required)	2	EA	\$45,000.00	\$90,000.00
	42 Concrete Pipe Supports	5	EA	\$15,200.00	\$76,000.00
	43 Coating of Pipeline and Appurtenances	1	LS	\$16,200.00	\$16,200.00
	44 Hydrostatic Testing	1	LS	\$28,500.00	\$28,500.00
<b>Package 5 - Miscellaneous Flow Meter Replacement</b>					
	45 18-inch Chrome Flow Meter – RAS 1 (Electrical Installation Not Required)	1	EA	\$32,200.00	\$32,200.00
	46 24-inch Magnetic Flow Meter – RAS 3A & 3B (Electrical Installation Not Required)	2	EA	\$44,000.00	\$88,000.00
	47 24-inch Magnetic Flow Meter – IW 1 & 2 (Electrical Installation Not Required)	2	EA	\$42,000.00	\$84,000.00
	Total				\$10,849,710.00

## VENDOR REFERENCE FORM

City of Hollywood Solicitation #: IFB-051-23-JJ  
 Reference for: Cardinal Contractors, Inc.

Organization/Firm Name providing reference: Lee County, FL

Organization/Firm Contact Name: Lyssa Lott Title: Project Manager

Email: llott@leegov.com Phone: 239-533-5672

Name of Referenced Project: Fiesta Village WRF Sludge & NaOCL Sys. Contract No: \_\_\_\_\_

Date Services were provided: 07/2019-11/2022 Project Amount: \$6.4M

Referenced Vendor's role in Project:  Prime Vendor  Subcontractor/  
 Subconsultant  
 Would you use the Vendor again?  Yes  No. Please specify in additional comments

**Description of services provided by Vendor (provide additional sheet if necessary):**  
 New high solids centrifuge with new platform, cake conveyance, piping, pumps & valves, new sludge pumps, piping & valves, reclaimed water pumps, piping & valves, electrical & instrumentation improvements, pre-engineered canopy, sodium hypo feed pumps/piping & valves

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Vendor's Organization:</b>				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Staff turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Timeliness/Cost Control of:</b>				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Additional Comments (provide additional sheet if necessary):**  
 \_\_\_\_\_  
 \_\_\_\_\_

****THIS SECTION FOR CITY USE ONLY****				
Verified via:	Email: <input type="checkbox"/>	Verbal: <input type="checkbox"/>	Mail: <input type="checkbox"/>	
Verified by:	Name:		Title:	
	Department:		Date:	

## VENDOR REFERENCE FORM

City of Hollywood Solicitation #: IFB-051-23-JJ  
 Reference for: Cardinal Contractors, Inc.

Organization/Firm Name providing reference: City of Sunrise

Organization/Firm Contact Name: Tim Welch Title: Project Manager

Email: twelch@sunrisefl.gov Phone: 954-888-6055

Name of Referenced Project: Springtree WWTP-Headworks Impr. Contract No: \_\_\_\_\_

Date Services were provided: 10/2019-10/2022 Project Amount: \$9.3M

Referenced Vendor's role in Project:  Prime Vendor  Subcontractor/  
 Subconsultant  
 Would you use the Vendor again?  Yes  No. Please specify in additional comments

**Description of services provided by Vendor (provide additional sheet if necessary):**  
 Rehab the existing headworks structure at the Springtree WWTP

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Vendor's Organization:</b>				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Staff turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Timeliness/Cost Control of:</b>				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Additional Comments (provide additional sheet if necessary):**

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	Email:	<input type="checkbox"/>	Verbal:	<input type="checkbox"/>	Mail:	<input type="checkbox"/>
Verified by:	Name:				Title:	
	Department:				Date:	

## VENDOR REFERENCE FORM

City of Hollywood Solicitation #: IFB-051-23-JJ  
 Reference for: Cardinal Contractors, Inc.

Organization/Firm Name providing reference: City of Sunrise

Organization/Firm Contact Name: Tim Welch Title: Project Manager

Email: twelch@sunrisefl.gov Phone: 954-888-6055

Name of Referenced Project: Sawgrass WWTP Reuse Facility-Ph1 Contract No: \_\_\_\_\_

Date Services were provided: 11/2015-8/2016 Project Amount: \$15M

Referenced Vendor's role in Project:  Prime Vendor  Subcontractor/  
 Subconsultant  
 Would you use the Vendor again?  Yes  No. Please specify in additional comments

<b>Description of services provided by Vendor (provide additional sheet if necessary):</b>
Construction of 9 MGD WWTP expansion

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Vendor's Organization:</b>				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Staff turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Timeliness/Cost Control of:</b>				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<b>Additional Comments (provide additional sheet if necessary):</b>

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	Email:	<input type="checkbox"/>	Verbal:	<input type="checkbox"/>	Mail:	<input type="checkbox"/>
Verified by:	Name:				Title:	
	Department:				Date:	

# FORM 5

## HOLD HARMLESS AND INDEMNITY CLAUSE

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**(Company Name and Authorized Signature, Print Name)**

, the contractor, shall indemnify, defend and hold harmless the City of Hollywood, its elected and appointed officials, employees and agents for any and all suits, actions, legal or administrative proceedings, claims, damage, liabilities, interest, attorney's fees, costs of any kind whether arising prior to the start of activities or following the completion or acceptance and in any manner directly or indirectly caused, occasioned or contributed to in whole or in part by reason of any act, error or omission, fault or negligence whether active or passive by the contractor, or anyone acting under its direction, control, or on its behalf in connection with or incident to its performance of the contract.

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Signature

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Printed Name

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Name of Company

---

Title

**FORM 6**

**NON-COLLUSION AFFIDAVIT**

**STATE OF:** \_\_\_\_\_

**COUNTY OF:** \_\_\_\_\_, being first duly sworn, deposes and says that:

- (1) He/she is \_\_\_\_\_ of \_\_\_\_\_, the Proposer that has submitted the attached Proposal.
- (2) He/she has been fully informed regarding the preparation and contents of the attached Proposal and of all pertinent circumstances regarding such Proposal;
- (3) Such Proposal is genuine and is not a collusion or sham Proposal;
- (4) Neither the said Proposer nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Proposer, firm or person to submit a collusive or sham Proposal in connection with the contractor for which the attached Proposal has been submitted or to refrain from bidding in connection with such contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Proposer, firm or person to fix the price or prices, profit or cost element of the Proposal price or the Proposal price of any other Proposer, or to secure an advantage against the City of Hollywood or any person interested in the proposed Contract; and
- (5) The price or prices quoted in the attached Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Proposer or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Name of Company

\_\_\_\_\_  
Title

# FORM 7

## SWORN STATEMENT PURSUANT TO SECTION 287.133 (3) (a) FLORIDA STATUTES ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS

1. This form statement is submitted to the City of Hollywood by \_\_\_\_\_ for \_\_\_\_\_  
(Print individual's name and title) (Print name of entity submitting sworn statement)  
whose business address is \_\_\_\_\_

and if applicable its Federal Employer Identification Number (FEIN) is \_\_\_\_\_. If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement.

- 
2. I understand that "public entity crime," as defined in paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid, proposal, reply, or contract for goods or services, any lease for real property, or any contract for the construction or repair of a public building or public work, involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misinterpretation.
3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in an federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.
4. I understand that "Affiliate," as defined in paragraph 287.133(1)(a), Florida Statutes, means:
1. A predecessor or successor of a person convicted of a public entity crime, or
  2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5 I understand that "person," as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or any entity organized under the laws of any state or of the

United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Please indicate which statement applies.)

\_\_\_\_\_ Neither the entity submitting sworn statement, nor any of its officers, director, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime, but the Final Order entered by the Hearing Officer in a subsequent proceeding before a Hearing Officer of the State of the State of Florida,

Division of Administrative Hearings, determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (attach a copy of the Final Order).

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THAT PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017 FLORIDA STATUTES FOR A CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

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

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Personally known \_\_\_\_\_

Or produced identification \_\_\_\_\_ Notary Public-State of \_\_\_\_\_

\_\_\_\_\_ my commission expires \_\_\_\_\_  
(Type of identification)

\_\_\_\_\_  
(Printed, typed or stamped commissioned name of notary public)

**FORM 8**

**CERTIFICATIONS REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS**

The applicant certifies that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, sentenced to a denial of Federal benefits by a State or Federal court, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three-year period preceding this application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction, violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and
- (d) Have not within a three-year period preceding this application had one or more public transactions (Federal, State, or local) terminated for cause or default.

Applicant Name and Address:

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---

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Application Number and/or Project Name:

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Applicant IRS/Vendor Number: \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Name of Company

\_\_\_\_\_  
Title

# FORM 9

## DRUG-FREE WORKPLACE PROGRAM

IDENTICAL TIE PROPOSALS - Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie proposals will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employee that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program (if such is available in the employee's community) by, any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of these requirements.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Name of Company

\_\_\_\_\_  
Title

# FORM 12

## TRENCH SAFETY

This form must be completed and signed by the Respondent.

Failure to complete this form may result in the solicitation being declared non-responsive.

Respondent acknowledges that the Florida Trench Safety Act, Section 553.60 et. seq., which became effective October 1, 1990, shall be in effect during the period of construction of the project. The respondent by signing and submitting the solicitation is, in writing, assuring that it will perform any trench excavation in accordance with applicable trench safety standards. The respondent further identifies the following separate item of cost of compliance with the applicable trench safety standards as well as the method of compliance:

Method of Compliance

Cost

Total \$ \_\_\_\_\_

Respondent acknowledges that this cost is included in the applicable items of their submittal and in the Grand Total Solicitation Price. Failure to complete the above will result in the solicitation being declared non-responsive.

The Respondent is, and the Owner and Engineer are not, responsible to review or assess Respondent's safety precautions, programs or costs, or the means, methods, techniques or technique adequacy, reasonableness of cost, sequences or procedures of any safety precaution, program or cost, including but not limited to, compliance with any and all requirements of Florida Statute Section 553.60 et. seq. cited as the "Trench Safety Act." Respondent is, and the owner and Engineer are not, responsible to determine if any safety related standards apply to the project, including but not limited to, the "Trench Safety Act."

\_\_\_\_\_  
Witness Signature

\_\_\_\_\_  
Contractor's Signature

\_\_\_\_\_  
Witness Printed Name

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Witness Address

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

- END OF SECTION -

# FORM 10

## SOLICITATION, GIVING, AND ACCEPTANCE OF GIFTS POLICY

Florida Statute 112.313 prohibits the solicitation or acceptance of Gifts. "No Public officer, employee of an agency, local government attorney, or candidate for nomination or election shall solicit or accept anything of value to the recipient, including a gift, loan, reward, promise of future employment, favor, or service, based upon any understanding that the vote, official action, or judgment of the public officer, employee, local government attorney, or candidate would be influenced thereby." The term "public officer" includes "any person elected or appointed to hold office in any agency, including any person serving on an advisory body."

The City of Hollywood/Hollywood CRA policy prohibits all public officers, elected or appointed, all employees, and their families from accepting any gifts of any value, either directly or indirectly, from any contractor, vendor, consultant, or business with whom the City/CRA does business.

The State of Florida definition of "gifts" includes the following:

- Real property or its use,
- Tangible or intangible personal property, or its use,
- A preferential rate or terms on a debt, loan, goods, or services,
- Forgiveness of indebtedness,
- Transportation, lodging, or parking,
- Food or beverage,
- Membership dues,
- Entrance fees, admission fees, or tickets to events, performances, or facilities,
- Plants, flowers or floral arrangements
- Services provided by persons pursuant to a professional license or certificate.
- Other personal services for which a fee is normally charged by the person providing the services.
- Any other similar service or thing having an attributable value not already provided for in this section.

Any contractor, vendor, consultant, or business found to have given a gift to a public officer or employee, or his/her family, will be subject to dismissal or revocation of contract.

As the person authorized to sign the statement, I certify that this firm will comply fully with this policy.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Name of Company

\_\_\_\_\_  
Title

# Form 13

## Bid Guaranty Form

(Construction)

STATE OF FLORIDA

KNOW ALL MEN BY THESE PRESENTS:

That we Cardinal Contractors, Inc., as Principal, and <sup>Federal Insurance Company AND</sup>  
The Continental Insurance Company, as

Surety, are held and firmly bound unto the City of Hollywood in the sum of Five Percent

of the Total Solicitation Price Dollars (\$ 5% TSP ) lawful money

of the United States, amounting to 5% of the total SOLICITATION Price, for the payment of said sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal has submitted the accompanying SOLICITATION, dated June 14, 2023 ~~20~~ for

### 2023 SRWWTP MAINTENANCE WORK SOLICITATION

NOW, THEREFORE, if the principal shall not withdraw said SOLICITATION within 90 days after date of the same and shall within ten days after the prescribed forms are presented to him for signature, enter into a written contract with the CITY, in accordance with the SOLICITATION as accepted, and give bond with good and sufficient surety or sureties, and provide the necessary Insurance Certificates as may be required for the faithful performance and proper fulfillment of such Contract, then this obligation shall be null and void.

Approved SOLICITATION Bond

In the event of the withdrawal of said SOLICITATION within the specified period, or the failure to enter into such contract and give such bond and insurance within the specified time, the principal and the surety shall pay to the City of Hollywood the difference between the amount specified in said SOLICITATION and such larger amount for which the City of Hollywood may in good faith contract with another party to perform the work and/or supply the materials covered by said SOLICITATION.

IN WITNESS WHEREOF, the above bound parties have executed this statement under their several seals this 7th day of June, 2023, ~~20~~ the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

WHEN THE PRINCIPAL IS AN INDIVIDUAL:

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Signature of Individual

\_\_\_\_\_  
Address

\_\_\_\_\_  
Printed Name of Individual

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Address

\_\_\_\_\_

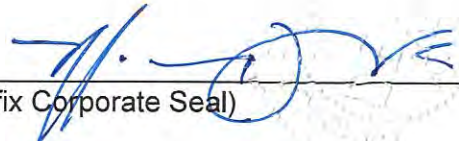
WHEN THE PRINCIPAL IS A CORPORATION:

Attest:

  
\_\_\_\_\_  
Secretary

Cardinal Contractors, Inc.  
\_\_\_\_\_  
Name of Corporation

13794 NW 4th Street, Suite 200, Sunrise, FL 33325  
\_\_\_\_\_  
Business Address


By:   
\_\_\_\_\_  
(Affix Corporate Seal)

MICHAEL BRANDAO  
\_\_\_\_\_  
Printed Name

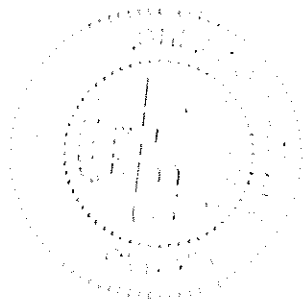
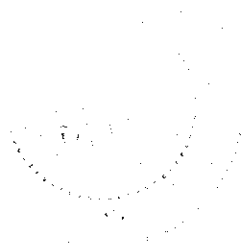
VICE PRESIDENT  
\_\_\_\_\_  
Official Title

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, John M. Perisich, certify that I am the secretary of the Corporation named as Principal in the attached bond; that Michael Brandao who signed the said bond on behalf of the Principal, was then Vice President of said Corporation; that I know his signature, and his signature thereto is genuine and that said bond was duly signed, sealed and attested for and on behalf of said Corporation by authority of its governing body.

  
\_\_\_\_\_  
Secretary





Approved SOLICITATION Bond

TO BE EXECUTED BY CORPORATE SURETY:

Attest:

*Maria D. Zuniga*

~~Secretary~~ Maria D. Zuniga  
Attorney-in-Fact  
Florida Non-Resident  
License No. W100173

Federal Insurance Company AND  
The Continental Insurance Company

Corporate Surety  
FIC: 202B Hall's Mill Road, Whitehouse Station, NJ 08889  
Business Address  
CIC: 151 N. Franklin St., Chicago, IL 60606

BY: *Vickie Lacy*  
(Affix Corporate Seal)



Vickie Lacy, Florida Non-Resident License No. W104273  
Attorney-in-Fact  
Benjamin R. Campbell Jr., Florida Resident License No. A038916

Name of Local Agency

3522 Thomasville Rd FL 3

Business Address

Tallahassee, FL 32309-3479

STATE OF ~~FLORIDA~~ TEXAS

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared,

Vickie Lacy to me well known, who being by me first duly sworn upon  
oath says that he is the attorney-in-fact for the Federal Insurance Company AND  
The Continental Insurance Company and  
that the has been authorized by Federal Insurance Company AND  
The Continental Insurance Company to execute the forgoing  
bond on behalf of the CONTRACTOR named therein in favor of the City of Hollywood, Florida.

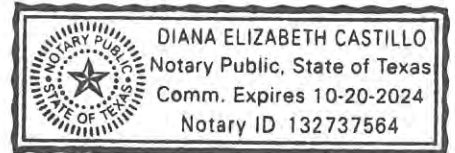
Subscribed and sworn to before me this 7th day of June, 2023

*Diana Castillo*

Notary Public, State of ~~Florida~~ Texas  
Diana Castillo  
Notary ID 132737564

My Commission Expires: October 20, 2024

- END OF SECTION-



Know All by These Presents, that FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Joseph R. Aubert, Marc W. Boots, Richard Covington, Ashley Koletar, Vickie Lacy, Heather Noles, Ryan Varela and Maria D. Zuniga of Houston, Texas; Susan Golla of San Antonio, Texas

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY have each executed and attested these presents and affixed their corporate seals on this 14th day of October, 2022.

*Dawn M. Chloros*

Dawn M. Chloros, Assistant Secretary

*Stephen M. Haney*

Stephen M. Haney, Vice President



STATE OF NEW JERSEY  
County of Hunterdon

SS.

On this 14th day of October, 2022 before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal



KATHERINE J. ADELAAR  
NOTARY PUBLIC OF NEW JERSEY  
No. 2316685  
Commission Expires July 16, 2024

*Katherine J. Adelaar*

Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- (ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this 7th day of June, 2023.



*Dawn M. Chloros*

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:  
Telephone (908) 903- 3493 Fax (908) 903- 3656 e-mail: surety@chubb.com

**POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT**

**Know All Men By These Presents**, That The Continental Insurance Company, a Pennsylvania insurance company, is a duly organized and existing insurance company having its principal office in the City of Chicago, and State of Illinois, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

**Marc W Boots, Vickie Lacy, Richard Covington, Maria D Zuniga, Heather Noles, Joseph R Aulbert, Ashley Koletar, Ryan Varela, Individually**

of Houston, TX, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

**- In Unlimited Amounts -**

and to bind them thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the insurance company and all the acts of said Attorney, pursuant to the authority hereby given is hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law and Resolutions, printed on the reverse hereof, duly adopted, as indicated, by the Board of Directors of the insurance company.

**In Witness Whereof**, The Continental Insurance Company has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 1st day of November, 2022.



The Continental Insurance Company

*Paul T. Bruflat*  
\_\_\_\_\_  
Paul T. Bruflat Vice President

State of South Dakota, County of Minnehaha, ss:

On this 1st day of November, 2022, before me personally came Paul T. Bruflat to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of The Continental Insurance Company, a Pennsylvania insurance company, described in and which executed the above instrument; that he knows the seal of said insurance company; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said insurance company and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said insurance company.



My Commission Expires March 2, 2026

*M. Bent*  
\_\_\_\_\_  
M. Bent Notary Public

**CERTIFICATE**

I, D. Johnson, Assistant Secretary of The Continental Insurance Company, a Pennsylvania insurance company, do hereby certify that the Power of Attorney herein above set forth is still in force, and further certify that the By-Law and Resolution of the Board of Directors of the insurance company printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said insurance company this 7th day of June, 2023.



The Continental Insurance Company

*D. Johnson*  
\_\_\_\_\_  
D. Johnson Assistant Secretary

Form F6850-4/2012

Go to [www.cnasurety.com](http://www.cnasurety.com) > Owner / Obligee Services > Validate Bond Coverage, if you want to verify bond authenticity.

## **Authorizing By-Laws and Resolutions**

ADOPTED BY THE BOARD OF DIRECTORS OF THE CONTINENTAL INSURANCE COMPANY:

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the Board of Directors of the Company at a meeting held on May 10, 1995.

“RESOLVED: That any Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Group Vice President to the Secretary of the Company prior to such execution becoming effective.

This Power of Attorney is signed by Paul T. Bruflat, Vice President, who has been authorized pursuant to the above resolution to execution power of attorneys on behalf of The Continental Insurance Company.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012.

“Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the “Authorized Officers”) to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, “Electronic Signatures”), Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company.”

# Form 14

## LIST OF SUBCONTRACTORS

The Respondent shall list below the name and address of each Subcontractor who will perform work under this Contract, and shall also list the portion of the work which will be done by such Subcontractor. After the opening of Submittals, changes or substitutions will be allowed with written approval of the City of Hollywood. Subcontractors must be properly licensed.

	<b>Work to be Performed</b>	<b>Subcontractor's Name / Address</b>
1.	_____	_____
	_____	_____
2.	_____	_____
	_____	_____
3.	_____	_____
	_____	_____
4.	_____	_____
	_____	_____
5.	_____	_____
	_____	_____
6.	_____	_____
	_____	_____
7.	_____	_____
	_____	_____
8.	_____	_____
	_____	_____
9.	_____	_____
	_____	_____
10.	_____	_____
	_____	_____

NOTE: Attach additional sheets if required.

- END OF SECTION -

**FORM 15**

**INFORMATION REQUIRED FROM BIDDERS**

**GENERAL INFORMATION**

The Bidder shall furnish the following information. Failure to comply with this requirement may cause its rejection. Additional sheets shall be attached as required.

1. Contractor's Name/Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Contractor's Telephone Number: \_\_\_\_\_  
and e-mail address: \_\_\_\_\_

3. Contractor's License (attach copy): \_\_\_\_\_  
Primary Classification: \_\_\_\_\_  
Broward County License Number (attach copy): \_\_\_\_\_

4. Number of years as a Contractor in construction work of the type involved in this  
Contract: \_\_\_\_\_  
\_\_\_\_\_

5. List the names and titles of all officers of Contractor's firm:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Name of person who inspected site or proposed work for your firm:  
Name: \_\_\_\_\_  
Date of Inspection: \_\_\_\_\_

7. What is the last project of this nature you have completed?  
\_\_\_\_\_  
\_\_\_\_\_

8. Have you ever failed to complete work awarded to you; if so, where and why?

---

---

9. Name three individuals or corporations for which you have performed work and to which you refer:

---

---

---

10. List the following information concerning all contracts on hand as of the date of submission of this proposal (in case of co-venture, list the information for all coventures).

Name of Project	City	Total Contract Value	Contracted Date of Completion	% Completion to Date

(Continue list on inset sheet, if necessary)

11. What equipment do you own that is available for the work?

---

---

---

---

12. What equipment will you purchase for the proposed work?

---

---

---

---

13. List at least three (3) similar projects completed within the last ten (10) years by the bidder. For purposes of this requirement, 'similar' projects shall be considered to include experience with dewatering facilities, grit removal facilities,

concrete repair in WWTP headworks and gate replacement. Include owner's contact information (client's name, address, telephone number and email address), project value, completion date, reference contact information and brief project description. The determination of whether a project is sufficiently similar shall be at the sole discretion of the City and the Engineer.

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(Add sheets as requested.)

14. Name the Project Manager proposed for this project. Attach a copy of the project manager's resume.

---

NOTE: If requested by CITY, the Bidder shall furnish a notarized financial statement, references and other information, sufficiently comprehensive to permit an appraisal of its current financial condition.

LIST OF SUBCONTRACTORS (NOT USED/See Form 14)

The Bidder shall list below the name and address of each Subcontractor who will perform work under this Contract in excess of one-half percent of the total lump sum base bid price, and shall also list the portion of the work which will be done by such Subcontractor. After the opening of Proposals, changes or substitutions will be allowed with written approval of the City of Hollywood. Subcontractors must be properly licensed and hold a valid Hollywood Certificate of Competency.

	<b>Work to be Performed</b>	<b>Subcontractor's Name / Address</b>
1.	<hr/> <hr/>	<hr/> <hr/>
2.	<hr/> <hr/>	<hr/> <hr/>
3.	<hr/> <hr/>	<hr/> <hr/>
4.	<hr/> <hr/>	<hr/> <hr/>
5.	<hr/> <hr/>	<hr/> <hr/>
6.	<hr/> <hr/>	<hr/> <hr/>
7.	<hr/> <hr/>	<hr/> <hr/>
8.	<hr/> <hr/>	<hr/> <hr/>
9.	<hr/> <hr/>	<hr/> <hr/>
10.	<hr/> <hr/>	<hr/> <hr/>

NOTE: Attach additional sheets if required.

END OF SECTION

PROPOSAL

TO THE MAYOR AND COMMISSIONERS  
CITY OF HOLLYWOOD, FLORIDA

SUBMITTED June 19, 2023

Dear Mayor and Commissioners:

The undersigned, as BIDDER, hereby declares that the only person or persons interested in the Proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Proposal or in the Contract to be entered into; that this Proposal is made without connection with any other person, company or parties making a Bid or Proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The BIDDER further declares that he has examined the site of the Work and informed himself fully in regard to all conditions pertaining to the place where the Work is to be done; that he has examined the Drawings and Specifications for the Work and contractual documents relative thereto, including the Notice to Bidders, Instructions to Bidders, Proposal Bid Form, Form of Bid Bond, Form of Contract and Form of Performance Bond, General, Supplementary and Technical Specifications, Addenda, Drawings, and Local Preference Program, Exhibit A, and has read all of the Provisions furnished prior to the opening of bids; and that he has satisfied himself relative to the work to be performed.

The undersigned BIDDER has not divulged to, discussed or compared his bid with other bidders and has not colluded with any other BIDDER of parties to this bid whatever.

If this Proposal is accepted, the undersigned BIDDER proposes and agrees to enter into and execute the Contract with the City of Hollywood, Florida, in the form of Contract specified; of which this Proposal, Instructions to Bidders, General Specifications, Supplementary Conditions and Drawings shall be made a part for the performance of Work described therein; to furnish the necessary bond equal to one hundred (100) percent of the total Contract base bid, the said bond being in the form of a Cash Bond or Surety Bond prepared on the applicable approved bond form furnished by the CITY; to furnish all necessary materials, equipment, machinery, tools, apparatus, transportation, supervision, labor and all means necessary to construct and complete the work specified in the Proposal and Contract and called for in the Drawings and in the manner specified; to commence Work on the effective date established in the "Notice to Proceed" from the ENGINEER; and to substantially complete all Contract Work within 365 calendar days with final completion within 30 days, and stated in the "Notice to Proceed" or pay liquidated damages for each calendar day in excess thereof, or such actual and consequential damages as may result therefrom, and to abide by the Local Preference Ordinance, Exhibit A.

The BIDDER acknowledges receipt of the any and all addenda.

And the undersigned agrees that in case of failure on his part to execute the said Contract and the Bond within ten (10) days after being presented with the prescribed Contract forms, the check or Bid Bond accompanying his bid, and the money payable thereon, shall be paid into the funds of the City of Hollywood, Florida, otherwise, the check or Bid Bond accompanying this Proposal shall be returned to the undersigned.

Attached hereto is a certified check on the

\_\_\_\_\_ Bank of \_\_\_\_\_

or approved Bid Bond for the sum of

\_\_\_\_\_ 5% of the bid amount \_\_\_\_\_ Dollars (\$) according to the conditions under the Instructions to Bidders and provisions therein.

NOTE: If a Bidder is a corporation, the legal name of the corporation shall be set forth below, together with signature(s) of the officer or officers authorized to sign Contracts on behalf of the corporation and corporate seal; if Bidder is a partnership, the true name of the firm shall be set forth below with the signature(s) of the partner or partners authorized to sign Contracts in behalf of the partnership; and if the Bidder is an individual, his signature shall be placed below; if a partnership, the names of the general partners.

WHEN THE BIDDER IS AN INDIVIDUAL:

\_\_\_\_\_

(Signature of Individual)

\_\_\_\_\_

(Printed Name of Individual)

\_\_\_\_\_

(Address)

\*\*\*\*\*

WHEN THE BIDDER IS A SOLE PROPRIETORSHIP OR OPERATES UNDER A TRADE NAME:

\_\_\_\_\_

(Name of Firm)

\_\_\_\_\_

(Address)

\_\_\_\_\_ (SEAL)

(Signature of Individual)

\*\*\*\*\*

WHEN THE BIDDER IS A PARTNERSHIP:

\_\_\_\_\_

(Name of Firm) A Partnership

\_\_\_\_\_

(Address)

By: \_\_\_\_\_  
(SEAL)  
(Partner)

Name and Address of all Partners:

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

\*\*\*\*\*

WHEN THE BIDDER IS A JOINT VENTURE:

\_\_\_\_\_  
(Correct Name of Corporation)

By: \_\_\_\_\_ (SEAL)  
(Address)

\_\_\_\_\_  
(Official Title)

As Joint Venture  
(Corporate Seal)

Organized under the laws of the State of \_\_\_\_\_, and authorized by the law to make this bid and perform all Work and furnish materials and equipment required under the Contract Documents.

\*\*\*\*\*

WHEN THE BIDDER IS A CORPORATION:

Cardinal Contractors, Inc.  
(Correct Name of Corporation)

By:  \_\_\_\_\_  
(SEAL) Michael Brandao

Vice President  
(Official Title)

13794 NW 4<sup>th</sup> Street, Suite 200, Sunrise, FL  
33325  
(Address of Corporation)



Organized under the laws of the State of Florida and authorized by the law to make this bid and perform all Work and furnish materials and equipment required under the Contract Documents.

**CERTIFIED COPY OF RESOLUTION OF  
BOARD OF DIRECTORS**

Cardinal Contractors, Inc.  
(Name of Corporation)

RESOLVED that Michael Brandao  
(Person Authorized to Sign)

Vice President of Cardinal Contractors, Inc.  
(Title) (Name of Corporation)

be authorized to sign and submit the Bid or Proposal of this corporation for the following project:

**SRWWTP Maintenance Work  
ESSD Project #9626  
Bid No. IFB-087-23-JJ**

The foregoing is a true and correct copy of the Resolution adopted by

Cardinal Contractors, Inc at a meeting of its Board of  
(Name of Corporation)

Directors held on March 1, 2022

By:   
John M. Perisich

Title: Corporate Secretary

(SEAL)

The above Resolution MUST BE COMPLETED if the Bidder is a Corporation.

- END OF SECTION -

ATTACHMENT A  
CONTRACT

THIS AGREEMENT, made and entered into, this 6 day of Nov, A.D., 2023  
by and between the CITY OF HOLLYWOOD, Florida, a municipal corporation of the  
State of Florida, part of the first part, (hereinafter sometimes called the "CITY"), and

**CARDINAL CONTRACTORS, INC.**

party of the second part (hereinafter sometimes called the "CONTRACTOR").

WITNESSETH: The parties hereto, for the considerations herein-after set forth,  
mutually agree as follows:

Article 1. Scope of Work: The CONTRACTOR shall furnish all labor, materials, and  
equipment and perform all work in the manner and form provided by the Contract  
Documents, for:

**2023 SRWWTP Maintenance Work  
Project No. 9626**

Article 2. The Contract Sum: The CITY shall pay to the CONTRACTOR, for the  
faithful performance of the Contract, in lawful money of the United States of America,  
and subject to additions and deductions as provided in the Contract Documents, as  
follows:

Based upon the prices shown in the Proposal heretofore submitted to the CITY by the  
CONTRACTOR, a copy of said Proposal being a part of these Contract Documents, the  
aggregate amount of this Contract being the sum of **Ten Million Eight Hundred Forty-  
Nine Thousand Seven Hundred Ten Dollars and Zero Cents (\$10,849,710.00)**.

Article 3. Partial and Final Payments: In accordance with the provisions fully set  
forth in the "General Conditions" of the "Specifications", and subject to additions and  
deductions as provided, the CITY shall pay the CONTRACTOR as follows:

- (a) On the 15th day, or the first business day thereafter, of each calendar month,  
the CITY shall make partial payments to the CONTRACTOR on the basis of a  
duly certified and approved estimate of work performed during the preceding  
calendar month by the CONTRACTOR, less five percent (5%) of the amount  
of such estimate which is to be retained by the CITY until all work has been  
performed strictly in accordance with this Agreement and until such work has  
been accepted by the CITY. The parties' rights and obligations regarding  
retainage are further specified in Sections 218.735 and 255.078, Florida  
Statutes, as applicable.
- (b) Upon submission by the CONTRACTOR of evidence satisfactory to the CITY  
that all payrolls, material bills and other costs incurred by the CONTRACTOR  
in connection with the construction of the WORK have been paid in full, and  
also, after all guarantees that may be required in the Specifications have  
been furnished and are found acceptable by the CITY, final payment on  
account of this Agreement shall be made within sixty (60) days after

completion by the CONTRACTOR of all work covered by this Agreement and acceptance of such work by the ENGINEER and approved by the CITY.

Article 4. Time of Completion: The CONTRACTOR shall commence work to be performed under this Contract within ten (10) consecutive calendar days after date of written Notice To Proceed and shall fully complete the Contract in accordance within the Contract Documents and meet all intermediate milestone completion dates required after said date of written notice as set forth in the Proposal, as may be modified by Instructions to Bidders, and stated in the Notice to Proceed.

It is mutually agreed between the parties hereto, that time is the essence, and in the event that construction of the WORK is not completed within the Contract Time and per intermediate dates, as may have been modified solely in accordance with the General Conditions of this Contract, that from the compensation otherwise to be paid to the CONTRACTOR, the CITY is authorized and shall retain, for each day thereafter, Sundays and holidays included, the sum set forth in the Supplementary General Conditions of this Contract as liquidated damages sustained by the CITY in the event of such default by the CONTRACTOR, or shall withhold such compensation for actual and consequential damages as may be stated therein or contemplated therefrom.

Article 5. Additional Bond: It is further mutually agreed between the parties hereto, that if, at any time after the execution of this Agreement and the Payment and Performance Bonds required herein for the express purpose of assuring the faithful performance of the Contractor's work hereto attached, the CITY shall deem the surety or sureties' to be unsatisfactory, or, if for any reason, said bonds cease to be adequate to cover the performance of the work, the CONTRACTOR shall, at his expense, within five (5) days after receipt of notice from the CITY furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the CITY. In such event, no further payment to the CONTRACTOR shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the CITY.

Article 6. Contract Documents: All of the documents hereinafter listed from the Contract and they are as fully a part of the Contract.

Article 7. The rate of wages and fringe benefits, or cash equivalent, for all laborers, mechanics and apprentices employed by any contractor or subcontractor on the work covered by the contract shall be not less than the prevailing rate of wages and fringe benefit payments or cash equivalent for similar skills or classifications of work as established by the General Wage Decision by the United States Department of Labor for Broward County, Florida that is in effect prior to the date the city issues its invitation for bids. If the General Wage Decision fails to provide for a fringe benefit rate for any worker classification, then the fringe benefit rate applicable to the worker classification shall be the fringe benefit rate applicable to the worker classification with a fringe benefit rate that has a basic hourly wage closest in dollar amount to the worker classification for which no fringe benefit rate has been provided.

Article 8. No additional work or extras shall be performed unless the same be duly authorized by appropriate action of the City.

Article 9. That in the event either party brings suit for enforcement of disagreement, the prevailing party shall be entitled to attorney's fees and court costs in addition to any other remedy afforded by law.

Article 10. The Contractor shall guarantee the complete project against poor workmanship and faulty materials for a period of twelve (12) months after final payment and shall immediately correct any defects which may appear during this period upon notification by the City or the Engineer.

Article 11. The making and acceptance of the final payment shall constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Article 12. Contract Term: The Contract Period is one year (365 days) to substantial completion, plus 30 days to final completion, beginning upon the notice to proceed.

\*\*\*\*\*

IN WITNESS WHEREOF the parties hereto have executed this Agreement on the day and date first above written in three (3) counterparts, each of which shall, without proof or accounting for the other counterparts, be deemed an original contract:

THE CITY OF HOLLYWOOD, FLORIDA  
Party of the First Part

By: \_\_\_\_\_ (SEAL)  
JOSH LEVY, MAYOR

*[Handwritten initials]*

*[Handwritten signature]*

ATTEST:


*[Handwritten signature]*  
PATRICIA A. CERNY, MMC  
City Clerk





WHEN THE CONTRACTOR IS A CORPORATION:

Attest:

  
\_\_\_\_\_  
Secretary John M. Perisch

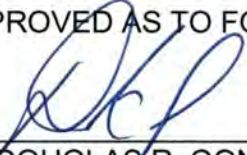
Cardinal Contractors, Inc.  
\_\_\_\_\_  
(Correct Name of Corporation)

BY:  \_\_\_\_\_ (SEAL)  
Vice President Michael Brandao



\*\*\*\*\*

APPROVED AS TO FORM:

By  \_\_\_\_\_  
DOUGLAS R. GONZALES  
City Attorney

APPROVED AS TO FINANCE:

By  \_\_\_\_\_  
DAVID E. KELLER  
Financial Services Director



CERTIFICATE


**STATE OF FLORIDA)  
COUNTY OF BROWARD)**

**I HEREBY CERTIFY** that a meeting of the Board of Directors of Cardinal Contractors, Inc., a corporation under the laws of the State of FL, was held on March 1, 2022, and the following resolution was duly passed and adopted:

"RESOLVED, that Michael Brandao as Vice President of the corporation, be and he is hereby authorized to execute the contracts on behalf of this corporation, and that his execution thereof, attested by the Secretary of the corporation and with corporate seal affixed, shall be the official act and deed of this corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation, this 3<sup>RD</sup> day of October, 2023.

  
\_\_\_\_\_  
Secretary John M. Perisich

(SEAL)



- END OF SECTION -

Issued In Triplicate

**PERFORMANCE AND PAYMENT BOND**  
**(Public Work)**

In compliance with F.S. Chapter 255.05(1)(a)

THE PROVISIONS AND LIMITATIONS OF SECTION 255.05 FLORIDA STATUTES, INCLUDING BUT NOT LIMITED TO THE NOTICE AND TIME LIMITATIONS IN SECTIONS 255.05(2), 255.05 (8) AND 255.05 (10), ARE INCORPORATED IN THIS BOND BY REFERENCE.

Bond No.: FIC: K41788860 & CIC: 30179451

**CONTRACTOR:**

Name: Cardinal Contractors, Inc.  
Address: 13794 NW 4th Street,  
Suite 200  
Sunrise, FL 33325

Phone No. 941-377-8555

---

SURETY: Federal Insurance Company  
202B Hall's Mill Road

Phone No. 215-640-1000

Name: Whitehouse Station, NJ 08889

AND

Address: The Continental Insurance Company  
151 N. Franklin Street, Chicago, IL 60606

Phone No. 312-822-5000

---

**OWNER:**

Name: City of Hollywood

Phone No. 954-921-3930

Address: Dept. of Public Utilities, Engineering & Support Services Division  
1621 N. 14<sup>th</sup> Avenue, Hollywood, FL 33020

---

**OBLIGEE:** (If contracting entity is different from the owner, the contracting public entity)

Name: \_\_\_\_\_

Phone No. \_\_\_\_\_

Address: \_\_\_\_\_

---

Bond Amount: \$10,849,710.00

Project Number: 9626

Description of Work: 2023 SRWWTP Maintenance Work  
Project No. 9626

Project Location: Hollywood, FL

FRONT PAGE

All other Bond page(s) are deemed subsequent to this page regardless of any page number(s) that may be re-printed thereon.

ATTACHMENT A  
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we Cardinal Contractors, Inc. 13794 NW 4th Street, Suite 200, Sunrise, FL 33325 (941) 377-8555,

as Principal, and 

	<u>Name</u>	<u>Address</u>	<u>Tel. No.</u>
	<u>Federal Insurance Company</u>	<u>202B Hall's Mill Road, Whitehouse Station, NJ 08889</u>	<u>(215) 640-1000</u> AND
	<u>The Continental Insurance Company</u>	<u>151 N. Franklin Street, Chicago, IL 60606</u>	<u>(312) 822-5000</u>

as Surety, are held and firmly bound unto the City of Hollywood in the sum of Ten Million Eight Hundred Forty-Nine Thousand Seven Hundred Ten and No/100 Dollars (\$ \$10,849,710.00),

for the payment of said sum we bind ourselves, our heirs, executors, administrators and assigns, jointly and severally, for the faithful performance of a certain written contract, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ entered into between the Principal and the City of Hollywood, Florida, for the installation of **2023 SRWWTP Maintenance Work.**

A copy of said Contract No. **9626** is incorporated herein by reference and is made a part hereof as if fully copied herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH, that if the Principal shall in all respects comply with the terms and conditions of said Contract and his obligations thereunder, including all of the Contract Documents (that include the Introduction, Special Terms and Conditions, Scope of Services, General Terms & Conditions, Submittal Checklist Form, Instructions to Bidders, Proposal, Proposal Bid Form, Basis of Payment, Bid Guaranty Form, Trench Safety Form, Information Required from Bidders, Vendor Reference Forms, Hold Harmless and Indemnity Clause, Non-Collusion Affidavit, Sworn Statement...Public Entity Crimes, Certifications Regarding Debarment... , Drug-Free Workplace Program, Solicitation, Giving, and Acceptance..., Contract, Performance Bond, Payment Bond, General and Supplementary General Conditions, Technical Specifications, Addenda and Drawings), therein referred to and made a part thereof, and such alterations as may be made in said Drawings and Specifications as therein provided for, and shall indemnify and save harmless the City of Hollywood against and from all expenses, damages, injury or conduct, want of care of skill, negligence or default, including patent infringement on the part of said Principal, his agents or employees, in the execution or performance of said Contract, including errors in the Drawings furnished by said Principal, and further, if the Principal shall promptly make payments to all who supply him, with labor and/or materials, used directly or indirectly by the Principal in the prosecution of the work provided for in said Contract, then this obligation shall be null and void; otherwise, the Principal and Surety, jointly and severally, agree to pay the City of Hollywood any difference between the sum that the City of Hollywood may be obliged to pay for the completion of said work, by Contract or otherwise, and the sum that the City of Hollywood would have been obliged to pay for the completion said work had the Principal properly executed all of the provisions of said Contract, and any damages, whether direct, indirect, or consequential, which the City of Hollywood may incur as a result of the failure of the said Principal to properly execute all of the provisions of said Contract.

AND, the said Principal and Surety hereby further bind themselves, their successors, executors, administrators and assigns, jointly and severally, that they will amply and fully protect the City of Hollywood against, and will pay any and all amounts, damages, costs and judgments which may be recovered against or which the Owner may be called upon to pay to any person or corporation by reason of any damage arising from the performance of the said work, repair or maintenance thereof, or the manner of doing the same, or his agents or his servants, or the infringements of any patent rights by reason of the use of any material furnished or work done, as aforesaid or otherwise.

AND, the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications and Drawings accompanying the same, shall in any way affect its obligations on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications and Drawings.

WHEN THE PRINCIPAL IS AN INDIVIDUAL:

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Signature of Individual)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Printed Name of Individual)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Address)

WHEN THE PRINCIPAL IS A SOLE PROPRIETORSHIP OR OPERATES UNDER A TRADE NAME:

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Name of Firm)

\_\_\_\_\_  
(Address)

By: \_\_\_\_\_ (Seal)  
(Signature of Individual)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
Address

\*\*\*\*\*

WHEN THE PRINCIPAL IS A PARTNERSHIP:

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Name of Partnership)

\_\_\_\_\_  
(Address)

By: \_\_\_\_\_ (Seal)  
(Partner)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Printed Name of Partner)

\_\_\_\_\_  
Address

\*\*\*\*\*

WHEN THE PRINCIPAL IS A CORPORATION:

Attest:

\_\_\_\_\_  
(Secretary) John Perisich

\_\_\_\_\_  
Cardinal Contractors, Inc.  
(Name of Corporation)

By: \_\_\_\_\_ (Seal)  
(Affix Corporate Seal)

\_\_\_\_\_  
Tom McCormick  
(Printed Name)

\_\_\_\_\_  
Director  
(Official Title)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, \_\_\_\_\_ John Perisich \_\_\_\_\_, certify that I am the Secretary of the corporation named as Principal in the within bond; that \_\_\_\_\_ Tom McCormick \_\_\_\_\_, who signed the said bond on behalf of the Principal was then \_\_\_\_\_ Director \_\_\_\_\_ of said corporation; that I know his signature, and his signature thereto is genuine; and that said Bond was duly signed, sealed and attested for and on behalf of said corporation by authority of its governing body.

\_\_\_\_\_  
Secretary (SEAL)

TO BE EXECUTED BY CORPORATE SURETY

Attest: *Vickie Lacy*  
~~(Secretary)~~ Vickie Lacy, ~~Attorney-in-Fact~~

Federal Insurance Company AND  
The Continental Insurance Company  
(Corporate Surety)

FIC: 202B Hall's Mill Road, Whitehouse Station, NJ 08889  
CIC: 151 N. Franklin Street, Chicago, IL 60606  
(Business Address)

By: *Richard Covington*  
(Affix Corporate Seal)

Richard Covington,  
FL Non-Resident License No. W501312  
(Attorney-In-Fact)

McGriff Insurance Services, LLC.  
Benjamin R. Campbell Jr., Florida Resident License No. A038916  
(Name of Local Agency)

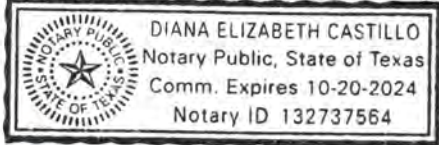
3522 Thomasville Rd FL 3  
(Business Address)

Tallahassee, FL 32309-3479

STATE OF ~~FLORIDA~~ TEXAS

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared, Richard Covington to me well known, who being by me first duly sworn upon oath, says that he is the attorney-in-fact for the Federal Insurance Company AND The Continental Insurance Company and that he has been authorized by Federal Insurance Company AND The Continental Insurance Company to execute the foregoing bond on behalf of the CONTRACTOR named therein in favor of the City of Hollywood, Florida.

Subscribed and sworn to before me this 26th day of September, 2023.



*Diana Castillo*  
Diana Castillo  
Notary ID 132737564

Notary Public, State of ~~Florida~~ Texas  
My Commission Expires: October 20, 2024

APPROVED AS TO FORM:

APPROVED AS TO FINANCE:

By *Douglas R. Gonzales*  
Douglas R. Gonzales  
City Attorney

By *David E. Keller*  
David E. Keller  
Financial Services Director

- END OF SECTION -

*Shil*  
*7-5*



Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company

Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Joseph R. Aulbert, Marc W. Boots, Ashley Coleman, Richard Covington, Stephanie Moore Harold, Ashley Koletar, Vickie Lacy, Heather Noles, Ryan Varela, Dylan Young and Maria D. Zuniga of Houston, Texas; Susan Golla of San Antonio, Texas

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY have each executed and attested these presents and affixed their corporate seals on this 18th day of August, 2023.

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

Stephen M. Haney

Stephen M. Haney, Vice President



STATE OF NEW JERSEY

County of Hunterdon

SS

On this 18th day of August, 2023 before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal



Albert Contursi
NOTARY PUBLIC OF NEW JERSEY
No 50202369
Commission Expires August 22, 2027

Albert Contursi
Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
(4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
(ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this



Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT: Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

**POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT**

**Know All Men By These Presents**, That The Continental Insurance Company, a Pennsylvania insurance company, is a duly organized and existing insurance company having its principal office in the City of Chicago, and State of Illinois, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

**Marc W Boots, Vickie Lacy, Richard Covington, Maria D Zuniga, Heather Noles, Joseph R Aulbert, Ashley Koletar, Ryan Varela, Individually**

of Houston, TX, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

**- In Unlimited Amounts -**

and to bind them thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the insurance company and all the acts of said Attorney, pursuant to the authority hereby given is hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law and Resolutions, printed on the reverse hereof, duly adopted, as indicated, by the Board of Directors of the insurance company.

**In Witness Whereof**, The Continental Insurance Company has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 1st day of November, 2022.

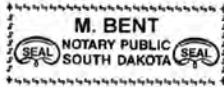


The Continental Insurance Company

*Paul T. Bruflat*  
Paul T. Bruflat Vice President

State of South Dakota, County of Minnehaha, ss:

On this 1st day of November, 2022, before me personally came Paul T. Bruflat to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of The Continental Insurance Company, a Pennsylvania insurance company, described in and which executed the above instrument; that he knows the seal of said insurance company; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said insurance company and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said insurance company.



My Commission Expires March 2, 2026

*M. Bent*  
M. Bent Notary Public

**CERTIFICATE**

I, D. Johnson, Assistant Secretary of The Continental Insurance Company, a Pennsylvania insurance company, do hereby certify that the Power of Attorney herein above set forth is still in force, and further certify that the By-Law and Resolution of the Board of Directors of the insurance company printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said insurance company this \_\_\_\_\_ day of \_\_\_\_\_



The Continental Insurance Company

*D. Johnson*  
D. Johnson Assistant Secretary

Form F6850-4/2012

## Authorizing By-Laws and Resolutions

ADOPTED BY THE BOARD OF DIRECTORS OF THE CONTINENTAL INSURANCE COMPANY:

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the Board of Directors of the Company at a meeting held on May 10, 1995.

“RESOLVED: That any Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Group Vice President to the Secretary of the Company prior to such execution becoming effective.

This Power of Attorney is signed by Paul T. Bruflat, Vice President, who has been authorized pursuant to the above resolution to execution power of attorneys on behalf of The Continental Insurance Company.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012.

“Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the “Authorized Officers”) to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, “Electronic Signatures”), Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company.”

Issued In Triplicate

**PERFORMANCE AND PAYMENT BOND  
(Public Work)**

In compliance with F.S. Chapter 255.05(1)(a)

THE PROVISIONS AND LIMITATIONS OF SECTION 255.05 FLORIDA STATUTES, INCLUDING BUT NOT LIMITED TO THE NOTICE AND TIME LIMITATIONS IN SECTIONS 255.05(2), 255.05 (8) AND 255.05 (10), ARE INCORPORATED IN THIS BOND BY REFERENCE.

**Bond No.:** FIC: K41788860 & CIC: 30179451

**CONTRACTOR:**

**Name:** Cardinal Contractors, Inc.  
**Address:** 13794 NW 4th Street,  
Suite 200  
Sunrise, FL 33325

**Phone No.** 941-377-8555

---

**SURETY:** Federal Insurance Company  
202B Hall's Mill Road

**Phone No.** 215-640-1000

**Name:** Whitehouse Station, NJ 08889

**AND**

**Address:** The Continental Insurance Company  
151 N. Franklin Street, Chicago, IL 60606

**Phone No.** 312-822-5000

---

**OWNER:**

**Name:** City of Hollywood  
**Address:** Dept. of Public Utilities, Engineering & Support Services Division  
1621 N. 14<sup>th</sup> Avenue, Hollywood, FL 33020

**Phone No.** 954-921-3930

---

**OBLIGEE:** (If contracting entity is different from the owner, the contracting public entity)

**Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_

**Phone No.** \_\_\_\_\_

---

**Bond Amount:** \$10,849,710.00

**Project Number:** 9626

**Description of Work:** 2023 SRWWTP Maintenance Work  
Project No. 9626

**Project Location:** Hollywood, FL

FRONT PAGE

All other Bond page(s) are deemed subsequent to this page regardless of any page number(s) that may be re-printed thereon.



SIGNED AND SEALED, this 3<sup>rd</sup> day of October, 2023

**PRINCIPAL:**

Cardinal Contractors, Inc.

ATTEST:

John Perisich

Secretary

(SEAL)

Tom McCormick  
(Signature)

Director  
(Title)

**SURETY:**

Federal Insurance Company  
The Continental Insurance Company  
(Surety)

ATTEST:

Joseph R. Aubert, Attorney-in-Fact

Vickie Lacy, Attorney-in-Fact

Richard Covington  
(Signature)

Richard Covington,  
FL Non-Resident License No. W501312  
(Attorney-in-Fact)

APPROVED AS TO FORM:

By Douglas R. Gonzales  
City Attorney

APPROVED AS TO FINANCE:

By David E. Keller  
Financial Services Director

- END OF SECTION -

**Know All by These Presents**, that **FEDERAL INSURANCE COMPANY**, an Indiana corporation, **VIGILANT INSURANCE COMPANY**, a New York corporation, **PACIFIC INDEMNITY COMPANY**, a Wisconsin corporation, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Joseph R. Aulbert, Marc W. Boots, Ashley Coleman, Richard Covington, Stephanie Moore Harold, Ashley Koletar, Vickie Lacy, Heather Noles, Ryan Varela, Dylan Young and Maria D. Zuniga of Houston, Texas; Susan Golla of San Antonio, Texas -----

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

**In Witness Whereof**, said **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, **PACIFIC INDEMNITY COMPANY**, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** have each executed and attested these presents and affixed their corporate seals on this **18<sup>th</sup> day of August, 2023**.

*Dawn M. Chloros*

Dawn M. Chloros, Assistant Secretary

*Stephen M. Haney*

Stephen M. Haney, Vice President



STATE OF NEW JERSEY

County of Hunterdon

SS.

On this **18<sup>th</sup> day of August, 2023** before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, **PACIFIC INDEMNITY COMPANY**, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY**, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, **PACIFIC INDEMNITY COMPANY**, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal



Albert Contursi  
NOTARY PUBLIC OF NEW JERSEY  
No 50202369  
Commission Expires August 22, 2027

*Albert Contursi*  
Notary Public

**CERTIFICATION**

Resolutions adopted by the Boards of Directors of **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, and **PACIFIC INDEMNITY COMPANY** on August 30, 2016; **WESTCHESTER FIRE INSURANCE COMPANY** on December 11, 2006; and **ACE AMERICAN INSURANCE COMPANY** on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, **PACIFIC INDEMNITY COMPANY**, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- (ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this



*Dawn M. Chloros*

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:  
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

**POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT**

**Know All Men By These Presents**, That The Continental Insurance Company, a Pennsylvania insurance company, is a duly organized and existing insurance company having its principal office in the City of Chicago, and State of Illinois, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

**Marc W Boots, Vickie Lacy, Richard Covington, Maria D Zuniga, Heather Noles, Joseph R Aulbert, Ashley Koletar, Ryan Varela, Individually**

of Houston, TX, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

**- In Unlimited Amounts -**

and to bind them thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the insurance company and all the acts of said Attorney, pursuant to the authority hereby given is hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law and Resolutions, printed on the reverse hereof, duly adopted, as indicated, by the Board of Directors of the insurance company.

**In Witness Whereof**, The Continental Insurance Company has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 1st day of November, 2022.

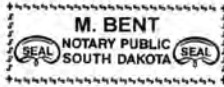


The Continental Insurance Company

*Paul T. Bruflat*  
Paul T. Bruflat Vice President

State of South Dakota, County of Minnehaha, ss:

On this 1st day of November, 2022, before me personally came Paul T. Bruflat to me known, who, being by me duly sworn, did depose and say; that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of The Continental Insurance Company, a Pennsylvania insurance company, described in and which executed the above instrument; that he knows the seal of said insurance company; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said insurance company and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said insurance company.



My Commission Expires March 2, 2026

*M. Bent*  
M. Bent Notary Public

**CERTIFICATE**

I, D. Johnson, Assistant Secretary of The Continental Insurance Company, a Pennsylvania insurance company, do hereby certify that the Power of Attorney herein above set forth is still in force, and further certify that the By-Law and Resolution of the Board of Directors of the insurance company printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said insurance company this        day of



The Continental Insurance Company

*D. Johnson*  
D. Johnson Assistant Secretary

## Authorizing By-Laws and Resolutions

ADOPTED BY THE BOARD OF DIRECTORS OF THE CONTINENTAL INSURANCE COMPANY:

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the Board of Directors of the Company at a meeting held on May 10, 1995.

“RESOLVED: That any Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Group Vice President to the Secretary of the Company prior to such execution becoming effective.

This Power of Attorney is signed by Paul T. Bruffat, Vice President, who has been authorized pursuant to the above resolution to execution power of attorneys on behalf of The Continental Insurance Company.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012.

“Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the “Authorized Officers”) to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, “Electronic Signatures”), Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company.”



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
06/16/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> McGriff Insurance Services, LLC 10100 Katy Freeway, #400 Houston, TX 77043	<b>CONTACT NAME:</b> Rachel Manis-Hyatt <b>PHONE (A/C, No, Ext):</b> 713-877-8975 <b>E-MAIL ADDRESS:</b> rmanis-hyatt@mcgriff.com	<b>FAX (A/C, No):</b> 713-877-8974
	<b>INSURER(S) AFFORDING COVERAGE</b>	
<b>INSURED</b> Cardinal Contractors, Inc. 13794 NW 4th Street Suite 200 Sunrise, FL 33325	<b>INSURER A :</b> Hartford Accident and Indemnity Company <b>NAIC #</b> 22357	
	<b>INSURER B :</b> Twin City Fire Insurance Company      29459	
	<b>INSURER C :</b> Hartford Fire Insurance Company      19682	
	<b>INSURER D :</b> Axis Surplus Insurance Company      26620	
	<b>INSURER E :</b> Gotham Insurance Company      25569	
	<b>INSURER F :</b> Oxford Insurance Company TN LLC      17142	

**COVERAGES**      **CERTIFICATE NUMBER:** CE4JVQZV      **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
C	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:			61CSEQU3414	02/28/2023	02/28/2024	EACH OCCURRENCE \$ 2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 2,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 2,000,000 GENERAL AGGREGATE \$ 4,000,000 PRODUCTS - COMP/OP AGG \$ 4,000,000
C	<input checked="" type="checkbox"/> <b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY <input type="checkbox"/> AUTOS ONLY			61CSEQU3415	02/28/2023	02/28/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Physical Damage Ded. \$ 250,000
D F	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$			P-001-000806562-02 1001-23-1	02/28/2023	02/28/2024	EACH OCCURRENCE \$ 10,000,000 AGGREGATE \$ 10,000,000
A B	<input checked="" type="checkbox"/> <b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	61WNQU3411 61WBRQU3412 61XWEQU3413 \$500,000 Ded/SIR applies to all	02/28/2023	02/28/2024	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
E	Automobile Excess Liability			EX202300003084	02/28/2023	02/28/2024	Each Loss \$ 3,000,000 Aggregate \$ 3,000,000

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES** (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
In the event of cancellation by the insurance companies the policies have been endorsed to provide (30) days Notice of Cancellation (except for non-payment) to the Certificate Holder shown below. The City of Hollywood is included as Additional Insured as respects the General Liability, Auto Liability and Umbrella Liability policies. A Waiver of Subrogation is provided in favor of The City of Hollywood as respects the General Liability, Auto Liability, Umbrella Liability and Workers' Compensation policies. General Liability, Auto Liability and Umbrella Liability policies are Primary and Non-Contributory. All as required by written contract and subject to policy terms, conditions and exclusions.

<b>CERTIFICATE HOLDER</b>  The City of Hollywood 2600 Hollywood Blvd. Hollywood, FL 33020	<b>CANCELLATION</b>  SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	<b>AUTHORIZED REPRESENTATIVE</b> <i>R Michael Broadlove, Jr</i>

AGENCY CUSTOMER ID: \_\_\_\_\_

LOC #: \_\_\_\_\_



## ADDITIONAL REMARKS SCHEDULE

Page 2 of 2

<b>PRODUCER</b> McGriff Insurance Services, LLC		<b>INSURED</b> Cardinal Contractors, Inc.	
<b>POLICY NUMBER</b>			
<b>CARRIER</b>	<b>NAIC CODE</b>	<b>ISSUE DATE:</b> 06/16/2023	

### ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: \_\_\_\_\_ FORM TITLE: \_\_\_\_\_

Contractor's Pollution Liability

Term: February 28, 2022 - February 28, 2024

Policy #: CPO1238582

Carrier: AIG Specialty Insurance Co

Limits

Each Claim: \$10,000,000

Aggregate: \$10,000,000

Coverage Territory includes Canada

ATTACHMENT B  
GENERAL CONDITIONS, PUBLIC UTILITIES

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**ATTACHMENT B  
GENERAL CONDITIONS, PUBLIC UTILITIES**

**CITY OF HOLLYWOOD, FLORIDA  
GENERAL CONDITIONS  
FOR CONSTRUCTION CONTRACTS**

ARTICLE 1 - DEFINITIONS

In the interpretation of these Contract Documents the following terms shall have the meaning indicated:

**ADDENDA** - Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Contract Documents.

**CHANGE ORDER** - A written order to CONTRACTOR executed in accordance with City procurement procedures, as amended authorizing an addition, deletion or revision in the work, or an adjustment in the Contract Price or the Contract Time, issued after the date of Award.

**CITY (OWNER)** - The City of Hollywood, Florida.

**COMMISSION** - The City Commission of the City of Hollywood, Florida, being the legislative body of the CITY as set forth in the City of Hollywood Charter.

**CONTRACT** - The written agreement between the CITY and the CONTRACTOR covering the work to be performed in accordance with the other Contract Documents which are attached to the Contract and made a part thereof.

**CONTRACTOR** - The person, firm, or corporation with whom the CITY has entered into the Contract.

**CONTRACT DOCUMENTS** - The Notice to Bidders, Instruction to Bidders, Proposal, Information Required of Bidders, all Bonds, Agreement, and all supporting documents, these General Requirements and Covenants, the Specifications, Drawings and Permits, together with all Addenda and Change Orders issued with respect thereto.

**CONTRACT PRICE** - Total monies payable by the CITY to the CONTRACTOR under the terms and conditions of the Contract Documents.

**CONTRACT TIME** - The number of days agreed to in the Proposal, commencing with the date of the Notice to Proceed for completion of the work.

**CONTROL** - shall mean having the primary power, direct or indirect, to influence the management of a business enterprise. The controlling party must have the demonstrable ability to make independent and unilateral business decisions on a day-to-day basis, as well as the independent and unilateral ability to make decisions which may influence and chart the future course of the business.

**DATE OF SUBSTANTIAL COMPLETION** - The date when the work on the project, or specified part thereof, is substantially completed in accordance with the Contract Documents, such that

the CITY can occupy or utilize the project or specified part thereof for the use and purpose for which it was intended as determined and accepted by the Engineer.

DAYS - Calendar days of 24 hours measured from midnight.

DRAWINGS - The drawings which show the character and scope of the work to be performed and which have been prepared by the DESIGN ENGINEER approved by ENGINEER and are referred to in and are a part of the Contract Documents.

ENGINEER - The Director of Public Utilities of the CITY of Hollywood, Florida, or his authorized designee.

EXCUSABLE DELAY - Delay caused by the CITY, hurricane, tornadoes, fires, floods, epidemics or labor strikes.

GENERAL CONDITIONS - That segment of the Contract Specifications incorporating the Provisions common to all CITY Construction Contracts.

INEXCUSABLE DELAY - Any delay caused either (i) by events or circumstances within the control of the CONTRACTOR not specified in the definition of excusable delay.

INSPECTOR - The authorized field representative of the ENGINEER.

LIQUIDATED DAMAGES - The amount prescribed in the General Requirements to be paid the CITY, or to be deducted from any payments due the CONTRACTOR for each day's delay in completing the whole or any specified portion of the work beyond the Contract Time.

NOTICE OF AWARD - The written notice by the CITY to the successful Bidder stating that upon his execution of the Agreement and other requirements as listed therein within the time specified the CITY will sign and deliver the Agreement.

NOTICE TO PROCEED - A written notice by the ENGINEER to the CONTRACTOR fixing the date on which the Contract Time will commence to run and on which the CONTRACTOR shall start to perform his obligation under the Contract Documents.

"OR EQUAL" - Equivalent or superior in construction, efficiency and effectiveness to a type, brand, model or process called out in the Contract Documents to establish a basis of quality as determined by the ENGINEER.

SHOP DRAWINGS - All certified affidavits, drawings, diagrams, illustrations, schedules and other data which are specifically prepared by CONTRACTOR, a Subcontractor, manufacturer, fabricator, supplier or distributor to illustrate some portion of the work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a manufacturer, fabricator, supplier or distributor and submitted by CONTRACTOR to illustrate material or equipment for some portion of the WORK.

SPECIFICATIONS - Division 1 through 17 of these Contract Documents, consisting of administrative details and written technical descriptions of materials, equipment, standards and workmanship.

SUPPLEMENTARY CONDITIONS - Division 1 of the Contract Specifications incorporating the provisions peculiar to a specific project.

SUBCONTRACTOR - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the work

SURETY - The person, firm or corporation responsible for the Bidder's acts in the execution of the Contract, or which is bound to the CITY with and for the CONTRACTOR to insure performance of the Contract and payment of all obligations pertaining to the work.

WORK - All the work materials or products specified, indicated, shown or contemplated in the Contract Documents to construct and complete the improvement, including all alterations, modifications, amendments or extension thereto made by Change Orders.

## ARTICLE 2 - ORGANIZATIONAL ABBREVIATIONS

Abbreviations of organizations which may be used in these Specifications are:

AASHTO:	American Association of State Highway and Transportation Officials
ACI:	American Concrete Institute
AIA:	American Institute of Architects
AISC:	American Institute of Steel Construction
AITC:	American Institute of Timber Construction
ANSI:	American National Standards Institute
APWA:	American Public Works Association
ASTM:	American Society for Testing and Materials
ASCE:	American Society of Civil Engineers
ASME:	American Society of Mechanical Engineers
ASHRAE:	American Society of Heating, Refrigerating and Air Conditioning Engineers
AWPA:	American Wood Preservers Association
AWWA:	American Water Works Association
AWS:	American Welding Society
BCEQCB:	Broward County Environmental Quality Control Board
CRSI:	Concrete Reinforcing Steel Institute
FDEP:	Florida Department of Environmental Protection
FDNR:	Florida Department of Natural Resources
FDOT:	Florida Department of Transportation
FPL:	Florida Power and Light
IEEE:	Institute of Electrical and Electronic Engineers
NACE:	National Association of Corrosion Engineers
NCPI:	National Clay Pipe Institute

NEC: National Electrical Code

NEMA: National Electrical Manufacturers Association

NFPA: National Fire Protection Association

OSHA: Occupational Safety and Health Act

PCI: Prestressed Concrete Institute

SFBC: South Florida Building Code, Broward Edition, Latest Revision

SFWMD: South Florida Water Management District

SSPC: Structural Steel Painting Council

UL: Underwriters' Laboratories, Inc.

UNCLE: Utility Notification Center for Location before Excavation (1-800-432-4770)

USEPA: United States Environmental Protection Agency

USGS: United States Geological Survey

WWEMA: Water and Wastewater Equipment Manufacturers Association

## ARTICLE 3 - MISCELLANEOUS PRELIMINARY MATTERS

### 3.1 Contract Document Discrepancies:

Any discrepancies, conflicts, errors or omissions found in the Contract Documents shall be promptly reported to the ENGINEER who will issue a correction, if necessary, in writing. The CONTRACTOR shall comply with any corrective measures regarding the same as prescribed by the ENGINEER.

### 3.2 Submissions:

Unless indicated otherwise in the Contract Documents, within seven days subsequent to the CONTRACTOR executing and submitting the required documents of Article 2.13 in Section II - Special Terms and Conditions, the CONTRACTOR shall submit to the ENGINEER an estimated progress schedule indicating the starting and completion days of the various stages of the work. A preliminary Schedule of Values and a preliminary schedule of Shop Drawing submissions may also be required by Section 01300 of Division 1 - General Requirements.

### 3.3 Pre-construction Conference:

The Contractor will be required to attend a mandatory Pre- Construction Conference for review of the above schedules, establishing procedures and establishing a working understanding among the parties as to the work.

### 3.4 Contract Time:

The Contract Time will commence on the date of the Notice to Proceed and shall exist for the total number of days as specified in Attachment C – Supplementary General Conditions, Section 1, Project Schedule as modified by any subsequent Change Orders, Unless the CONTRACTOR fails to complete the requirements of Section II - Special Terms and Conditions, the additional time in days (including weekends) required to correctly complete the documents will be deducted by CITY from the Contract Time specified by the CONTRACTOR in this Proposal.

### 3.5 Computation of Time:

When any period of time is referred to the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a legal holiday, such day shall be omitted from the computation.

### 3.6 Commencement of Work:

The CONTRACTOR shall not perform work at the site prior to the date of the Notice to Proceed.

### 3.7 Extension of Contract Time:

Extensions of time shall be based solely upon the effect of delays to the work as a whole. Extensions of time shall not be granted for delays to the work, unless the CONTRACTOR can clearly demonstrate, through schedule analysis, that the delay to the work as a whole arose in accordance with Article 11, Changes in Contract Time and that such delays did or will, in fact, delay the progress of work as a whole. Time extensions shall not be allowed for delays to parts of the work that are not on the critical path of the Project schedule. Time extensions shall not be granted until all float or contingency time, at the time of the delay, available to absorb specific delays and associated impacts, is used.

3.8    Notice and Service Thereof:

All notices, demands, requests, instructions, approvals and claims shall be in writing. Notices, demands, etc. shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the business address as defined at the Pre-Construction Conference.

3.9    Separate Contract:

The CITY reserves the right to let other Contracts in connection with this Project. The CONTRACTOR shall afford other Contractors reasonable opportunity for the introduction and storage for their materials and the execution of their work and shall properly connect and coordinate his work with theirs.

3.10   Assignments of Contract:

No assignment by the CONTRACTOR of the Contract or of any part thereof, or any monies due or to become due thereunder shall be made.

3.11   Patents:

It is mutually understood and agreed that without exception, Contract prices are to include all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the work. It is the intent that whenever the Contractor is required or desired to use any design, device, material or process covered by letters, patent, or copyright, the right for such use shall be provided for by suitable legal agreements with the Patentee or Owner and a copy of this agreement shall be filed with the ENGINEER. However, whether or not such an agreement is made or filed as noted, the CONTRACTOR and the Surety in all cases shall indemnify and save harmless the CITY from any and all claims for infringement by reason of the use of any such patented design, device, material or process, to be performed under the Contract, and shall indemnify the said CITY from any costs, expenses, and damages which it may be obliged to pay, by reason of such infringement, at any time during the prosecution or after the completion of the work.

### 3.12 Federal Excise Tax:

The forms needed for applying for exemption certificates for materials and equipment, normally subject to the Federal Excise Tax, may be obtained from the Director of Internal Revenue, Jacksonville, Florida.

The CONTRACTOR is solely responsible for obtaining the desired exemption certificate from the Federal Government.

### 3.13 Savings Due to Excise Tax Exemptions:

The Bidder shall include in the Bid price the estimated cost of all goods, supplies and equipment which will be incorporated in the Work and the taxes that the Bidder would be required to pay if the Bidder were to purchase such goods, supplies or equipment. By subsequent Change Order(s), the parties shall reduce the Bid price to reflect any goods, supplies and equipment purchased directly by City and the resulting tax savings due to City's exemption from Excise Taxes.

CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the laws and regulations of the State of Florida and its political subdivisions. Consistent with the tax exemption for municipalities provided by state law, CITY and CONTRACTOR shall jointly operate so that CITY may purchase directly, goods, supplies and equipment which will be incorporated into the Work. The goods, supplies and equipment that will be purchased by CITY shall be approved in advance by the parties.

With respect to all goods, supplies and equipment to be purchased by CITY, CONTRACTOR shall, on behalf of CITY, take all actions necessary and appropriate to cause all purchases to be made and shall be responsible for delivery of all such goods, supplies and equipment, including verification of correct quantities and documents or orders, coordination of purchases and delivery schedules, sequence of delivery, unloading, handling and storage through installation, obtaining warranties and guarantees required by the Contract Documents, inspection and acceptance of the goods, supplies and equipment at the time of delivery, and other arrangements normally required for the particular goods, supplies or equipment purchased. Unless otherwise directed by CITY, such actions shall also include taking the lead in efforts to resolve any and all disputes with the vendor. CONTRACTOR shall ensure that each vendor of goods, supplies and equipment purchased by CITY agrees in writing to the terms and conditions contained in CITY'S standard purchase order, which terms and conditions are set forth in Attachment C - Supplementary General Conditions of the Contract Documents. Even though CITY may purchase such goods, supplies and equipment, the goods, supplies and equipment shall be stored at the site in the same manner as goods, supplies and equipment purchased by CONTRACTOR.

CONTRACTOR shall hold CITY harmless from delays in manufacturing, delivery, and other unforeseen conditions that may arise as part of the procurement of CITY-purchased goods, supplies and equipment.

### 3.14 Overtime Work:

The CONTRACTOR shall receive no additional compensation for overtime work, i.e., work in excess of eight hours in any one calendar day or 40 hours in any one calendar week, even though such overtime work may be required under emergency conditions and may be ordered by the ENGINEER in writing. Additional compensation will be paid the CONTRACTOR for overtime work only in the event extra work is ordered by the ENGINEER and the Change Order specifically authorizes the use of overtime work and then only to such extent as overtime wages are regularly being paid by the CONTRACTOR for overtime work of a similar nature in the same locality.

### 3.15 Inspections and Testing during Overtime:

The CONTRACTOR shall establish a normal work schedule which does not exceed eight hours per day in a normal work day nor 40 hours per week in a normal work week. Normal work days shall be Monday through Friday. Whenever CONTRACTOR's work requires scheduled overtime, unless such overtime work is specifically required by the Contract Documents, CONTRACTOR shall reimburse the CITY for the extra costs incurred for providing Inspectors. Overtime shall be scheduled only after CONTRACTOR obtains written permission from the CITY. A change order shall be prepared to cover the CITY costs. Inspector costs shall be charged to the CONTRACTOR at a rate of \$80.00 per hour with a minimum of four hours charged for weekends and holidays. If the CONTRACTOR has an overtime work force size of fifty or more persons a second Inspector will be required and the costs for two Inspectors will be \$160.00 per hour.

### 3.16 Nights, Sunday or Holiday Work:

Except upon specific permission of the ENGINEER, the CONTRACTOR shall not perform any work on Sundays or on legal State or Municipal holidays. In accordance with City of Hollywood Code of Ordinances, Section 21.49, no work between 6:00 p.m. and 8:00 a.m. will be permitted, except in case of an emergency, that violates Section 21.49 concerning noise levels. All costs of testing and inspection performed during night, Sunday or holiday work shall be borne by the CONTRACTOR. The CONTRACTOR shall notify all regulatory agencies, including but not limited to the City Police Department, Fire Department, and Code Enforcement Department.

### 3.17 Injury or Damage Claims:

Should CITY or CONTRACTOR suffer injury or damage to their person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage. However, nothing herein shall be deemed to affect the rights, privileges and immunities of City as are set forth in Section 768.28, Florida Statutes.

## ARTICLE 4 - CONTRACT DOCUMENTS

### 4.1 Intent:

The Contract Documents comprise the entire Agreement between the CITY and CONTRACTOR concerning the work. The Contract Documents can be altered only by Change Order. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. It is the intent of the Contract Documents that the CONTRACTOR, for due consideration, shall furnish all equipment, material, supervision and labor, (except as may be specifically noted otherwise) required or necessary to complete the work in total accordance with said Documents. It is the intent of the Drawings and Specifications to describe the Project to be constructed in accordance with the Contract Documents. Any work that may reasonably be inferred from the Drawings or Specifications as being required in order to produce the intended result shall be supplied whether or not it is specifically called for.

### 4.2 Order of Precedence of Contract Documents:

In resolving differences resulting from conflicts, errors or discrepancies in any of the following Contract Documents, the order of precedence shall be as follows:

1. Permits
2. Change Orders
3. Contract Agreement
4. Specification
5. Drawings

Within the Specifications the order of precedence is as follows:

1. Addenda
2. Section I - Introduction
3. Section II – Special Terms and Conditions
4. General Terms & Conditions
5. Attachment C- Supplementary General Conditions
6. Attachment B - General Conditions
7. Division 1, General Requirements
8. Technical Specifications
9. Referenced Standard Specifications

With reference to the Drawings the order of precedence is as follows:

1. Figures Govern over Scaled Dimensions
2. Detail Drawings Govern over General Drawings
3. Change Order Drawings Govern over Contract Drawings
4. Contract Drawings Govern over Standard or Shop Drawings

### 4.3 Reference To Standards:

Any reference to standard Specifications, manuals or codes of any organization or governmental authority shall mean the latest edition, in effect as of the Bid Opening Date.

## ARTICLE 5 - BONDS AND INSURANCE

### 5.1 Bid Guarantee:

Bidders may be required to submit a Bid Guarantee in an amount indicated in the SECTION II - SPECIAL TERMS AND CONDITIONS. This Guarantee may be a Certified or Cashier's Check on a solvent National or State Bank, or a Bid Bond written by a Surety licensed to do business in Florida and rated at least "A", Class X in the latest edition of "Best's Key Rating Guide" published by A.M. Best Company.

### 5.2 Performance and Payment Bond:

CONTRACTOR shall furnish Performance and Payment Bonds, in amounts equal to the Contract Price as Security for the faithful performance and payment of CONTRACTOR's obligations. The Bond or Bonds shall remain in effect one year after the date of final payment. The Surety must be qualified as specified above in Paragraph 5.1. However, the City reserves the right to require additional bonds as set forth in Article 5 of the Contract.

### 5.3 Signatures:

All Bonds signed by an Agent must be accompanied by a Certified copy of the authority to act, with said copy having been signed (not typed nor printed) by an Officer of the Surety and carrying the seal of the Surety.

### 5.4 Insurance Coverage:

Within ten days from Notice of Award the CONTRACTOR shall purchase and maintain such insurance as specified in Article 2.25 of Section II – Special Terms and Requirements as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR's operations under the Contract or Contract Documents, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

### 5.5 Certificates of Insurance:

Within ten days of award, the Contractor shall obtain a Certificate of Insurance reflecting the necessary coverages as required by the Contract Documents. Certificates of Insurance shall contain a provision that coverages afforded under the policies will not be canceled until at least 30 days prior written notice has been given to the CITY. The City of Hollywood must be named as additional insured on all coverage with the exception of Workmen's Compensation. Policies shall be issued by companies authorized to do business under the Laws of the State of Florida. Policyholders and Financial Ratings must be no less than "A" and Class X respectively in the latest edition of "Best Key Rating Guide", published by A.M. Best Company.

5.6    Insurance Limits of Liability:

The insurance required by this Article shall be written for no less than the level of liability specified in "Insurance Requirements", Section 2 of the Supplementary General Conditions, or required by law, whichever is greater. The insurance shall include contractual liability insurance applicable to the CONTRACTOR's obligations under this contract.

The level required in Section 2 of the Supplementary General Conditions will not be reduced for any reason.

## ARTICLE 6 - AVAILABILITY OF LAND; REFERENCE POINTS

### 6.1 Rights-of-Way:

Lands or Rights-of-Way for the work to be constructed under the Contract will be provided by the CITY. Nothing contained in the Contract Documents shall be interpreted as giving the CONTRACTOR exclusive occupancy of the lands or Rights-of-Way provided. Any additional lands or Rights-of-Way required for construction operations shall be provided by the CONTRACTOR at his own expense; provided, that the CONTRACTOR shall not; and the CITY nor the ENGINEER shall not be liable for any claims or damages resulting from the CONTRACTOR's unauthorized trespass or use of any such properties.

### 6.2 Permits:

When required by Article 2.16 of the Section II – Special Terms and Conditions, the CONTRACTOR shall secure, from the agencies having jurisdiction, the necessary permits to create obstructions, to make excavations if required under the Contract, and to otherwise encroach upon Rights-of-Way, and to present evidence to the ENGINEER that such permission has been granted, before work is commenced. Regulations and requirements of all agencies concerned shall be strictly adhered to in the performance of the Contract. The enforcement of such requirements under the Contract shall not be made the basis for additional compensation.

### 6.3 Lines and Grades:

The CONTRACTOR shall furnish all grades and all other lines required for the proper execution of the work.

## ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

### 7.1 Laws/Regulations to Be Observed:

The CONTRACTOR shall familiarize himself and comply with all Federal, State, County and CITY laws, by-laws, ordinances or regulations controlling the action or operation of those engaged or employed in the work or affecting material used, and govern himself in accordance with them. He shall indemnify and save harmless the CITY and all of its officers, agents and employees against any claims or liability arising from or based on the violation of any such laws, by-laws, ordinances, regulations, orders or decrees, whether by himself or his employees or Subcontractors.

### 7.2 Indemnification of City:

- (a) Refer to ARTICLE 1.46 – INDEMNIFICATION AND HOLD HARMLESS AGREEMENT of Section IV – General Terms and Conditions.
- (b) Refer to ARTICLE 1.47 – PATENT AND COPYRIGHT INDEMNIFICATION of Section IV – General Terms and Conditions.
- (c) The provisions of (a) and (b) above shall survive the expiration or earlier termination of the Contract Documents.

### 7.3 Guarantee of Payments:

The CONTRACTOR guarantees the payments of all just claims for materials, supplies, tools, labor and other just claims against him, or any Subcontractor in connection with this Contract, and his bond will not be released by final acceptance and payment by the CITY unless all such claims are paid or released.

### 7.4 Permits and Licenses:

The CONTRACTOR shall obtain all permits and licenses required by the Contract Documents. A copy of the permit(s) and such conditions and requirements thereon are a part of the Contract Documents. Failure to obtain such permits or licenses shall subject the CONTRACTOR to the provisions of the South Florida Building Code, Broward Edition.

## 7.5    Emergencies:

In emergencies affecting the safety or protection of persons or the work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or CITY, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice of any significant changes in the work or deviations from the Contract Documents caused thereby.

## 7.6    Substitutes or "Or Equal":

### A.      Substitutes or "Or-Equal" Materials or Equipment:

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by the ENGINEER if sufficient information submitted by the CONTRACTOR to allow the ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The ENGINEER will be allowed 30 days within which to evaluate each proposed substitute. The ENGINEER will be the sole judge of acceptability, and NO SUBSTITUTE WILL BE ORDERED, INSTALLED OR UTILIZED WITHOUT THE ENGINEER'S PRIOR WRITTEN ACCEPTANCE which will be evidenced by either a Change Order or an approved set of Shop Drawings. Requests for review of substitute items of material and equipment will not be accepted by the ENGINEER from anyone other than the CONTRACTOR. The procedure for review by the ENGINEER is as follows:

If the CONTRACTOR wishes to furnish or use a substitute item of material or equipment, the CONTRACTOR shall make written application to the ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. In addition, the application shall

1. State that the evaluation and acceptance of the proposed substitute will not prejudice the CONTRACTOR's achievement of completion on time.
2. State whether or not acceptance of the substitute for use in the WORK will require a change in any of the Contract Documents to adapt design to the proposed substitute. The CONTRACTOR shall be responsible for any extra design adaptation costs associated with a proposed substitute.
3. State whether or not incorporation or use of the substitute in connection with the work is subject to payment of any license fee or royalty.
4. Provide complete substitute identification and description, including manufacturer's and local distributor's name and address, performance and test data, and reference standards.

5. Provide samples, as required by ENGINEER.
  6. Provide name and address of similar projects on which the proposed substitute has been used, and date of installation.
  7. Identify all variations of the proposed substitute from that specified.
  8. Indicate available maintenance, repair and replacement service.
  9. Submit an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other Contractors affected by the resulting change. The CONTRACTOR shall be responsible for the costs of redesign and claims of other Contractors.
  10. Provide any additional data about the proposed substitute as the ENGINEER may require of the CONTRACTOR.
- B. Substitute means, method, technique, sequence or procedure of construction:
- If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, the CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the ENGINEER, if the CONTRACTOR submits sufficient information to allow the ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by the ENGINEER will be similar to that provided in Paragraph 7.6 A.
- C. The CITY may require the CONTRACTOR to furnish at the CONTRACTOR's expense, a special performance guarantee or other surety with respect to any substitute.
- D. The ENGINEER will record time required by the ENGINEER and/or the ENGINEER's consultants in evaluating substitutions proposed by the CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not the ENGINEER accepts a proposed substitute, THE CONTRACTOR SHALL REIMBURSE THE CITY FOR THE CHARGES OF THE ENGINEER AND THE ENGINEER'S CONSULTANTS FOR EVALUATING EACH PROPOSED SUBSTITUTE.
- E. Any and all costs which result from changes to/adaptations of the work shall be paid by the CONTRACTOR including but limited to design, materials, installation, etc.

## 7.7 Shop Drawings:

Shop Drawing submittals shall be as follows:

- A. The CONTRACTOR shall submit a sufficient number of copies of each Shop Drawing to enable the ENGINEER to retain three copies unless additional copies are specified in the Contract Documents. Resubmissions of Shop Drawings shall be made in the same quantity until final approval is obtained.
- B. The CONTRACTOR shall submit Shop Drawings for all equipment, apparatus, machinery, fixtures, piping, fabricated structures, manufactured articles and structural components Manufacturer's Certified Affidavit that the item supplied complies with the design Specifications, and all other submittal requirements.
- C. Shop Drawings for structural components, electrical or mechanical systems shall be Certified by a Registered Engineer of the discipline involved.
- D. The CONTRACTOR shall thoroughly review and check the Shop Drawings, and each and every copy shall show his approval thereon. If the Shop Drawings show or indicate departures from the Contract requirements, the CONTRACTOR shall make specific mention thereof in his letter of transmittal. Failure to point out such departures shall not relieve the CONTRACTOR from his responsibility to comply with the Drawings and Specifications.
- E. No approval will be given to partial submittals of Shop Drawings for items which interconnect and/or are interdependent. It is the CONTRACTOR's responsibility to assemble the Shop Drawings for all such interconnecting and/or interdependent items, check them himself and then make one submittal to the ENGINEER along with his comments as to compliance, non-compliance, or features requiring special attention.
- F. If catalog sheets or prints of manufacturer's standard drawings are submitted as Shop Drawings, any additional information or changes on such Drawings shall be typewritten or lettered in ink.
- G. The CONTRACTOR shall keep one set of Shop Drawings marked with the ENGINEER's approval at the job site at all times.
- H. Where a Shop Drawing or sample is required by the Specifications, no related work shall be commenced until the submittal has been reviewed and approved by the ENGINEER.
- I. Approval of the Shop Drawings shall constitute approval of the subject matter thereof only, and not of any structure, material, equipment or apparatus shown or indicated. The approval of the Shop Drawings will be general and shall not relieve the CONTRACTOR of responsibility for the accuracy of such Drawings, nor for the proper fitting and construction of the work, nor for the furnishing of materials or work required by the contract and not indicated on the Drawings. Approval shall not relieve the CONTRACTOR from responsibility for errors or omissions of any sort on the Shop Drawings.

7.8

Personnel:

A. Supervision and Superintendence:

1. The CONTRACTOR shall supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the work in accordance with the Contract Documents. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but the CONTRACTOR shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. The CONTRACTOR shall be responsible to see that the finished work complies accurately with the Contract Documents.
2. The CONTRACTOR shall keep on the work at all times during its progress a competent resident Superintendent fluent in both oral and written communication in the English language, who shall not be replaced without written notice to the ENGINEER except under extraordinary circumstances. The Superintendent will be the CONTRACTOR's representative at the site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the Superintendent shall be as binding as if given to the CONTRACTOR.

B. Workforce:

1. None but skilled workers shall be employed on work requiring special qualifications. When required in writing by the ENGINEER, the CONTRACTOR or any Subcontractor shall discharge any person who is, in the opinion of the ENGINEER, incompetent, disorderly or otherwise unsatisfactory, and shall not again employ such discharged person on the work except with the consent of the ENGINEER. Such discharge shall not be the basis of any claim for damages against the CITY or any CITY agents.
2. With respect to all skilled, semi-skilled and unskilled workers employed on the Project under this Contract, preference in employment shall be given to persons residing in Hollywood when such persons are available and qualified to perform the work to which the employment relates. No person shall be employed in violation of the State or National Labor Laws. No person under the age of 16 years shall be employed on a Project under the Contract. No person whose age or physical condition is such as to make his employment dangerous to his health or safety or to the health or safety of others shall be employed on the Project under this Contract; provided that this shall not operate against the employment of physically handicapped persons, otherwise employable where such persons may be safely assigned to work which they can ably perform. No person currently serving sentences in a penal or correctional institution and no inmate of an institution for

mentally defective shall be employed on a Project under this Contract without specific approval of the ENGINEER.

3. No discrimination shall be made in the employment of persons on the work by the CONTRACTOR or by any Subcontractor under him, because of the race, color, sex, age or religion of such persons, and there shall be full compliance with the provisions of applicable State and Federal laws in this regard.

7.9 Safety and Protection:

A. Federal Safety and Health Regulations:

The CONTRACTOR and Subcontractors shall comply with the provisions of the Occupational Safety and Health Standards, promulgated by the Secretary of Labor under the "Occupational Safety and Health Act of 1970".

B. Responsibilities:

The CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. The CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. All employees on the work and other persons who may be affected thereby.
2. All the work and all materials or equipment to be incorporated therein, whether in storage on or off the site.
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocating or replacement in the course of construction.

C. Designated Safety Officer:

The CONTRACTOR shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the CONTRACTOR's Superintendent unless otherwise designated in writing by the CONTRACTOR to the ENGINEER.

D. Protection of the Work:

Until acceptance of the work by the CITY, it shall be under the charge and in care of the CONTRACTOR and he shall take every necessary precaution against injury or damage to the work by action of the elements or from the execution or from the non-execution of the work. The CONTRACTOR shall rebuild, restore and make good, at his own expense, all injuries or damages to any portion of the work occasioned by any of the above causes before its completion and acceptance.

7.10 Traffic Control, Public Safety and Convenience:

- A. The CONTRACTOR shall at all times conduct his work so as to assure the least possible obstruction to traffic and inconvenience to the general public, and provide adequate protection of persons and property in the vicinity of the work.
- B. WHEN THE NORMAL FLOW OF TRAFFIC WILL BE IMPAIRED OR DISRUPTED IN ANY MANNER ON ANY STREET, THE CONTRACTOR SHALL NOTIFY THE POLICE TRAFFIC SERGEANT AT 921-3610 AT LEAST 48 HOURS IN ADVANCE.
- C. Streets shall not be closed, except when and where directed by the ENGINEER, and whenever a street is not closed the work must be conducted with the provision for safe passageway for traffic at all times. The CONTRACTOR shall make all necessary arrangements concerning maintenance of traffic and selection of detours required.
- D. When permission has been granted to close an existing roadway, or portion thereof, the CONTRACTOR shall furnish and erect signs, barricades, lights, flags and other protective devices as necessary subject to the approval of the ENGINEER. From sunset to sunrise, the CONTRACTOR shall furnish and maintain as many yellow lights as the ENGINEER may direct.
- E. During working hours the CONTRACTOR shall furnish watchmen in sufficient numbers to protect and divert the vehicular and pedestrian traffic from working areas closed to traffic, or to protect any new work. Failure to comply with this requirement will result in the ENGINEER shutting down the work until the CONTRACTOR shall have provided the necessary protection.
- F. No separate payment will be made for such signs, barricades, lights, flags, watchmen or other protective devices as required, with all costs thereof deemed to be included in the prices bid for the various items scheduled in the bid.
- G Sidewalks, gutters, drains, fire hydrants and private drives shall, in so far as practicable, be kept in condition for their intended uses. While the work is actually going on at any location, as much as half the street width at that location may be barricaded to exclude traffic entirely, but street traffic shall not be obstructed needlessly. Fire hydrants on or adjacent to the work shall be kept accessible to fire apparatus at all times, and no material or obstruction shall be placed within ten feet of any such hydrant.
- H. Construction material stored upon the public street shall be placed so as to cause as little obstruction to the general public as is reasonably possible.

### 7.11 Use of Explosives:

When the use of explosives is necessary for the prosecution of the work, the CONTRACTOR shall observe the utmost care so as not to endanger life or property, and whenever directed, the number and size of charges shall be limited. All explosives shall be stored in a secure manner and all such storage places shall be marked clearly "DANGEROUS EXPLOSIVES" and shall be in care of a competent watchman at all times. The CONTRACTOR must familiarize himself with all laws and ordinances pertaining thereto, and govern himself and his employees accordingly.

### 7.12 Loading of Structures:

The CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the CONTRACTOR subject any part of the work or adjacent property to stresses or pressures that will endanger it.

### 7.13 Concerning Subcontractors:

- A. The CONTRACTOR, with his own forces, shall perform no less than 25% of the work as determined by the Contract price. Each Subcontractor shall be properly licensed for the type of work he is to perform.
- B. A copy of each Sub-Contract shall be filed promptly with the ENGINEER upon request. Each Sub-Contract shall contain a reference to the Contract between the CITY and the CONTRACTOR, and the terms and conditions of the Contract shall be made a part of each Sub-Contract. Each Sub-Contract shall provide for annulment of same by the CONTRACTOR upon written order of the ENGINEER if the Subcontractor fails to comply with the requirements of this Contract.
- C. The CONTRACTOR shall be responsible to the CITY and ENGINEER for the acts and omissions of his Sub-Contractors and their employees to the same extent as he is responsible for the acts and omissions of his own employees. Nothing contained in this Contract shall create any contractual relationship between any Subcontractor and the CITY or ENGINEER nor relieve the CONTRACTOR of any liability or obligation under this Contract.

### 7.14 Materials and Equipment:

- A. Material for the Work:
  - 1. The CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the work.
  - 2. Unless otherwise specified, shown or permitted by the ENGINEER, all material and equipment incorporated in the work shall be new and of current manufacture. The ENGINEER may request the CONTRACTOR to furnish manufacturer's certificates to this effect.

3. The ENGINEER may require any or all materials to be subjected to test by means of samples or otherwise, at production points or after delivery. The CONTRACTOR shall afford such facilities as the ENGINEER may require for collecting and forwarding samples, which samples shall be furnished by the CONTRACTOR without charge. The CONTRACTOR shall furnish evidence satisfactory to the ENGINEER that the materials and finished articles have passed the required test prior to the incorporation of such materials and finished articles in the work. Unless otherwise provided, the cost of such inspection and testing shall be as provided in Article 12.2.
4. All packaged manufactured products for use on the work shall be delivered to the work in their original, unopened packages, bearing thereon the manufacturer's name and the brand name of the product.
5. Wherever any product or material is selected to be used on the work, all such products or material shall be of the same brand and manufacture throughout the work.
6. All equipment, tools and machinery used for handling material or executing any part of the work shall be maintained in a satisfactory working condition. All equipment utilized on any portion of the work shall be such that no injury to personnel, the work, adjacent property or other objects will result from its use.
7. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents.

B. Storage of Materials:

1. All materials and equipment including that ordered by the CITY designed for permanent installation in the work shall be properly stored by the CONTRACTOR to insure protection against deterioration of any type. These materials shall be placed as to cause a minimum of inconvenience to other contractors on the work and to the public. The storage piles shall be arranged to facilitate inspections, and any deterioration shall be grounds for rejection.
2. Materials stored in public Rights-of-Way, shall be stored in such a manner so as to be compatible with the Traffic Control requirements set forth in Paragraph 7.10. Materials shall be stored so as not to deny access to public or private property. Stored materials shall be adequately marked with barricades and/or flashing warning lights, where necessary, so as to protect the materials from damage and to protect the public health, safety and welfare.
3. Lawns, grass plots or other private property shall not be used for storage purposes without written permission of the Owner or Lessee of that private

property. Should the CONTRACTOR desire to store equipment or materials of any kind on the property of the CITY, he must obtain permission from the ENGINEER. The CITY reserves the right to order materials to be removed or relocated in such approved storage areas, if necessary.

4. The protection of stored materials shall be the CONTRACTOR's responsibility and the CITY OF HOLLYWOOD shall not be liable for any loss of materials, by theft or otherwise, nor for any damage to the stored materials.

C. **Salvage of Materials and Equipment:**

The CITY reserves the right to retain title to all soil, sand, stone, gravel, equipment, machinery or any other material that was a part of the structure, site or Right- of-Way and which was developed from excavations or other operations connected with the work. The CONTRACTOR will be permitted to use in the work, without charge, any such material which meets the requirements of the Contract Documents. For that material which the CITY desires to retain the CONTRACTOR shall, at his expense, transfer to a site within the CITY as designated by the ENGINEER. That material which the CITY does not wish to retain shall be the property of the CONTRACTOR and removed from the site at CONTRACTOR's expense.

7.15 Temporary Utilities:

The CONTRACTOR shall provide and maintain at his own expense, all water, power, telephone and sanitary facilities as required to comply with State and/or local Codes and Regulations. If water, including that for testing is required, it is the CONTRACTOR's responsibility to arrange through the CITY Water Department for a water meter. A deposit to be paid by the CONTRACTOR is required for meter rental and all water shall be purchased at the prevailing rate.

7.16 Review of Records:

The CONTRACTOR shall allow and permit the ENGINEER or his duly authorized representative to inspect and review all payrolls, records of personnel, conditions of employment, invoice of materials, books of accounts and other relevant data and records pertinent to the CONTRACT and Sub-Contracts.

7.17 Use of Premises:

CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted by law, ordinances, permits or required by the Contract Documents, and shall not interfere with the premises or operation of the City Utilities facilities with construction equipment or other materials or equipment. Construction which interferes with Plant Operations shall be fully coordinated and approved by the ENGINEER.

7.18 CONTRACTOR's Daily Reports:

Except where otherwise provided, the CONTRACTOR shall complete a daily report indicating manpower, major equipment, Subcontractors, etc., involved in the performance of the work. The daily report shall be completed on forms approved by the ENGINEER, and shall be submitted to the ENGINEER at the conclusion of each work day.

7.19 Record Documents:

The CONTRACTOR shall keep one record copy of all Specifications, Drawings, Addenda, Modifications, Shop Drawings and samples at the site, in good order and annotated to show all changes made during the construction process. These shall be available to ENGINEER for examination and shall be delivered to ENGINEER upon completion of the work.

7.20 Cleanliness of the Site:

During the progress of the work, The CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the work. At the completion of the work the CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials, and shall leave the site clean and ready for occupancy by the CITY. The CONTRACTOR shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

7.21 Dust Control:

It shall be the CONTRACTOR's responsibility to control dust by watering as directed by the ENGINEER. The water used shall be paid for by the CONTRACTOR. Should the CONTRACTOR fail to control dust to the satisfaction of the ENGINEER, the CITY will control the dust by whatever means the CITY desires and the CONTRACTOR shall pay all expenses incurred by the CITY associated with the control of the dust.

7.22 Continuing the Work:

The CONTRACTOR shall carry on the work and maintain the Progress Schedule during all disputes or disagreements with the CITY. No work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the CONTRACTOR and the CITY may otherwise agree in writing.

7.23 Indemnification:

In consideration of the amount listed in the Bid Form and other valuable consideration, the Contractor shall defend, indemnify and save harmless the CITY, its officers, agents, and employees from or on account of any personal injury, loss of life or damage to property received or sustained by any person or persons during or on account of any operations connected with the construction of this Project; or by or in consequence of any negligence (excluding negligence of the CITY), in connection with the same; or by use of any improper materials or by or on account of any use of any improper materials or by or on account of any act or omission of the said Contractor or his subcontractor, agents, servants or employees. Contractor agrees to indemnify and save harmless the

CITY against any liability arising from or based upon the violation of any federal, state, county or city laws, by-laws, ordinances or regulations by the Contractor, his subcontractor, agents, servants or employees. Contractor further agrees to indemnify and save harmless the CITY from all such claims and fees, and from any and all suits and actions of every name and description that may be brought against the CITY on account of any claims, fees, royalties, or costs for any invention or patent, and from any and all suits and actions that may be brought against the CITY for the infringement of any and all patents or patent rights claimed by any person, firm, or corporation.

The indemnification provided above shall obligate the Contractor to defend at his own expense or to provide for such defense, at the CITY's option, any and all claims or liability and all suits and actions of every name and description that may be brought against the Owner which may result from the operations and activities under this Contract whether the construction operations be performed by the Contractor, his subcontractor or by anyone directly or indirectly employed by either.

Nothing in this indemnification shall be deemed to affect the rights, privileges or immunities of the CITY as set forth in Section 768.28, Florida Statutes.

The CITY will pay to the Contractor the specific consideration, in the amount stated in the Bid Form. The Contractor shall acknowledge the receipt of payment and other good and valuable consideration from the Owner which has been paid to him as specific consideration for the indemnification provided herein and in accordance with the provisions of Chapter F.S.A., Section 725.06.

ARTICLE 8 - CITY'S RESPONSIBILITIES

8.1    Communications:

The CITY shall issue all communications to the CONTRACTOR through the ENGINEER.

8.2    Furnish Contract Documents:

The CITY shall furnish the number of Contract Documents as specified in the Supplementary General Conditions to the CONTRACTOR at no cost. Referenced Standard Specifications Manuals, guidebooks, etc., will not be provided.

8.3    Furnish Right-of-Way:

The CITY shall furnish the necessary land or Right-of-Way on which the work is to be accomplished, and will provide lines and grades as specified in Article 6.

8.4    Timely Delivery of Materials:

The CITY shall be responsible for the delivery of any CITY furnished material, equipment or labor as specified in the Contract Documents.

## ARTICLE 9 - ENGINEER'S STATUS

### 9.1 Authority of the Engineer:

- A. The general supervision of the execution of this Contract is vested in the ENGINEER who is the CITY's sole representative during the construction period. The instructions of the ENGINEER are to be strictly and promptly followed in every case. The CONTRACTOR's representative (Article 7.8 A. 1.) shall be responsible for the execution of any instructions given by the ENGINEER during the absence of the CONTRACTOR.
- B. The ENGINEER is the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the work. Claims, disputes and other matters relating to the acceptability of work or requirements of the Contract Documents shall be referred in writing to the ENGINEER within 15 days of the event, with a request for a formal decision, which the ENGINEER will render in writing within a reasonable time. This rendering of a decision by the ENGINEER will be a condition precedent to any exercise by the CITY or CONTRACTOR of rights or remedies as either may otherwise have under the Contract Documents or at law in respect to any such claim, dispute or other matter.
- C. The ENGINEER will issue with reasonable promptness any written clarifications or interpretations of the Contract Documents as he shall deem necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If, as a result of a clarification or interpretation, either the CONTRACTOR or ENGINEER believes a Change Order is justified, it shall be submitted.
- D. The ENGINEER has approval authority over the acceptability of all material or equipment furnished, Shop Drawings, Change Orders, work performed and the rate of progress of the work. Verification of the quantities of work performed for pay purposes is the responsibility of the ENGINEER.
- E. The ENGINEER also has the authority to disapprove or reject work which is defective, and may require special inspection or testing of the work, whether or not it is fabricated, installed or completed.
- F. The ENGINEER has the authority to suspend the work wholly or in part for such period or periods as may be deemed necessary, due to the unsuitable prosecution of the work, or for such time as is necessary due to failure on the part of the CONTRACTOR to carry out orders given or perform any or all provisions of the Contract. The CONTRACTOR shall not suspend the work and shall not remove any equipment, tools, lumber or other materials without the written permission of the ENGINEER.

## 9.2 Access to the Work:

The ENGINEER is to have free access to the materials and work at all times for laying out, measuring or inspecting same, and the CONTRACTOR is to afford him all necessary facilities and assistance for so doing.

## 9.3 Limitations on The ENGINEER's Responsibilities:

- A. Neither the ENGINEER's authority to act under this Article or elsewhere in the Contract Documents nor any decision made by the ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the ENGINEER to the CONTRACTOR, any Subcontractor, any manufacturer, fabricator, supplier or distributor or any of their agents or employees or any other person performing any of the work.
- B. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used, to describe requirement, direction, review or judgment of the ENGINEER as to the work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective never indicates that the ENGINEER has authority to supervise or direct performance of the work.
- C. The ENGINEER will not be responsible for the CONTRACTOR's means, methods, techniques, sequences or procedures of construction, nor the safety precautions and programs incident thereto, and the ENGINEER will not be responsible for the CONTRACTOR's failure to perform the work in accordance with the Contract Documents.
- D. The ENGINEER will not be responsible for the acts or omissions of the CONTRACTOR or of any Subcontractors, or of the agents or employees of any CONTRACTOR or subcontractor, or of any other persons at the site or otherwise performing any of the work.

## 9.4 Inspectors:

- A. Inspectors employed by the CITY assist the ENGINEER in ascertaining the work conforms to the Contract Documents and are authorized to inspect all work done and material furnished as representatives of the ENGINEER. Inspectors shall be stationed at the site of the work to report to the ENGINEER as to the progress of the work and the quality of workmanship and material.
- B. In case of any dispute arising between the CONTRACTOR and the Inspector, the Inspector shall have the authority to reject material or to suspend the work until the question of issue can be referred to and decided upon by the ENGINEER.
- C. If the CONTRACTOR refuses to suspend operation on verbal order, the Inspector shall issue a written order giving the reason for shutting down the work.

After placing the order in the hands of the man in charge, the Inspector shall immediately leave the job. work done during the absence of the Inspector, after such written notice, will not be accepted nor paid for.

- D. Inspectors are not authorized to revoke, alter, enlarge, relax or release any requirements of these Contract Documents, nor to issue instructions contrary to them. Inspectors shall in no case act as foreman or perform other duties for the CONTRACTOR, nor interfere with management of the work by the latter. Any instructions which Inspectors may give the CONTRACTOR shall in no way be construed as releasing the CONTRACTOR from fulfillment of the terms of the Contract.
- E. The payment of any compensation, whatever may be its character or form, or the giving of any gratuity, or the granting of any valuable favor, by the CONTRACTOR to any Inspector, directly or indirectly, is strictly prohibited and any such act on the part of the CONTRACTOR will constitute a violation of this Contract and may subject the CONTRACTOR to other penalties provided for by law or ordinance.

9.5    Inspections:

- A. The ENGINEER will make, or have made, such inspections and tests as he deems necessary to assure that the work is being accomplished in accordance with the requirements of the Contract. In the event such Inspections or tests reveal non-compliance with the requirements of the Contract, the CONTRACTOR shall bear the cost of such corrective measures as well as the cost of subsequent reinspection and retesting.
- B. Work done in the absence of a prescribed inspection may be required to be removed and replaced under proper inspection. The entire cost of removal and replacement, including the cost of all material which may be furnished by the CITY and used in the work thus removed, shall be borne by the CONTRACTOR, regardless of whether the work removed is found to be defective or not. Work covered up without the authority of the ENGINEER, shall, upon order of the ENGINEER, be uncovered to the extent required, and the CONTRACTOR shall similarly bear the entire cost of performing all the work and furnishing all the material necessary for the removal of the covering and its subsequent replacement.
- C. Unless otherwise provided, the cost of inspection and all inspection fees imposed by public agencies other than the fees associated with the issuance of the Master Building Permit by the City of Hollywood shall be paid by the CONTRACTOR.
- D. No inspection nor any failure to inspect at any time or place shall relieve the CONTRACTOR from any obligation to perform all of the work in strict conformance with the requirements of the Contract Documents.

## ARTICLE 10 - CHANGES IN THE WORK/CONTRACT PRICE

### 10.1 Changes in the Work or Terms of Contract Documents:

- A. Without invalidating the Contract and without notice to any surety CITY reserves and shall have the right, from time to time to make such increases, decreases or other changes in the character or quantity of the Work as may be considered necessary or desirable to complete fully and acceptably the proposed construction in a satisfactory manner. Any extra or additional work within the scope of this Project must be accomplished by means of appropriate Clarifications, Field Orders, or Change Orders.
- B. Any changes to the terms of the Contract Documents must be contained in a written document, executed by the parties hereto, with the same formality and of equal dignity prior to the initiation of any work reflecting such change.

This section shall not prohibit the issuance of Change Orders executed only by CITY as hereinafter provided.

### 10.2 Supplemental Instructions - Clarifications:

- A. The CITY, through the ENGINEER, shall have the right to approve and issue Clarifications setting forth written interpretations of the intent of the Contract Documents and ordering minor changes in Work execution, providing the Clarifications involve no change in the Contract Price or the Contract Time.
- B. The ENGINEER shall have the right to approve and issue Clarifications setting forth written orders, instructions, or interpretations concerning the Contract Documents or its performance, provided such Clarifications involve no change in the Contract Price or the Contract Time.

### 10.3 Field Orders / Change Orders:

- A. Changes in the quantity or character of the Work within the scope of the Project which are not properly the subject of Clarifications, including all changes resulting in changes in the Contract Price or the Contract Time, shall be authorized only by Field Orders or Change Orders approved in advance and issued in accordance with the provisions of the CITY Procurement Code, as amended from time to time.
- B. CONTRACTOR shall not start work on any changes requiring an increase in the Contract Price or the Contract Time until a Field Order or Change Order setting forth the adjustments is approved by the CITY. Upon receipt of a Change Order CONTRACTOR shall promptly proceed with the work set forth within the document.

- C. Field Orders shall be issued for change in Contract Price related to Cost Allowances specifically included on the Proposal Bid Form. Change Orders shall be issued when required for all other Contract Price Changes. Hereinafter, the term "Change Order(s)" shall be used to include "Change Orders" and "Field Orders" with the exception that Field Order shall not be used for any Contract Time adjustments.
- D. In the event satisfactory adjustment cannot be reached for any item requiring a change in the Contract Price or Contract Time, and a Change Order has not been issued, CITY reserves the right at its sole option to either terminate the Contract as it applies to the items in question and make such arrangements as may be deemed necessary to complete the disputed work; or the work shall be performed on the "cost of work" basis as described in Article 10.4.
- E. On approval of any Contract change increasing the Contract Price, CONTRACTOR shall ensure that the performance bond and payment bond are increased so that each reflects the total Contract Price as increased.
- F. Under circumstances determined necessary by CITY, Change Orders may be issued unilaterally by CITY.

#### 10.4 Value of Change Order Work:

- A. The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
  - A.1 Where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of items involved, subject to the provisions of Article 10.4.G.
  - A.2 By mutual acceptance of a lump sum which CONTRACTOR and CITY acknowledge contains a component for overhead and profit.
  - A.3 On the basis of the "cost of work," determined as provided in this Article, plus a CONTRACTOR's fee for overhead and profit which is determined as provided in Article 10.4.D.
- B. The term "cost of work" means the sum of all direct costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work described in the Change Order. Except as otherwise may be agreed to in writing by CITY, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in Article 10.4.C.
  - B.1 Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the work described in the Change Order under schedules of job classifications agreed upon by CITY and

CONTRACTOR. Payroll costs for employees not employed full time on the work covered by the Change Order shall be apportioned on the basis of their time spent on the work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay application thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing the work after regular working hours, on Sunday or legal holidays shall be included in the above to the extent authorized by CITY.

- B.2 Cost of all materials and equipment furnished and incorporated in the work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless CITY deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to CITY. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to CITY and CONTRACTOR shall make provisions so that they may be obtained. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by CITY with the advice of ENGINEER and the costs of transportation, loading, unloading, installation, dismantling and removal thereof, all in accordance with the terms of said agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the work.
- B.3 Payments made by CONTRACTOR to Subcontractors for work performed by Subcontractors, If required by CITY, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to CITY who will then determine, with the advice of ENGINEER, which bids will be accepted. If the Subcontract provides that the Subcontractor is to be paid on the basis of cost of the work plus a fee, the Subcontractor's cost of the work shall be determined in the same manner as CONTRACTOR'S cost of the work. All Subcontractors shall be subject to the other provisions of the Contract Documents insofar as applicable.
- B.4 Cost of special engineers, including, but not limited to, engineers, architects, testing laboratories, and surveyors employed for services specifically related to the performance of the work described in the Change Order.

B.5 Supplemental costs including the following:  
The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the work except for local travel to and from the site of the work.

Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workmen, which are consumed in the performance of the work, and cost less market value of such items used but not consumed which remains the property of CONTRACTOR.

Sales, use, or similar taxes related to the work, and for which CONTRACTOR is liable, imposed by any governmental authority. Deposits lost for causes other than CONTRACTOR's negligence; royalty payments and fees for permits and licenses. The cost of utilities, fuel, and sanitary facilities at the site. Receipted minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the work. Cost of premiums for additional bonds and insurance required because of changes in the work.

C. The term "cost of the work" shall not include any of the following:

C.1 Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in its principal or a branch office for general administration of the work and not specifically included in the agreed-upon schedule of job classifications referred to in this Article, all of which are to be considered administrative costs covered by CONTRACTOR's fee.

C.2 Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

C.3 Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the work and charges against CONTRACTOR for delinquent payments.

C.4 Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same, except for additional bonds and insurance required because of changes in the work.

C.5 Costs due to the negligence or neglect of CONTRACTOR, any Subcontractors, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to,

the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.

- C.6 Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in this Section.
- D. CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:
  - D.1 A mutually acceptable fixed fee or if none can be agreed upon,
  - D.2 A fee based on the following percentages of the various portions of the cost of the work:

For costs incurred under Article 10.4.B.1, CONTRACTOR's fee shall not exceed ten percent (10%).

For costs incurred under Article 10.4.B.3 and B.4, CONTRACTOR's fee shall not exceed seven and one half percent (7.5%); and if a subcontract is on the basis of cost of the work plus a fee, the maximum allowable to the Subcontractor as a fee for overhead and profit shall not exceed ten percent (10%);

No fee shall be payable on the basis of costs itemized under Article 10.4.B.5 and Article 10.4.C.
- E. The amount of credit to be allowed by CONTRACTOR to CITY for any such change which results in a net decrease in cost, will be the amount of the actual net decrease. When both additions and credits are involved in anyone change, the combined overhead and profit shall be figured on the basis of the net increase, if any, however, CONTRACTOR shall not be entitled to claim lost profits for any Work not performed.
- F. Whenever the cost of any work is to be determined pursuant to Articles 10.4.B and 10.4.C, CONTRACTOR will submit in a form acceptable to CONSULTANT an itemized cost breakdown together with the supporting data.
- G. Where the quantity of any item of the Work that is covered by a unit price is increased or decreased by more than twenty percent (20%) from the quantity of such work indicated in the Contract Documents, an appropriate Change Order shall be issued to adjust the unit price, if warranted.
- H. Whenever a change in the Work is to be based on mutual acceptance of a lump sum, whether the amount is an addition, credit or no change-in-cost, CONTRACTOR shall submit an initial cost estimate acceptable to ENGINEER and CITY.
  - H.1 Breakdown shall list the quantities and unit prices for materials, labor, equipment and other items of cost.
  - H.2 Whenever a change involves CONTRACTOR and one or more Subcontractors and the change is an increase in the Contract Price,

overhead and profit percentage for CONTRACTOR and each Subcontractor shall be itemized separately.

- I. Each Change Order must state within the body of the Change Order whether it is based upon unit price, negotiated lump sum, or "cost of the work."

10.5 Notification and Claim for Change of Contract Price:

- A. Any claim for a change in the Contract Price shall be made by written notice by CONTRACTOR to the CITY and to ENGINEER within five (5) calendar days of the commencement of the event giving rise to the claim and stating the general nature and cause of the claim. Thereafter, within twenty (20) calendar days of the termination of the event giving rise to the claim, written notice of the extent of the claim with supporting information and documentation shall be provided unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim and such notice shall be accompanied by CONTRACTOR's written notarized statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR has reason to believe it is entitled as a result of the occurrence of said event. All claims for changes in the Contract Price shall be in accordance with Articles 10.3 and 10.4 hereof, if CITY and CONTRACTOR cannot otherwise agree. **IT IS EXPRESSLY AND SPECIFICALLY AGREED THAT ANY AND ALL CLAIMS FOR CHANGES TO THE CONTRACT PRICE SHALL BE WAIVED IF NOT SUBMITTED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION.**

10.6 Notice of Change:

If notice of any change affecting the general scope of the work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be CONTRACTOR's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. The CONTRACTOR shall furnish proof of such adjustment to the CITY. Failure of the CONTRACTOR to obtain such approval from the Surety may be a basis for termination of this Contract by the CITY.

10.7 Records:

The CONTRACTOR's representative and the ENGINEER shall compare records of extra work done at the end of the day. Such records shall be made in duplicate upon a form provided for such purpose by the ENGINEER and shall be signed by both the Inspector and the CONTRACTOR's representative, one copy being submitted to the ENGINEER and the other being retained by the CONTRACTOR.

10.8 Cancelled Items and Payments Therefore:

The CITY COMMISSION shall have the right to cancel those portions of the Contract relating to the construction of any item provided therein. Such cancellation shall entitle the CONTRACTOR to payment in a fair and equitable amount covering all items of cost incurred by him prior to the date of cancellation or suspension of the work. The CONTRACTOR shall be allowed a profit percentage on the materials used and on construction work actually performed, at the same rates as provided for "Extra Work", but no allowance will be made for anticipated profits. Acceptable materials ordered by the CONTRACTOR or delivered on the work, prior to date of such cancellation or suspension, may be purchased from the CONTRACTOR by the CITY at actual cost and shall thereupon, become property of the CITY, or may be returned to the manufacturer for a reasonable restocking charge.

10.9 Full Payment:

The Compensation herein provided shall be received and accepted by the CONTRACTOR as payment in full for all extra work done or costs incurred in event of cancellation.

## ARTICLE 11 - CHANGES IN THE CONTRACT TIME

### 11.1 Change Order:

The Contract Time may only be changed by a Change Order. A FULLY EXECUTED CHANGE ORDER MUST EXIST PRIOR TO EXTENSION OR SHORTENING OF THE CONTRACT TIME.

### 11.2 Notification and Claim for Change of Contract Time:

- A. Any claim for a change in the Contract Time shall be made by written notice by the CONTRACTOR to the CITY and to ENGINEER within five (5) calendar days of the commencement of the event giving rise to the claim and stating the general nature and cause of the claim. Thereafter within twenty (20) calendar days of the termination of the event giving rise to the claim, written notice of the extent of the claim with supporting information and documentation shall be provided unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim and such notice shall be accompanied by CONTRACTOR's written notarized statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR has reason to believe it is entitled as a result of the occurrence of said event. All claims for changes in the Contract Time shall be determined in accordance with Articles 10.3 and 10.4 hereof, if CITY and CONTRACTOR cannot otherwise agree. **IT IS EXPRESSLY AND SPECIFICALLY AGREED THAT ANY AND ALL CLAIMS FOR CHANGES TO THE CONTRACT TIME SHALL BE WAIVED IF NOT SUBMITTED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION.**
- B. The Contract Time will be extended an amount equal to time lost on critical Work items due to delays beyond the control of and through no fault or negligence of CONTRACTOR if a claim is made thereafter as provided in Article 11.2. Such delays shall include, but not be limited to, acts or neglect by any separate contractor employed by CITY, fire, floods, labor disputes, epidemics, abnormal weather conditions or acts of God

### 11.3 Basis for Extension:

Extensions of time shall be considered and will be based solely upon the effect of delays to the work as a whole. Extensions of time shall not be granted for delays to the work, unless the CONTRACTOR can clearly demonstrate, through schedule analysis, that the delay to the work as a whole arose in accordance with Article 12.3 or Article 15.1, and that such delays did or will, in fact, delay the progress of work as a whole. Time extensions shall not be allowed for delays to parts of the work that are not on the critical path of the project schedule. Time extensions shall not be granted until all float or contingency time, at the time of the delay, available to absorb specific delays and associated impacts is used.

11.4 Change of Time Due to Contract Execution Problems:

Refer to Article 3.4 for a decrease in Contract Time when the CONTRACTOR fails to return the correctly executed Contract Documents within the time allowed.

11.5 Change of Time Due to Change Order Evaluation:

When evaluating a proposed Change Order, the ENGINEER shall have access to any available float or contingency time. Extension will only be considered in accordance with Article 11.3.

11.6 Change of Time and Inspection and Testing:

Neither observations by the ENGINEER, nor inspections, tests or approvals by others, passing or failing, will be cause for consideration of time extension.

11.7 Change of Time and Defective Work:

- A. If WORK is found to be defective, CONTRACTOR shall bear all remedial expenses including any additional costs experienced by CITY due to delays to others performing additional WORK. CONTRACTOR shall further bear the responsibility for maintaining schedule, and will be excluded from a time extension and the recovery of delay damages due to the uncovering.
- B. If the WORK is found to be defective per the Specifications, but the CITY chooses to accept it at its sole discretion, CONTRACTOR shall bear the responsibility for maintaining schedule, and will be excluded from a time extension and the recovery of delay damages due to the uncovering.

11.8 Liquidated Damages:

All time limits stated in the Contract Documents are of the essence. The provisions of this Article 11 shall not exclude recovery for damages by CITY as indicated in Section 3 of the Supplementary General Conditions.

ARTICLE 12 - WARRANTY AND GUARANTEE;  
TEST AND INSPECTIONS;  
CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

12.1 Warranty and Guarantee:

The CONTRACTOR warrants and guarantees to the CITY and the ENGINEER that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to the CONTRACTOR. All defective work, whether or not in place, may be rejected, corrected or accepted as provided in this Article.

12.2 Tests and Inspections:

- A. The CONTRACTOR shall give the ENGINEER and, when appropriate, the Building Department and other regulatory authorities which have jurisdiction over the work, timely notice of readiness of the work for all required inspections, tests or approvals.
- B. All inspections performed as a result of the issuance of the Master Building Permit shall be performed by the CITY. All costs associated with such inspections shall be paid by the CITY, EXCEPT THAT should said test or inspection fail to pass the CONTRACTOR shall pay all costs associated with the rework and the retesting.
- C. When any other regulatory authority, by virtue of its rules or regulations, requires specific tests or inspections, the CONTRACTOR shall assume full responsibility for and pay all costs in connection with said tests and inspections.
- D. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the ENGINEER's acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the work, or of materials or equipment submitted for approval prior to ENGINEER's acceptance thereof for incorporation in the work and as otherwise specified in the Contract Documents.
- E. Neither observations by the ENGINEER nor inspections, tests or approvals by others shall relieve the CONTRACTOR from his obligations to perform the work in accordance with the Contract Documents.

12.3 Uncovering Work:

- A. If any work that is to be inspected, tested or approved is covered without written concurrence of the ENGINEER, it must, if requested, by the ENGINEER, be uncovered. Such uncovering and replacement shall be at the CONTRACTOR's expense.

- B. CONTRACTOR must contact all regulatory agencies issuing construction permits to make all necessary inspections. If CONTRACTOR fails to have the necessary inspections performed and such failure results in uncovering of work already performed, CONTRACTOR shall be responsible for all related time delays and monetary costs.
- C. If the ENGINEER considers it necessary or advisable that work previously covered with his permission or cognizance be observed, inspected or tested, the CONTRACTOR, at the ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, material and equipment. If it is found that such work is defective, the CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services. If, however, such work is not found to be defective the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim therefor in accordance with Article 10.2 and Article 11.2.

12.4 City May Stop the Work:

If the work is defective, or the CONTRACTOR fails to supply sufficient skilled workmen or suitable materials or equipment, the CITY may order the CONTRACTOR to stop the work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the CITY to stop the work shall not give rise to any duty on the part of the CITY to exercise this right for the benefit of the CONTRACTOR or any other party.

12.5 Correction or Removal of Defective Work:

If required by the ENGINEER, the CONTRACTOR shall promptly, without cost to the CITY and as specified by the ENGINEER either correct any defective work, whether or not fabricated, installed or completed, or if the work has been rejected by the ENGINEER, remove it from the site and replace it with nondefective work.

12.6 One Year Correction Period:

If within one year after the date of Substantial Completion or Final Completion as applicable, or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any work is found to be defective, the CONTRACTOR shall promptly without cost to the CITY and in accordance with the ENGINEER's written instructions, either correct such defective work, or if it has been rejected by the ENGINEER remove it from the site and replace it with nondefective work. If the CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the ENGINEER may have the defective work corrected or the rejected work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by the CONTRACTOR.

12.7 Acceptance of Defective Work:

If instead of requiring correction or removal and replacement of defective work, the ENGINEER prefers to accept it, he may do so. In such case, if acceptance occurs prior to the ENGINEER's recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or if the acceptance occurs after such recommendation, an appropriate amount shall be paid by the CONTRACTOR to the CITY.

12.8 City May Correct Defective Work:

If the CONTRACTOR fails within a reasonable time after written notice of the ENGINEER to proceed to correct and to correct defective work or to remove and replace rejected work as required by the ENGINEER in accordance with Paragraph 12.5, or if the CONTRACTOR fails to perform the work in accordance with the Contract Documents, (including any requirements of the progress schedule), the CITY may, after seven days' written notice to the CONTRACTOR, correct and remedy any such deficiency. In exercising its rights under this Paragraph the CITY shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, the CITY may exclude the CONTRACTOR from all or part of the site, take possession of all or part of the work, and suspend the CONTRACTOR's services related thereto, take possession of the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the work all materials and equipment stored at the site or for which the CITY has paid the CONTRACTOR but which are stored elsewhere. The CONTRACTOR shall allow the CITY, the CITY's representatives, agents and employees such access to the site as may be necessary to enable the CITY to exercise his rights under this Paragraph. All direct and indirect costs of the CITY in exercising such rights shall be charged against the CONTRACTOR in an amount verified by the ENGINEER, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Price. Such direct and indirect costs shall include, in particular but without limitations, compensation for additional professional services required and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of the CONTRACTOR's defective work. The CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the work attributable to the exercise by the CITY of the CITY's rights hereunder.

## ARTICLE 13 - PAYMENTS TO THE CONTRACTOR

### 13.1 Basis of Payment:

Progress payments shall be based on the aggregate of the unit price amounts listed in the Proposal or in the Schedule of Values which have been incorporated in the work acceptable to the ENGINEER.

### 13.2 Unit Price Inclusion:

The unit prices stated in the Proposal include all costs and expenses for materials, labor, tools, equipment, transportation, commissions, patent fees and royalties, removing crossings or other obstructions, protection or maintaining pipes, drains, railroad tracks, buildings, bridges, or other structures furnishing temporary crossings or bridges, furnishing all supplemental construction stakes, batter boards, templates, common and ordinary labor for handling materials during inspection replacing any property damage, together with any and all costs or expenses for performing and completing the work as specified.

### 13.3 Schedule of Values: (Lump Sum Price Breakdown)

A Schedule of Values must be submitted within seven days subsequent to the CONTRACTOR executing and submitting the Documents required of Article 2.13 of the Section II – Special Terms and Conditions. The schedules shall be satisfactory in form and substance to the ENGINEER, and shall include quantity and unit prices aggregating the Contract Price, and shall subdivide the work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon acceptance of the schedule of values by the ENGINEER, it shall be incorporated into a form of Application for Payment acceptable to the ENGINEER.

### 13.4 Changed Conditions: (Unit Price Only)

It is mutually agreed that due to latent field conditions which can not be foreseen at the time of advertising for bids, adjustments of the Plans to field conditions will be necessary during construction; and, therefore, such changes in the plans shall be recognized as constituting a normal and accepted margin of adjustment not unusual and not involving or permitting any change or modification of unit prices, in which case payment will be made for the revised quantities at the unit price bid in the Proposal.

### 13.5 Application for Progress Payment:

On the 20th day of the month or the first working day thereafter, the CONTRACTOR shall submit to the ENGINEER for review an Application for Payment form filled out and signed by the CONTRACTOR. The form shall be notarized, and shall cover the work completed as of the date of the application. The Application for Payment shall be accompanied by a Schedule of Values, and any other supporting documentation as the ENGINEER may reasonably require.

13.6 Payment for Materials:

If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by such data, satisfactory to the ENGINEER, as will establish the CITY's title to the material and equipment and protect the CITY's interest therein, including applicable insurance.

13.7 Affidavit Required:

All Applications for Payment shall include an Affidavit of the CONTRACTOR stating that all previous progress payments received on account of the work have been applied to discharge in full all of CONTRACTOR's obligations reflected in prior Applications for Payment. The amount of retainage with respect to progress payments will be 5%.

13.8 Retainage:

The amount of retainage with respect to progress payments will be 5% until completion of the construction services purchased pursuant to the Contract, as more specifically set forth in the Article 3 of the main contract entitled "Partial and Final Payment."

13.9 CONTRACTOR's Warranty of Title:

The CONTRACTOR warrants and guarantees that title to all work, materials and equipment covered by any Application for Payment whether incorporated in the Project or not, will pass to the CITY at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereinafter in these General Conditions referred to as "Liens").

13.10 Review of Application for Payment:

The ENGINEER will, within seven (7) days, review the Application for Payment and either approve and submit it for payment or notify the CONTRACTOR of the deficiencies such that the CONTRACTOR may make the necessary corrections and resubmit in time for the month's payment. However, the ENGINEER may refuse to recommend the whole or any part of any payment if, in his opinion, it would be incorrect to make such representations. He may also refuse to recommend any such payment, or because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended to such extent as may be necessary in the ENGINEER's opinion to protect the CITY from loss because:

- A. The work is defective, or completed work has been damaged requiring correction or replacement.
- B. Written claims have been made against the CITY or Liens have been filed in connection with the work.
- C. The Contract Price has been reduced because of Change Order.
- D. The CITY has been required to correct defective work or complete the work in accordance with Article 12.8.
- E. The CONTRACTOR's unsatisfactory prosecution of the work in accordance with the Contract Documents.
- F. The CONTRACTOR's failure to make payment to Sub- Contractors, or for labor, materials or equipment.

13.11 Payment to the Contractor:

Payments are made only on the fifteenth day or first workday thereafter of each month.

ARTICLE 14 - SUBSTANTIAL COMPLETION, PARTIAL UTILIZATION,  
FINAL CLEAN UP, INSPECTION, PAYMENT AND ACCEPTANCE

14.1 Substantial Completion:

When the CONTRACTOR considers the entire work ready for its intended use, the CONTRACTOR shall, in writing to the ENGINEER, certify that the entire work is substantially complete and request that the ENGINEER issue a Certificate of Substantial Completion. Within a reasonable time thereafter the CONTRACTOR and the ENGINEER shall make an inspection of the work to determine the status of completion. If the ENGINEER does not consider the work substantially complete, the ENGINEER will notify the CONTRACTOR in writing giving his reasons therefore. If the ENGINEER considers the work substantially complete, the ENGINEER will prepare and deliver to the CONTRACTOR a Certificate of Substantial Completion, which shall fix the date of Substantial Completion. There shall be attached to the certificate a proposed Punch List, developed by the CONTRACTOR, of items to be completed or corrected before final payment.

Within ten (10) days after delivery of the certificate, the CITY shall review the proposed Punch List and either approve it or contact the CONTRACTOR to commence good faith efforts to develop a Punch List that is satisfactory to both parties. If the parties are unable to resolve any differences they may have in the development of the Punch List, the ENGINEER shall resolve their differences. The parties shall expedite the process of developing the Punch List with the intent of finalizing the Punch List within sixty (60) days after the date of Substantial Completion.

At the time of delivery of the Certificate of Substantial Completion the ENGINEER will deliver to the CONTRACTOR written notice as to division of responsibilities pending final payment between the CITY and the CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities and insurance, said responsibilities will be binding on the CITY and the CONTRACTOR until final payment. Unless otherwise stated herein or on the Certificate of Substantial Completion, all building, product, equipment, and machinery warranties will commence on the date of Substantial Completion. The CITY shall have the right to exclude the CONTRACTOR from the work after the date of Substantial Completion, but the CITY shall allow the CONTRACTOR reasonable access to complete or correct items on the Punch List.

14.2 Partial Utilization:

Use by the CITY of any finished part of the work which has specifically been identified in the Contract Documents or which the ENGINEER and the CONTRACTOR agree constitutes a separately functioning and usable part of the work that can be used by the CITY without significant interference with CONTRACTOR's performance of the remainder of the work, may be accomplished prior to Substantial Completion of all the work subject to the following:

- A. The ENGINEER at any time may request the CONTRACTOR in writing to permit the CITY to use any such part of the work which the ENGINEER believes to be ready for its intended use and substantially complete. If the CONTRACTOR agrees, the CONTRACTOR will certify to the ENGINEER that said part of the work is substantially complete and request the ENGINEER to issue a Certificate of Substantial Completion for that part of the work. The CONTRACTOR, at any time, may notify the ENGINEER in writing that the CONTRACTOR considers any such part of the work ready for its intended use and substantially complete and request the ENGINEER to issue a Certificate of Substantial Complete for the part of the work. Within a reasonable time after either such request, the CONTRACTOR and the ENGINEER shall make an inspection of that part of the work to determine its status of completion. If the ENGINEER does not consider that part of the work to be substantially complete, the ENGINEER will notify the CONTRACTOR in writing giving the reasons therefore. If the ENGINEER considers that part of the work to be substantially complete, the provisions of Article 14.1 will apply with respect to Certificate of Substantial Completion of that part of the work and the division of responsibility in respect thereof and access thereto. It shall be understood by the CONTRACTOR that until such written notification is issued, all responsibility for care and maintenance of all of the WORK shall be borne by the CONTRACTOR. Upon issuance of said written notice of partial utilization, the OWNER will accept responsibility for the protection and maintenance of all such items or portions of the WORK described in the written notice.

#### 14.3 Final Clean-Up:

Upon completion of the work and before final inspection shall be made, the CONTRACTOR shall clean and remove from the site, the Right-of-Way and adjacent property, all surplus and discarded materials, rubbish, and temporary structures; restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the work; and shall leave the site and vicinity unobstructed in a neat and presentable condition throughout the entire area or length of the work under Contract. The placing of materials of every character, rubbish, or equipment on the abutting property, with or without the consent of the property owners, shall not constitute the satisfactory disposal. If the work is of such a character as may be done by block or sections, the CONTRACTOR may be required to promptly remove and dispose of accumulated rubbish, debris or surplus materials from blocks or sections as completed or partially completed. No separate payment will be made for final cleaning up and restoration of property, but all costs thereof shall be included in the prices bid for the various scheduled items of work.

#### 14.4 Final Inspection:

Upon written notice from the CONTRACTOR that the entire work or an agreed portion thereof is complete and final clean-up has been completed, the ENGINEER will make a final inspection with the CONTRACTOR and will notify the CONTRACTOR in writing of all particulars in which this inspection reveals that the work is incomplete or defective. The CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

#### 14.5 Final Application for Payment:

After the CONTRACTOR has completed all such corrections to the satisfaction of the ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in Article 7.19 of the General Conditions and other documents; all as required by the Contract Documents and after the ENGINEER has indicated that the work is acceptable (subject to the provisions of Article 14.9) the CONTRACTOR may make Application for Final Payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to the CITY) of all Liens arising out of or filed in connection with the work. In lieu thereof and as approved by the CITY, the CONTRACTOR may furnish receipts or releases in full; an affidavit of the CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the work for which the CITY or the CITY's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, the CONTRACTOR may furnish a Bond or other collateral satisfactory to the CITY to indemnify the CITY against any Lien.

#### 14.6 Final Payment and Acceptance:

If on the basis of the ENGINEER's observation of the work during construction and final inspection, and the ENGINEER's review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, the ENGINEER is satisfied that the work has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the ENGINEER will recommend payment. Thereupon the ENGINEER will give written notice to the CITY and the CONTRACTOR that the work is acceptable subject to the provisions of Article 14.9.

#### 14.7 Payment of Retainage Without Final Completion:

If through no fault of the CONTRACTOR, final completion of the work is significantly delayed and if the ENGINEER so confirms, the CITY shall, upon receipt of the CONTRACTOR's final Application for Payment and recommendation of the ENGINEER, and without terminating the Agreement, make payment of the balance due for the portion of the work fully completed and accepted. If the remaining balance to be held by the CITY for work not fully completed or corrected is less than the retainage stipulated in the Agreement and if Bonds have been furnished as required in Article 5.2, the written consent of the Surety to the payment of the balance due for that portion of the work fully completed and accepted shall be submitted by the CONTRACTOR to the ENGINEER with the application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

14.8 CONTRACTOR's Continuing Obligation:

The CONTRACTOR's obligation to perform and complete the work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the ENGINEER, nor the issuance of a Certificate of Substantial Completion, nor any payment by the CITY to the CONTRACTOR under the Contract Documents, nor any use or occupancy of the work or any part thereof by the CITY nor any act of acceptance by the CITY nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by the ENGINEER pursuant to Article 14.6, nor any correction of defective work by the CITY will constitute an acceptance of work not in accordance with the Contract Documents or a release of the CONTRACTOR's obligation to perform the work in accordance with the Contract Documents (except as provided in Article 14.9).

14.9 Waiver of Claims:

The making and acceptance of final payment will constitute:

- A. A waiver of all claims by the CITY against the CONTRACTOR, except claims arising from unsettled Liens, from defective work appearing after final inspection pursuant to Article 14.4 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by the CITY of any rights in respect of the CONTRACTOR's continuing obligations under the Contract Documents.
- B. A waiver of all claims by the CONTRACTOR against the CITY other than those previously made in writing and still unsettled.

## ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

### 15.1 City May Suspend Work:

The CITY may, at any time and without cause, suspend the work or any portion thereof for a period of not more than ninety (90) days by notice in writing to the CONTRACTOR which will fix the date on which work will be resumed. The CONTRACTOR shall resume the work on the date so fixed. The CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.

### 15.2 City May Terminate:

- A. Upon the occurrence of any one or more of the following events:
1. If the CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if the CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency.
  2. If a petition is filed against the CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against the CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency.
  3. If the CONTRACTOR makes a general assignment for the benefit of creditors.
  4. If a trustee, receiver, custodian or agent of the CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of the CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of the CONTRACTOR's creditors.
  5. If the CONTRACTOR admits in writing an inability to pay its debts generally as they become due.
  6. If the CONTRACTOR persistently fails to perform the work in accordance with the Contract Documents (including, but not limited to, failure to supply a qualified superintendent or sufficient skilled workers or suitable materials or equipment or failure to adhere to the approved progress schedule revised from time to time).
  7. If the CONTRACTOR disregards laws or regulations of any public body having jurisdiction.

8. If the CONTRACTOR disregards the authority of the ENGINEER.
  9. If the CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents.
- B. The CITY may, after giving the CONTRACTOR and the Surety seven days' written notice and to the extent permitted by laws and regulations, terminate the services of the CONTRACTOR, exclude the CONTRACTOR from the site and take possession of the work and of all the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by the CONTRACTOR (without liability to the CONTRACTOR for trespass or conversion), incorporate in the work all materials and equipment stored at the site or for which the CITY has paid the CONTRACTOR but which are stored elsewhere, and finish the work as the CITY may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals, and court and arbitration costs) such excess will be paid to the CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR, or CONTRACTOR's Surety, shall pay the difference to the CITY.
  - C. Where the CONTRACTOR's services have been so terminated by the CITY, the CITY alone shall determine the scope and description of the work to be completed and the method and schedule for completing it.
  - D. Where the CONTRACTOR's services have been so terminated by the CITY the termination will not affect any rights or remedies of the CITY against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due the CONTRACTOR by the CITY will not release the CONTRACTOR from liability.
  - E. Upon seven days' written notice to the CONTRACTOR the CITY may, without cause and without prejudice to any other right or remedy, elect to abandon the work and terminate the Contract. In such case the CONTRACTOR shall be paid for all work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

15.3 Contractor May Stop Work or Terminate:

If through no act or fault of the CONTRACTOR, the work is suspended for a period of more than ninety (90) days by the CITY or under an order of court or other public authority, or the CITY fails for sixty (60) days to pay the CONTRACTOR any sum finally determined to be due, then the CONTRACTOR may, upon seven days' written notice to the CITY terminate the Contract and recover from the CITY payment for all work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Contract, if the CITY has failed to make any payment as aforesaid, the CONTRACTOR may upon seven days' written notice to the CITY stop the work until payment of all amounts then due are paid. The provisions of this paragraph shall not relieve the CONTRACTOR of the obligations to carry on the work in accordance with the progress schedule and without delay during disputes and disagreements with the CITY.

- END OF SECTION -

ATTACHMENT C  
SUPPLEMENTARY GENERAL CONDITIONS  
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**General Note:**

The General Conditions refer to specific section numbers in the Supplementary General Conditions. These reference numbers may not coordinate with the actual Article numbers utilized in the Supplementary General Conditions. The CONTRACTOR shall comply with all General Conditions and all Supplementary General Conditions as well as related conditions included in the General Requirements, Division 1 of the Technical Specifications. Incorrect cross-reference numbers shall not relieve this requirement.

**1. Project Schedule**

Time is of the essence for this work. The following defines the schedule for the project:

**CONSTRUCTION WORK SCHEDULE  
CONSTRUCTION / STARTUP / ACCEPTANCE:**

Major Milestones	Completion Time (Calendar Days)
Substantial Completion	<b>365</b>
Project Closeout	<b>30</b>

Individual project schedules may be established per Work Order contract.

Failure to meet any of the above defined construction/startup/acceptance completion dates shall subject the CONTRACTOR to pay damages as specified in these Supplementary General Conditions in Article 3.

<sup>(1)</sup>Substantial Completion

1. Refer to Attachment B - General Conditions Articles 14.1 and 14.2. (Certification of Substantial Completion Services appended to the Supplementary General Conditions).
2. Substantial Completion shall also include:
  - Completion of all construction work associated with the specific "Major Milestone" listed in the construction work schedule including completion of punch list items. "Completion of punch list items" shall be as determined by the Engineer in the field.
  - Coating touchup completed.
  - Record shop drawings and O&M submittals received and accepted by the Engineer.
  - Record drawing red-lines received and accepted by the Engineer.
  - Guarantee certifications, performance affidavits, and all other certifications received and accepted by the Engineer.

Contractor shall also conform to construction sequence constraints as defined on the Drawings and in Specifications.

<sup>(2)</sup>Project Closeout

1. Refer to Division 1 General Requirement, Section 01700 Project Closeout.
2. Project Closeout shall also include:
  - All requirements of substantial completion met plus the following
  - Site cleanup and restoration completed
  - All other sitework completed
  - Minor punch list items completed (minor as defined by the Engineer in the field)
  - Demobilization completed
  - Releases from all parties who are entitled to claims

The title "Engineer" utilized in these descriptions for substantial and final completion shall mean the City staff engineer assigned to this project, or his designated representative.

2. **Insurance Requirements (Not Used. Refer to ARTICLE 2.25 of SECTION II – SPECIAL TERMS AND CONDITIONS OF THE CONTRACT DOCUMENTS**

**3. Liquidated Damages**

Liquidated damages shall be paid by the CONTRACTOR to the CITY for failure to complete work on time in accordance with the following schedule:

CONSTRUCTION/STARTUP/ACCEPTANCE:		
<u>Major Milestones</u>	<u>Completion Time (calendar days)</u>	<u>Liquidated Damages (Per Day)</u>
1. Substantial Completion	<b>365</b>	<b>\$1,000.00</b>
2. Project Closeout	<b>30</b>	<b>\$1,000.00</b>

The CITY is hereby authorized to deduct the sums described above from the monies which may be due to the CONTRACTOR for the work under this contract. Liquidated damages shall be additive such that the maximum total which may be deducted shall be \$1,000.00/day. Other damages for failure to meet warranty conditions as defined in other sections of the Specifications shall also be added with liquidated damages for failure to meet completion times.

**4. Restricted Area**

The CONTRACTOR shall, in installing the new facilities, confine all activities within the CITY property, easement, and right-of-ways indicated.

**5. Existing Facilities and Structures**

All existing facilities shall be protected, and if damaged, shall be repaired by the CONTRACTOR at no additional cost to the CITY.

**6. Explosives**

Explosives shall not be used on this project.

**7. Contract Documents**

The CITY will provide the CONTRACTOR with one (1) set of Contract Documents after the Notice to Proceed.

**8. Required Notifications**

When provisions of the pertinent codes, standards or regulations conflict with this Specification, the more stringent shall apply.

Prior to any site work, the CONTRACTOR shall notify the Engineering and Construction Services Division Inspector at (954) 921-3930.

Prior to excavation at the site, the CONTRACTOR shall notify the appropriate utilities and Sunshine State One-Call of Florida, Inc. (formerly U.N.C.L.E.) at 1-800-432-4770 for locations of buried utilities.

Prior to closure of any CITY streets or alleyways, or other activity which requires the diversion of traffic, the CONTRACTOR shall notify and obtain the permission of the CITY of Hollywood Fire and Police Communications Section at (954) 967-4321.

**9. Notice of Completion**

See attached form.

**10. Prevailing Wage Requirement**

A. The CONTRACTOR shall be responsible for ensuring payment of the rate of wages and fringe benefits, or cash equivalent, for all laborers, mechanics and apprentices employed by him/her or his/her SUBCONTRACTORS on the work covered by this contract which shall be not less than the prevailing rate of wages and fringe benefits payment or cash equivalent for similar skills or classifications of work as established by the General Wage Decision by the United States Department of Labor for Broward County, Florida that is in effect prior to the date the CITY issued the invitation for bids for this project (the prevailing rate of wages and fringes can be obtained at website <http://www.access.gpo.gov/davisbacon>).

If the General Wage Decision fails to provide for a fringe benefit rate for any worker classification, then the fringe benefit rate applicable to such worker classification shall be the fringe benefit rate that has a basic wage rate closest in dollar amount to the work classification for which no fringe benefit rate has been provided.

- B. Upon commencement of work, the CONTRACTOR and all of his/her SUB-CONTRACTORS shall post a notice in a prominent place at the work site stating the requirements of this Article.
- C. As per the City of Hollywood Code of Ordinances, Prevailing Wage Requirements and Fringe Benefits are applicable to the following: (A) Utilities projects over \$1,000,000.00 (one million dollars) and (B) All other projects over \$500,000.00 (five hundred thousand dollars).

**11. Inspections and Testing During Overtime**

- A. The following supplement Article 3.15 and 3.16 of the General Conditions:

For weekend work, CONTRACTOR shall submit a written request to the CITY by the preceding Wednesday. A separate request is required for each week that the CONTRACTOR wished to work on a weekend. For evening and holiday work, CONTRACTOR shall submit a written request to the CITY three (3) days in advance. The CITY will provide inspection services for all overtime work and the CONTRACTOR shall pay for inspection services per Article 3.15, no exceptions.

Similarly, Holiday and other overtime work shall be requested a minimum of 36-hours in advance and CITY will provide inspection for all overtime.

- B. Exceptions to the hours and days of the week for work and other related limitations are allowed only for tie-ins during low flow periods / early morning hours, coatings that need to be applied during lower temperature times of the day and whenever the Documents specifically define that work shall be completed outside of the limitations for “normal” work hours, days, etc.

Inspection for tie-ins during low flow/early morning and specialty coating application performed during nighttime will not be cause for extra inspection costs unless such work is remedial in nature as a result of defective work.

**12. Retainage**

After 50-percent completion of the construction services purchased pursuant to each individual Work Order under this contract, CONTRACTOR may present to CITY a payment request for one-half of the retainage then held by CITY. CITY shall promptly make payment to CONTRACTOR, unless CITY has grounds for withholding the payment of retainage. CITY shall have grounds for withholding the payment of retainage with respect to any amounts that are the subject of a good-faith dispute, the subject of a claim brought pursuant to Florida Statute Section 255.05, or otherwise the subject of a claim or demand by CITY or CONTRACTOR.

At acceptance of completion of all other project completion items, including all punch list items, CITY shall promptly make payment to CONTRACTOR the balance of retainage then held by CITY.

**13. Owner's Contingency (NOT USED)**

*This allowance is in its entirety dedicated for the use of the Owner (The City of Hollywood) to address conditions (or work) associated with undefined conditions. All work resulting from undefined conditions shall be authorized in writing and in advance by the Owner, specifically the Director of Public Services, through the full execution of a Field Order. The actual amount to be paid per Field Order will be negotiated and agreed by both parties (the Owner and the Contractor). The final/negotiated amount of the field order will be deducted from the Owner's Allowance designated in the Bid Proposal and Schedule of Values. The Owner reserves the right to award none, any portion of, or all of the money associated with this allowance. By executing the CONTRACT between the City of Hollywood and the Contractor, the Contractor acknowledges that under no circumstances he or she should assume that he or she would be entitled to any amounts set aside by the City of Hollywood within the Owner's Allowance.*

# CERTIFICATE OF SUBSTANTIAL COMPLETION

**PROJECT:** **ENGINEER:** Engineering Support Services Division

**TO:** **CONTRACTOR:**

**CONTRACT FOR:**

**NOTICE TO PROCEED DATE:**

**DATE OF ISSUANCE:**

**PROJECT OR DESIGNATED PORTION SHALL INCLUDE:**

Portions of the work performed under this Contract as described above, have been reviewed and found to be substantially complete. The Date of Substantial Completion of Project or designated portion thereof designated above is hereby established as \_\_\_\_\_ which is also the date of commencement of applicable warranties required by the Contract Documents for the noted area.

## **DEFINITION OF DATE OF SUBSTANTIAL COMPLETION**

The Date of Substantial Completion of the work or designated portion thereof is the date certified by the ENGINEER ("Date of Issuance" above) when construction is sufficiently complete, in accordance with the Contract Documents, so the CITY can occupy or utilize the work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the CONTRACTOR and verified and amended by the ENGINEER, for the above referenced "Project or Designated Portion" is attached to this form (attached "Punch List" dated \_\_\_\_\_).

The failure to include any items on such list does not alter the responsibility of the CONTRACTOR to complete all work in accordance with the Contract Documents.

# CERTIFICATE OF SUBSTANTIAL COMPLETION

Please note that in accordance with Article 14 General Conditions, the Contractor retains full responsibility for the satisfactory completion of all work regardless of whether the Owner occupies and / or operates a part of the facility and that the taking possession and use of such work shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents.

City of Hollywood - ESSD

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<b>ENGINEER</b>	<b>BY</b>	<b>DATE</b>
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<b>CONTRACTOR</b>	<b>BY</b>	<b>DATE</b>
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The CITY OF HOLLYWOOD, through the City's authorized representative, accepts the work or designated portion thereof as substantially complete and will assume full possession thereof at \_\_\_\_\_(time) on \_\_\_\_\_  
\_\_\_\_\_ (date).

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<b>BY</b>	<b>DATE</b>
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- END OF SECTION -

**PROJECT 9626**

**CITY OF HOLLYWOOD**  
**CONTRACT DOCUMENTS AND SPECIFICATIONS**  
**FOR**  
**2023 SRWWTP MAINTENANCE WORK**

**MAY 2023**



Prepared by:

**ENGINEERING SUPPORT SERVICES DIVISION**

1621 N 14<sup>th</sup> Avenue  
PO Box 229045  
Hollywood, FL 33022-9045

**BID PACKAGE**

**FOR**

**2023 SRWWTP MAINTENANCE WORK**

**IFB – 087-23-JJ**

**SUBMITTED BY:** \_\_\_\_\_

**MAY 2023**

**CITY OF HOLLYWOOD  
DEPARTMENT OF PUBLIC UTILITIES**

**2023 SRWWTP MAINTENANCE WORK**

**BID PACKAGE CONTENTS AND REQUIREMENTS**

<b><u>SECTION</u></b>	<b><u>TITLE</u></b>
Section I	INTRODUCTION
Section II	SPECIAL TERMS AND CONDITIONS
Section III	SCOPE OF SERVICES
Section IV	GENERAL TERMS & CONDITIONS
Section V	FORMS
Section VI	ATTACHMENTS/EXHIBITS

**SUBMIT THIS COMPLETE PACKAGE AND ONE COPY WITH YOUR BID**

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01090	Applicable Standards and Code
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**DIVISION 1**  
**GENERAL REQUIREMENTS**

## SECTION 01010

### SUMMARY OF WORK

#### PART 1 -- GENERAL

##### 1.01 THE REQUIREMENT

- A. The work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies, and manufactured articles and for furnishing all transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The work shall be complete, and all work, materials, and services not expressly shown or called for in the Contract documents which may be necessary for the complete and proper construction of the work in good faith CONTRACTOR as though originally so specified or shown, at no increase in cost to the CITY.
- B. Prior to construction, the CONTRACTOR shall locate and verify potential existing utilities in their working area. The utility verifications consist of excavation to verify tie-in points and to locate potential conflicts that may affect the work. The CONTRACTOR shall be responsible for the coordination of this work with the associated utility owners and permitting agencies having jurisdiction over the specific locations to be verified.

##### 1.02 SCOPE

- A. The work to be performed includes site, civil, mechanical, and structural work associated with the construction of the proposed improvements depicted on the Contract Documents.

The contractor shall perform the work in accordance with all permits.

- B. It is the intent of the CITY to obtain a complete and working installation under this contract and any items of labor, materials, or equipment, which may be reasonably assumed as necessary to accomplish this end, should be supplied whether or not specifically shown on the plans or described herein. Maintenance of the existing utility systems is mandated through the construction period.

##### 1.03 WORK BY OTHERS

- A. The CONTRACTOR shall cooperate fully with all utility forces of the CITY, or other public or private agencies engaged in the relocation, altering, or otherwise rearranging any facilities which interfere with the progress of the work, and shall schedule the work so as to minimize interference with said relocation, altering, or rearranging of facilities.
- B. The CONTRACTOR'S attention is directed to the fact that work will be conducted at the site by other contractors during the performance of the work under this Contract. The CONTRACTOR shall conduct its operations so as to cause a minimum of interference

with the Work of such other contractors and shall cooperate fully with such contractors to provide continued safe access to their respective portions of the site, as required to perform their respective contracts.

- C. When two or more contracts are being executed at one time on the same or adjacent land in such manner that Work on one contract may interfere with that on another, the CITY shall determine the sequence and order of the Work. When the territory of one contract is the necessary or convenient means of access for the execution of another contractor, such privilege of access or any other reasonable privilege may be granted by the CITY to CONTRACTOR. No such decision as to the method or time of conducting the Work or the use of territory shall be made the basis of any claim for delay or damage.

#### 1.04 LOCATION OF THE PROJECT

- A. The location of the project is the Southern Regional Wastewater Treatment Plant at 1621 N 14<sup>th</sup> Avenue, Hollywood, Florida 33020.

#### 1.05 CONTRACT DRAWINGS

- A. The work to be performed shall be as shown on the Contract Documents.

#### 1.06 CONTRACTOR FURNISHED MATERIAL AND EQUIPMENT

- A. All equipment, materials, or devices incorporated in this project shall be new and unused, unless indicated otherwise in the Contract Documents and shall be the products of reliable manufacturers who, unless otherwise specified, have been regularly engaged in the manufacture of such material and equipment for at least five (5) years.

#### 1.07 DRAWINGS OF EXISTING FACILITIES

- A. Drawings of the existing facilities may be inspected at the City's Engineering Support Services Office. These drawings are for information only and are not a part of the Contract Documents. In making these drawings available for inspection, the CITY makes no guarantee, either expressed or implied, as to their accuracy or completeness.
- B. The CONTRACTOR shall contact representatives for other utilities, facilities in proximity of the work and Sunshine One Call Inc., to obtain the as-built information from them directly. The utilities shown on Drawings are based upon available records supplied from various sources. The CITY makes no guarantee, either expressed or implied, as to their accuracy or completeness.

#### 1.08 ITEMS SPECIFIED ON DOCUMENTS

- A. Certain items of material and/or equipment, and their installation may be specified on the Drawings and not mentioned in the Specifications. Such items are to be considered as both shown on the Drawings and not mentioned on the Specifications. Such items are to

be considered as both shown on the Drawings and noted in the Specifications and be provided by the CONTRACTOR in accordance with the Specification on the Documents.

#### 1.09 FIELD LAYOUT OF WORK

- A. All work under this Contract shall be constructed in accordance with Contract Drawings or as directed by the ENGINEER. Elevations of existing ground, structures and appurtenances are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake-out survey shall be referred immediately to the CITY for interpretation or correction.
- B. All survey work for construction control purposes shall be made by the CONTRACTOR at his expense.
- C. The CONTRACTOR shall establish all base lines for the location of the principal component parts of the work together with benchmarks and batter boards adjacent to the work. Based upon the information provided by the Contract Drawings, the CONTRACTOR shall develop and make all detail surveys necessary for construction. The CITY will furnish information and location of existing benchmarks.
- D. The CONTRACTOR shall have the responsibility to carefully preserve the benchmarks, reference points and stakes. In case of destruction thereof by the CONTRACTOR or resulting from his negligence, he shall be held liable for any expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such benchmarks, reference points and stakes.
- E. Existing or new control points, property markers, and monuments that will be established or are destroyed during the normal causes of construction shall be re-established by the CONTRACTOR; and all reference ties recorded therefore shall be furnished to the CITY. All computations necessary to establish the exact position of the work shall be made and preserved by the CONTRACTOR.
- F. The CITY may check all or any portion of the work, and the CONTRACTOR shall afford all necessary assistance to the CITY in carrying out such checks. Any necessary corrections to the work shall be performed immediately by the CONTRACTOR and he shall accept all responsibility for the accuracy and completeness of his work.

#### 1.10 CONTRACTOR USE OF PROJECT SITE

- A. The CONTRACTOR's use of the project site shall be limited to its construction operations and field offices as applicable. Off-site storage of materials, if required, shall be arranged for by the CONTRACTOR and a copy of an agreement for use of other property shall be furnished to the CITY.

#### 1.11 CITY USE OF THE PROJECT SITE

- A. The CITY may utilize all or part of the existing facilities during the entire period of construction for the conduct of the CITY's normal operations. The CONTRACTOR shall cooperate with the CITY to minimize interference with the CONTRACTOR's operations and to facilitate the CITY's operations.

#### 1.12 PARTIAL UTILIZATION OF THE WORK BY CITY

- A. The CONTRACTOR is hereby advised that the CITY may accept the responsibility for the maintenance and protection of a specific portion of the project if utilized prior to completion. However, the CONTRACTOR shall retain full responsibility for satisfactory operation of the total project.

#### 1.13 SITE CONDITIONS

- A. The CONTRACTOR acknowledges that he has investigated prior to bidding and satisfied himself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides, water tables or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The CONTRACTOR further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, or any contiguous site, as well as from information presented by any Drawings and Specifications made a part of this Contract, or any other information made available to him prior to receipt of Bids. Any failure by the CONTRACTOR to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The CITY assumes no responsibility for any conclusions or interpretations made by the CONTRACTOR on the basis of the information made available by the CITY.
- B. CONTRACTOR shall also take 4" x 6" color photographs and video tapes to document pre-existing above-ground conditions and shall provide the CITY with a set of photographs, negatives and video tapes. These photographs and tapes may be used for purposes of restoration documentation. Digital photographs supplied on a CD are also acceptable.

#### 1.14 DIFFERING SITE CONDITIONS

- A. The CONTRACTOR shall promptly and before such conditions are disturbed, notify the CITY in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for this contract. The CITY will promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the CONTRACTOR's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.
- B. No claim of the CONTRACTOR under this clause shall be allowed unless the CONTRACTOR has given the notice required in Paragraph A.
- C. No claim by the CONTRACTOR for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

## SECTION 01025 – BASIS OF PAYMENT

### PART 1 -- GENERAL

#### 1.01 SCOPE OF WORK

- A. Payments to the CONTRACTOR shall be made on the basis of the Bid Proposal as full and complete payment for furnishing all materials, labor, tools and equipment, and for performing all operations necessary to complete the work included in the Contract Documents. Such compensation shall also include payments for any loss or damages arising directly or indirectly from the work, or from any discrepancies between the actual quantities of work and those shown in the Contract Documents.
- B. The prices stated in the Bid Form include full compensation for overhead and profit, all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the work as shown on the details and specified herein. The Basis of Payment for an item at the price shown in the Bid Form shall be in accordance with its description of the item in this Section and as related to the work specified. Unit prices will be applied to the actual quantities furnished and installed in conformance with the Contract Documents. The items listed below, refer to and are the same pay items listed in the Bid Form. They constitute all of the pay items for the completion of the work. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, services, field offices, layout surveys, job signs, sanitary requirements, testing, safety devices, approval and record drawings, water supplies, power, underground utility locating, maintenance of traffic, site preparation, removal of waste, site cleanup, watchmen, bonds, insurance, mobilization, demobilization, and any other requirements of the General Conditions and Bidding and Contract Requirements. Compensation for all such services, equipment and materials shall be included in the prices stipulated for the unit pay items listed herein.
- C. The CONTRACTOR's attention is called to the fact that the quotations for the various items of work are intended to establish a total price for completing the work in its entirety. Should the CONTRACTOR feel that the cost for any item of work has not been established in the Bid Proposal or this Section, the cost for that Work shall be included in some other applicable Bid item, so that the Proposal for the project reflects the total price for completing the work in its entirety. It is intended that all work required to complete this Contract will be included in the various items as described herein.
- D. In the event that repairs to laterals, mains, manholes, force mains, utilities, or any other public or private property are required due to damage caused by the CONTRACTOR's operations, the CONTRACTOR shall provide and employ all necessary labor, equipment, and materials, at no additional cost, to complete such repairs in accordance with applicable provisions of these specifications. This shall include but not be limited to materials for repair, if required, including pipe, fittings and specials, pipe bedding, and materials for surface restoration; transportation and handling costs delivered to the work site; any bypass pumping; providing provisional sewers to maintain service; complying with the State of Florida Trench Safety Act, including shoring; removal, transportation and disposal of existing sewer excavation; supporting and protecting existing utilities as required; dewatering; sheeting and shoring, if necessary; furnishing and installing replacement

## SECTION 01025- 1 – BASIS OF PAYMENT

pipe, fittings and repair couplings; unloading material and placing it in the trench; cutting pipe; furnishing and installing joint materials including lubricant; making all connections within the lines to existing sewers, laterals and structures; placing and compacting bedding and backfill; furnishing and installing additional suitable backfill material, if required; furnishing all materials and equipment required to clean and test the sewer; cleaning and testing the sewer; temporary paving installation and removal; permanent paving replacement; replacement of pavement markings as existed before repair; replacing utilities, catch basins, manholes, trees, grass, shrubs, mail boxes, sprinkler systems, concrete or rock bed driveways, sidewalk and all other similar items, to original locations and to equal or better than original conditions; obtaining and paying for any necessary permits; satisfying all requirements of the permits, and all other appurtenant and miscellaneous items and work including final cleanup.

- E. The CITY will not provide any space or place to store materials for this project. No payment will be made for stored materials.
- F. The CITY will not provide for disposal of any solids resulting from sewer cleaning. The CONTRACTOR shall obtain permits and make arrangements as required to properly dispose of solids. All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of by the CONTRACTOR in a legal and sanitary manner as approved by appropriate authorities, at the CONTRACTOR's cost.
- G. Unless otherwise specifically stated elsewhere herein, the CONTRACTOR shall include in the prices bid all materials, electrical supply, fuel, lubricants, temporary equipment, temporary wiring, temporary piping and fittings, pumps, gages, and all other items of whatever nature required to completely test, balance, disinfect if required, and put into fully operational condition all equipment and/or systems supplied by either the CITY or the CONTRACTOR and installed as a part of this Project. Further, any test materials supplied by the CONTRACTOR shall be completely satisfactory to the CITY. Any decision as to whether a particular material is suitable for test purposes shall be at the sole discretion of the Engineer whose decision shall be final. Any material considered not suitable shall be immediately replaced by the CONTRACTOR with suitable material and no extra compensation will be allowed.
- H. The Basis of Payment for an item at the price shown in the Bid Form shall be in accordance with its description of the item in this Section and as related to the work specified in the standard details and specifications. Unit prices where used will be applied to the actual quantities furnished and installed in conformance with the Contract Documents.
- I. CONTRACTOR'S attention is called to the fact that the quotations for the various items of work are intended to obtain a complete and working installation under this Contract, and any items of labor, equipment or materials which may reasonably be assumed as necessary to accomplish this end shall be supplied whether or not they are specifically shown on the Plans or stated herein. Should the CONTRACTOR feel that the cost of any item of work has not been established by the Bid Form or Basis of Payment, he shall include the cost for that work in the Bid Item that most closely associates with that work so that his proposal for the project does reflect his total price for completing the work in its entirety.
- J. Whenever "Limits of Construction" is referred to, the limit of construction shall be within an area 7.5 feet each side of the centerline of the pipe and no more than five feet beyond the end of the new pipe installed.

#### SECTION 01025- 2 – BASIS OF PAYMENT

#### 1.04 MEASUREMENT

- A. The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the CITY, in accordance with the Bid Form as described in Section V, unless otherwise specified. The CITY will witness all field measurements.
- B. The quantities stated in the Bid Form are approximate only and are intended to serve as a basis for the comparison of bids and to fix the approximate amount of the cost of the Project. The CITY does not expressly or impliedly agree that the actual amount of the work to be done in the performance of the contract will correspond with the quantities in the Bid Form; the amount of work to be done may be more or less than the said quantities and may be increased or decreased by the CITY as circumstances may require. The increase or decrease of any quantity shall not be regarded as grounds for an increase in the unit price or in the time allowed for the completion of the work, except as provided in the Contract Documents.

#### 1.05 PAYMENT ITEMS – MOBILIZATION AND DEMOBILIZATION

For purposes of describing items appearing in the Proposal Bid Form, pricing for each item shall include work and components described below.

- A. Item No. 1 – Mobilization: The lump sum price bid for this item shall be full compensation for all mobilization activities, including but not limited to bonds, insurance, scheduling and other permit package, temporary facilities, audio-video documentation of the existing site submitted for City's approval. Any space required for staging, laydown, survey, storage, parking, etc., and all other activities necessary to prepare to complete the contract work. The payment items for mobilization shall not exceed 3% of the sum of Bid Items No.3 through 22, plus Bid Items No.33 through 47.
- B. Item No. 2 – Demobilization: Payment for completing all other work including but not limited to finish grading, demobilization, site cleanup, final restoration, correction of punch list items, and – all as per the Technical Specifications and Contract Drawings for the turn-key project packages. The payment items for demobilization shall be lump sum and not be less than 2 percent of the sum of Bid Items No. 3 through 22, plus Bid Items No.33 through 47.

#### 1.06 PAYMENT ITEMS – PACKAGE 1: IMPROVEMENTS IN DEWATERING BUILDING

- C. Items 3 – Replacement of Sludge Feed Pumps: The unit price bid includes full compensation for all turn-key work including, all labor, equipment and material necessary to properly furnish and replace each item to be fully functional. Payment shall be based upon the unit price per item, all in accordance with the requirements of the Contract Documents. The sludge feed pumps shall be replaced in-kind (Moyno 2000 Series Pump Model #1H115G1CSQ3AAA, no substitution) including, but not limited to, survey, confirmation of dimensions of spool pieces after field verification, shop drawing submittal, necessary valves and associated fittings, daily and final site cleaning, painting, removal and disposal of old pumps and appurtenances, concrete support repair/replacement as needed, furnish and install hot dip galvanized steel pump bases, all required electrical installation to local control panel or junction box, pump startup and testing, and other related work not defined in other Base Bid Package items. The City reserves the right to award any, all, or none of the money associated with this bid item.

#### SECTION 01025- 3 – BASIS OF PAYMENT

- D. Item 4a – Replacement of Sludge Feed Pump 8-inch Plug Valves: The unit price bid includes full compensation for all work, including, all labor, equipment, and material necessary to properly furnish and replace each item to be fully functional. Payment shall be based upon the unit price per item, all in accordance with the requirements in the Contract Documents. The valves shall be replaced in-kind (Dezurik 8-inch Flanged Plug Valve, 175 psi pressure class, no substitutions) including, but not limited to survey, confirmation of dimensions of spool pieces after field verification, shop drawing submittal, associated fittings, daily and final site cleaning, painting, removal and disposal of old valves, repair/replacement of concrete supports as needed, and other related work not defiled in other Base Bid Package items. The City reserves the right to award any, all, or none of the money associated with this bid item.
- E. Item 4b – Replacement of Sludge Feed Pump 8-inch Check Valves: The unit price bid includes full compensation for all work, including, all labor, equipment, and material necessary to properly furnish and replace each item to be fully functional. Payment shall be based upon the unit price per item, all in accordance with the requirements in the Contract Documents. The valves shall be replaced in-kind (GA Industries 8-inch Swing Check Valve or approved equal) including, but not limited to survey, confirmation of dimensions of spool pieces after field verification, shop drawing submittal, associated fittings, daily and final site cleaning, painting, removal and disposal of old valves, repair/replacement of concrete supports as needed, and other related work not defiled in other Base Bid Package items. The City reserves the right to award any, all, or none of the money associated with this bid item.
- F. Item 5 – Replacement of Sludge Feed Pump Piping Sets (All Piping for Complete Package): The set price includes full compensation for all work including, all labor, equipment, and material necessary to properly furnish and replace the ductile iron piping to be fully functional. Payment shall be based upon the set price, all in accordance with the requirements in the Contract Documents. The piping shall be replaced in-kind, including, but not limited to survey, confirmation of dimensions of spool pieces after field verification, shop drawing submittal, other valves and fittings, daily and final site cleaning, painting, removal and disposal of old piping, concrete support repair/replacement as needed, and other related work not defined in other Base Bid Package items. The City reserves the right to award any, all, or none of the money associated with this bid item.
- G. Item 6 – Furnish Spare Sludge Feed Pump: The unit price bid includes to furnish the spare sludge feed pump (Moyno 2000 Series Pump Model #1H115G1CSQ3AAA). The City reserves the right to award any, all, or none of the money associated with this bid item.
- H. Item 7 – Furnish Spare Plug Valve: The unit price bid includes to furnish the spare plug valve (Dezurik 8-inch Flanged Plug Valve, 175 psi pressure class). The City reserves the right to award any, all, or none of the money associated with this bid item.
- I. Item 8 - Replacement of Polymer Dosing Skids: The set price bid includes full compensation for all work including, all labor, equipment, and material necessary to properly furnish and replace each item to be fully functional. Payment shall be based upon the set price, all in accordance with the requirements of the Contract Documents. The polymer dosing skids shall be replaced in-kind (UGSI Chemical Feed PolyBlend Systems Model No.2400-P20AB, no substitutions) including, but not limited to, survey, confirmation of dimensions of spool pieces after field verification, shop drawing submittal, installation of necessary valves, piping, and associated fittings, daily and final site cleaning, painting, removal and disposal of old skids, piping and appurtenances, all required electrical installation to local control panel or junction box, concrete support repair/replacement as

SECTION 01025- 4 – BASIS OF PAYMENT

needed, and other related work not defined in other Base Bid Package items. The location and piping of each skid package might need to be adjusted depending on dimensions of new polymer dosing skids. The City reserves the right to award any, all, or none of the money associated with this bid item. One set of polymer dosing skid shall be installed, demonstrated for minimum of 30 days, before the City releases production, delivery, and replacement of other polymer dosing skids.

#### 1.07 PAYMENT ITEMS – PACKAGE 2: GRIT PUMP AND PIPING REPLACEMENT

- J. Item 9 – Grit Pipe Cleaning from Grit Classifiers to Grit Pumps: The set price bid of this item includes full compensation for all labor, material, and equipment necessary to clean the grit pipe, from the grit classifiers to the grit pumps using high pressure cleaning and snake cleaning tools. Payment will be made on a lump sum basis and shall include removal and disposal of grit and other debris inside the pipe to approved landfill. The City reserves the right to award any, all, or none of the money associated with this bid item.
- K. Item 10 – Grit Removal and Disposal in Chambers 1, 2, and 3: The price bid of this item shall be per cubic yard, documented by hauling volume in the truck leaving the site and the receipts issued by disposal landfill facilities, and includes full compensation for all work including, all labor, equipment and material necessary to remove grit, sand, floatables and debris in the grit chambers as needed and disposal to approved landfill. The City reserves the right to award any, all, or none of the money associated with this bid item.
- L. Item 11 – Replacement of Grit Pumps: The unit price bid includes full compensation for all turn-key work including, all labor, equipment and material necessary to properly furnish and install each item to be fully functional. Payment shall be based upon the unit price per item, all in accordance with the requirements of the Contract Documents. The grit pumps shall be replaced in-kind (Yeomans Chicago Corporation (Morris Pumps), Model/Size: CT4X6-18, Serial Number – 75170110053-5, Flow: 200 GPM, Head: 80' TDH) including, but not limited to, survey, confirmation of dimensions of spool pieces after field verification, shop drawing submittal, installation of all necessary valves and associated fittings, daily and final site cleaning, painting, removal and disposal of old pumps and appurtenances per existing layout and size, concrete support repair/replacement as needed, installation of new pumps, suction/discharge piping, associated isolation valves and check valves, all required electrical installation to local control panel or junction box, and other related work not defined in other Base Bid Package items. The City reserves the right to award any, all, or none of the money associated with this bid item.
- M. Item 12 – Pipe Replacement Inside Grit Chambers and Pump Room (6-inch Glass Lined DIP): The per linear foot price bid of this item includes full compensation for all labor, material and equipment necessary to replace, remove and dispose of the existing pipe, and furnish and install the new pipe per existing layout and size, inside grit chambers, including but not limited to, survey, pre-construction videos to confirm all existing layout including valve locations, confirmation of dimensions of spool pieces after field verification, shop drawing submittal, necessary valves and associated fittings, daily and final site cleaning, painting, removal and disposal of old piping, replacement of wall supports, repair/replacement of concrete supports and concrete pads as needed, and other related work not defined in other Base Bid Package items. The City reserves the right to award any, all, or none of the money associated with this bid item.
- N. Item 13 – Pipe Replacement (Underground) from Grit Classifiers to Grit Chambers (6-inch Glass Lined DIP): The per linear foot price bid of this item includes full compensation for all labor, material and equipment necessary to replace, remove and dispose of the existing pipe, and furnish

#### SECTION 01025- 5 – BASIS OF PAYMENT

and install the new pipe, per existing layout and size, including but not limited to, survey, field location of pipes, protection of existing facilities, pre-construction videos to confirm all existing layout including valve locations, shop drawing submittal, excavation and trenching as needed, cutting spool pieces for field verification, necessary valves and associated fittings, daily and final site cleaning, painting, removal and disposal of old piping and appurtenances, installation of concrete thrust blocks as needed, and other related work not defined in other Base Bid Package items. The City reserves the right to award any, all, or none of the money associated with this bid item.

1.08 PAYMENT ITEMS – PACKAGE 3: OXYGENATION TRAIN FLOW DISTRIBUTION BOX GATE REPAIR

- O. Items 14a and 15a – Box 2 and 3 Pressure Cleaning: The lump sum price bid of this item includes full compensation for all work, labor, material, and equipment necessary for pressure cleaning of OTFD Boxes 2 and 3. Payment will be made on a lump sum basis. The City reserves the right to award any, all, or none of the money associated with this bid item.
- P. Items 14b and 15b – Box 2 and 3 Sandblasting: The lump sum price bid of this item includes full compensation for all work, labor, material, and equipment necessary for sandblasting of OTFD Boxes 2 and 3. Payment will be made on a lump sum basis. The City reserves the right to award any, all, or none of the money associated with this bid item.
- Q. Items 14c – Grit Removal and Disposal in Box 2 and 3: The price bid of this item shall be per cubic yard, documented by hauling volume in the truck leaving the site and the receipts issued by disposal landfill facilities, and includes full compensation for all work including, all labor, equipment and material necessary to remove grit, sand, floatables and debris in the flow distribution boxes as needed and disposal to approved landfill. The City reserves the right to award any, all, or none of the money associated with this bid item.
- R. Item 16 – Repair Surface Defects or Cracks Less Than or Equal to 1”: Payment shall be made at the unit price per square foot of small surface defects, and cracks in the existing concrete utilizing an average repair thickness of 1”. Payment shall include all labor, material, testing and equipment costs for the preparation and application of the material. The City reserves the right to award any, all, or none of the money associated with this bid item.
- S. Item 17 – Repair Surface Defects Greater than 1”: Payment shall be made at the unit price per square foot of deep surface defects in existing concrete utilizing an average repair thickness of up to 2”. Payment shall include all labor, material, testing, and equipment costs for the preparation and application of the material(s). Surface defects in new concrete under this contract such as honeycomb, bug holes, and form tie holes, shall be repaired. The City reserves the right to award any, all, or none of the money associated with this bid item.
- T. Item 18 – Concrete Coating: Payment shall be made on a unit price per square foot basis. Payment shall include all labor, material and equipment costs for the preparation and application of the material(s) for interior coating of the boxes. The City reserves the right to award any, all, or none of the money associated with this bid item.
- U. Item 19 – Box 2 Gate Repair: Payment shall be made on a lump sum basis. Payment shall include all labor, material, and equipment costs for the completion of the repair, and to put the gate back in service. This item needs City approval in writing before construction is scheduled. The City reserves the right to award any, all, or none of the money associated with this bid item.

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- V. Item 20 – Box 3 Gate Repair: Payment shall be made on a lump sum basis. Payment shall include all labor, material, and equipment costs for the completion of the repair, and to put the gate back in service. This item needs City approval in writing before construction is scheduled. The City reserves the right to award any, all, or none of the money associated with this bid item.
- W. Item 21 – Furnish and Replace Gate 2 and Remove Old Gate: Payment shall be made lump sum for all work associated with the furnishing and replacement of Gate 2 and the electrical operator, as well as replacement and removal of the old gate, all required electrical installation to local control panel or junction box, and shall include all labor, material, and equipment costs to complete the work. This task needs approval by City in advance based on consequence and findings from repair of Gate 2. The City reserves the right to award any, all, or none of the money associated with this bid item.
- X. Item 22 – Furnish and Replace Gate 3 and Remove Old Gate: Payment shall be made lump sum for all work associated with the furnishing and installation of Gate 3 and the electrical operator, as well as replacement and removal of the old gate, all required electrical installation to local control panel or junction box, and shall include all labor, material, and equipment costs to complete the work. This task needs approval by City in advance based on consequence and findings from repair of Gate 3. The City reserves the right to award any, all, or none of the money associated with this bid item.

#### 1.09 PAYMENT ITEMS - GENERAL ITEMS/ALLOWANCES

- Y. Item 23 – Owner’s Contingency: Included in this allowance account is work associated with undefined conditions or conflicts developing from undefined conditions incidental to the work done under this contract. All work authorized for payment will be authorized in writing by the CITY in advance. The CITY reserves the right to award any, all, or none of the money associated with this allowance.
- Z. Item 24 – Consideration for Indemnification in Accordance with the Supplementary General Conditions: In recognition of the CONTRACTOR’S indemnification obligations, the CITY will pay to the CONTRACTOR the specific consideration of ten dollars (\$10.00). Payment of said specific consideration shall be made at the time of the payment of the first progress estimate and the CONTRACTOR shall acknowledge payment of this consideration by letter to the CITY after receipt of the progress payment.
- AA. Item 25 – Testing Allowance: This allowance account shall be used to pay for testing as required by the City. One test shall be performed by an independent testing laboratory and NACE inspection service selected by the CITY. All labor, equipment, and materials for work necessary and required for NACE certified personnel to inspect concrete rehabilitation and repair work, surface preparation, and coating application for the facilities shall be included. The item includes but is not limited to inspection of concrete repair work (including pre-repair inspection, inspection during repairs, and post-repair inspection), surface preparation, and coating application (including pre-coating inspection, inspection during coating application, and post-coating application inspection) and inspection of all other related work required to complete concrete rehabilitation. Should any test(s) fail, subsequent tests shall be performed by the same testing laboratory and paid for by the CONTRACTOR at no additional cost to the Contract. Payment will be based on actual fee and receipts, specifically excluding any labor, mark up, overhead, profit and administration costs from the Contractor.

#### SECTION 01025- 7 – BASIS OF PAYMENT

BB. Item 26 – Cost Allowance for Permits, Licenses and Fees: The allowance account indicated for this item is to pay for all permits, licenses and other fees required of the CONTRACTOR from the various agencies having jurisdiction for construction of the project. The allowance shown on the Bid Proposal is an estimate of fees required. Payment will be based on the actual permit, license or fee paid directly to agency, documented by paid receipts, specifically excluding any labor, mark-up, overhead and profit, administration and other costs involved in obtaining permits or licenses or paying fees. Fees specifically excluded from this allowance include but are not limited to re-inspection fees and expired permit fees. The CITY reserves the right to award any, all, or none of the money associated with this allowance.

#### 1.10 PAYMENT ITEMS - MISCELLANEOUS EXPLORATION WORK

CC. Items 27 through 32 – Miscellaneous Exploration Work: Payment under these items applies to additional work not defined in this contract. Scope of work to be determined by the City of Hollywood as needed to explore unforeseen conditions, and locations of facilities related to the project. This work must be authorized by the City in advance in writing. Payment for these items shall be made at the unit price listed. Payment of these items shall constitute full compensation for all labor, equipment, and all in accordance with the requirements of the contract documents.

#### 1.11 PAYMENT ITEMS – PACKAGE 4: OXYGENATION TRAIN INFLUENT PIPING AND FLOW METER REPLACEMENT

DD. Item 33 – Demolition of Pipeline Including Flow Meter, Couplings, From Flange to Flange: Payment shall be made lump sum for all work associated with the demolition of the Oxygenation Train No.4 36-inch piping from flange to flange, as depicted on sketches, including proper disposal, and all labor, material, and equipment costs to complete the work. The cost shall also include the removal of the Oxygenation Train No.5 flow meter. The City reserves the right to award any, all, or none of the money associated with this bid item.

EE. Item 34 – Demolition of Concrete Supports and Footings: Payment shall be made at a unit price for demolition of all of the concrete pipe supports on the Oxygenation Train No.4 36-inch piping. Proper disposal, permits, and all labor, material, and equipment costs to complete the work shall be included in the cost of demolition. The City reserves the right to award any, all, or none of the money associated with this bid item.

FF. Item 34a – Demolition of Concrete Encasement: Payment shall be made lump sum for all work associated with the demolition of the Oxygenation Train No.4 4'x4'x4' reinforced concrete encasement to be installed by another contractor as a temporary repair of the leaking joint, as depicted on sketches, including proper disposal, incidentals, and all labor, material, and equipment costs to complete the turn-key work. The City reserves the right to award any, all, or none of the money associated with this bid item.

GG. Item 35 – 36-inch Flanged Ductile Iron Pipe: Payment shall be made for installation, at a unit price per linear foot of Oxygenation Train No.4 36-inch domestic DI pipe, including field survey, pipe layout, shop drawing submittal, and proper lay length of components to ensure a complete installation with appurtenances and pipe supports for service, including all labor, material, and equipment costs to complete the turn-key work. The City reserves the right to award any, all, or none of the money associated with this bid item.

#### SECTION 01025- 8 – BASIS OF PAYMENT

- HH. Item 36 – 36-inch Ductile Iron Pipe 45-Degree Elbows: Payment shall be made for installation, at a unit price for all fittings required for the Oxygenation Train No.4 36-inch pipe, including all labor, material, and equipment costs to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- II. Item 37 – 36-inch Couplings Including Lugs and Tie Rods: Payment shall be made for installation at a unit price for the domestic dresser couplings, including lugs and tie rods, on the Oxygenation Train No.4 36-inch pipe, including all labor, material, and equipment costs to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- JJ. Item 38 – 36-inch Dismantling Coupling: Payment shall be made for installation, at a unit price for the domestic dismantling coupling, on the Oxygenation Train No.4 36-inch pipe, including all labor, material, and equipment costs to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- KK. Item 39 – 36-inch Magnetic Flow Meter (Electrical Installation Not Required): Payment shall be made at a unit price, to furnish and install (electrical installation not required) one 36-inch ABB Watermaster Electromagnetic Flow Meter, Remote Mount FEW325.900.H.1.S.4.C2.B.1.A.1.A.3.P.3.B.3.A.1.JK.M5.V3.CWM, on the Oxygenation Train No.4 36-inch pipe. Installation shall include all labor, material, and equipment to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- LL. Item 40 – 36-inch Magnetic Flow Meter (Electrical Installation Not Required) - City Furnished: Payment shall be made at a unit price, for installation (electrical installation not required) of one City furnished 36-inch ABB Watermaster Electromagnetic Flow Meter, Remote Mount FEW325.900.H.1.S.4.C2.B.1.A.1.A.3.P.3.B.3.A.1.JK.M5.V3.CWM on the Oxygenation Train No.5 36-inch pipe. Installation shall include all labor, material, and equipment to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- MM. Item 41 – 24-inch Magnetic Flow Meter (Electrical Installation Not Required): Payment shall be made at a unit price, for furnishing and installation (electrical installation not required) for two 24-inch ABB Watermaster Electromagnetic Flow Meters, Remote Mount FEW325.600.H.1.S.4.A1.B.1.A.1.A.3.P.3.B.3.A.1.M5.V3.CWM on the Oxygenation Train No.4 and No.5 RAS lines. Installation shall include all labor, material, and equipment to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- NN. Item 42 - Concrete Pipe Supports: Payment shall be made at a unit price for installation of new concrete pipe supports for the Oxygenation Train No.4 36-inch pipe, including ensuring adequate soil bearing capacity at each pipe support per geotechnical conditions/report, and including all labor, material, and equipment needed to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- OO. Item 43 – Coating of Complete Pipeline and Appurtenances: Payment shall be made lump sum for complete pipeline and appurtenance painting included in the project, including all labor, material, and equipment needed to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- PP. Item 44 – Hydrostatic Testing: Payment shall be made lump sum for hydrostatic testing of the newly

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installed 36-inch pipe, including all labor, material and equipment needed to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.

#### 1.12 PAYMENT ITEMS – PACKAGE 5: MISCELLANEOUS FLOW METER REPLACEMENT

- QQ. Item 45 – 18-inch Chrome Flow Meter – RAS 1 (Electrical Installation Not Required): Payment shall be made at a unit price, for furnishing and installation (electrical installation not required) for one 18-inch ABB Watermaster Electromagnetic Flow Meters Remote Mount FEW325.450.H.1.S.4.A1.B.1.A.1.A.3.P.3.B.3.A.1.M5.V3.CWM on the Oxygenation Train No.1 RAS line. Installation shall include all labor, material, and equipment to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- RR. Item 46 – 24-inch Magnetic Flow Meter – RAS 3A & 3B (Electrical Installation Not Required): Payment shall be made at a unit price, for furnishing and installation (electrical installation not required) for two 24-inch ABB Watermaster Electromagnetic Flow Meters, Remote Mount FEW325.600.H.1.S.4.A1.B.1.A.1.A.3.P.3.B.3.A.1.M5.V3.CWM on the RAS 3A and 3B lines. Installation shall include all labor, material, and equipment to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.
- SS. Item 47 – 24-inch Magnetic Flow Meter – IW 1 & 2 (Electrical Installation Not Required): Payment shall be made at a unit price, for furnishing and installation (electrical installation not required) for two 24-inch ABB Watermaster Electromagnetic Flow Meters, Remote Mount FEW325.600.H.1.S.4.A1.B.1.A.1.A.3.P.3.B.3.A.1.M5.V3.CWM on the Injection Wells No.1 and No.2. Installation shall include all labor, material, and equipment to complete the work. The City reserves the right to award any, all, or none of the money associated with this bid item.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION –

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## SECTION 01090

### APPLICABLE STANDARDS AND CODES

#### **Part 1 - GENERAL**

##### 1.01 THE REQUIREMENT

- A. Wherever references are made in these specifications to any published standards, codes, standard specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. References shall be to the latest versions currently in effect, unless otherwise specified by the City and/or Engineer. As a guide to the user of these specifications, the following acronyms or abbreviations which may appear in these specifications shall have the meanings indicated herein.
- B. The following is a partial list of typical abbreviations which may be used in the Specifications, and the organizations to which they refer. Abbreviated titles for other governing standards are used throughout these specifications and, although most of them are widely known, their complete titles are given below to avoid misunderstanding:
1. AAMA - Architectural Aluminum Manufacturer's Association
  2. AASHTO - American Association of the State Highway and
  3. ACI - American Concrete Institute
  4. ACI - American Concrete Institute
  5. ACIFS - American Cast Iron Flange Standards
  6. ACOE - Army Corps of Engineers
  7. ACPA - American Concrete Pipe Association
  8. AFBMA - Anti-Friction Bearing Manufacturer's Association
  9. AGMA - American Gear Manufacturer's Association
  10. AGA - American Gas Association
  11. AGMA - American Gear Manufacturers Association
  12. AHGDA - American Hot Dip Galvanizers Association
  13. AI - The Asphalt Institute
  14. AIA - American Institute of Architects
  15. AISC - American Institute of Steel Construction

16. AISI - American Iron and Steel Institute
17. AITC - American Institute of Timber Construction
18. AMCA - Air Moving and Conditioning Association
19. ANSI - American National Standards Institute, Inc.
20. APA - American Plywood Association
21. API - American Petroleum Institute
22. APHA - American Public Health Association
23. APWA - American Public Works Association
24. ASA - Acoustical Society of America
25. ASAE - American Society of Agriculture Engineers
26. ASCE - American Society of Civil Engineers
27. ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers
28. ASLE - American Society of Lubricating Engineers
29. ASME - American Society of Mechanical Engineers
30. ASMM - Architectural Sheet Metal Manual
31. ASSE - American Society of Sanitary Engineers
32. ASTM - American Society for Testing and Materials
33. AWI - Architectural Woodwork Institute
34. AWPA - American Wood Preservers Association
35. AWPI - American Wood Preservers Institute
36. AWS - American Welding Society
37. AWWA - American Water Works Association
38. BCEPGMD - Broward County Environmental Protection and Growth Management Department (formerly BCEPD)
39. BCHD - Broward County Health Department
40. BHMA - Builders Hardware Manufacturer's Association
41. CMA - Concrete Masonry Association
42. CRSI - Concrete Reinforcing Steel Institute
43. CSA - Canadian Standards Association
44. DHI - Door and Hardware Institute

45. DIPRA - Ductile Iron Pipe Research Association
46. EIA - Electronic Industries Association
47. ETL - Electrical Test Laboratories
48. FBC - Florida Building Code
49. FDEP - Florida Department of Environmental Protection
50. FDOT - Florida Department of Transportation
51. FS - Federal Specifications
52. ICEA - Insulated Cable Engineers Association
53. IEEE - Institute of Electrical and Electronics Engineers
54. IES - Illuminating Engineering Society
55. IPCEA - Insulated Power Cable Engineers Association
56. ISA - Instrument Systems and Automation
57. ISO - International Organization for Standardization
58. MBMA - Metal Building Manufacturers Association
59. MMA - Monorail Manufacturers Association
60. MTI - Marine Testing Institute
61. NAAMM - National Association of Architectural Metal Manufacturers
62. NACE - National Association of Corrosion Engineers
63. NBS - National Bureau of Standards
64. NCPI - National Clay Pipe Institute
65. NEC - National Electrical Code
66. NEMA - National Electrical Manufacturer's Association
67. NFPA - National Fire Protection Association
68. NLMA - National Lumber Manufacturers Association
69. NIOSH - National Institute of Occupational Safety and Health
70. NIST - National Institute of Standards and Testing
71. NRCA - National Roofing Contractors Association
72. NSF - National Science Foundation
73. OSHA - Occupational Safety and Health Administration
74. PCA - Portland Cement Association
75. SMACCCNA - Sheet Metal and Air Conditioning Contractors National Association

76. SAE - Society of Automotive Engineers Standards
77. SHBI - Steel Heating Boiler Institute
78. SMACCNA - Sheet Metal and Air Conditioning Contractors National Association
79. SSPC - Steel Structures Painting Council
80. SSPWC - Standard Specifications for Public Works Construction
81. SFWMD - South Florida Water Management District
82. UL - Underwriters Laboratories, Inc.

C. CONTRACTOR shall, when required, furnish evidence satisfactory to the ENGINEER that materials and methods are in accordance with such standards where so specified.

D. In the event any questions arise as to the application of these standards or codes, copies shall be supplied on site by the CONTRACTOR.

**Part 2 - PRODUCTS (Not Used)**

**Part 3 - EXECUTION (Not Used)**

- END OF SECTION -

## SECTION 01300

### SUBMITTALS

#### Part 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. This section specifies the means of all submittals. All submittals, whether their final destination is to the City, Engineer, or other representatives of the City, shall be directed through the Engineer. A summary of the key types of submittals and the number of copies required is as follows:

<u>Copies to Engineer</u>	<u>Type of Submittal</u>
4	Construction schedule
4	Schedule of payment items
1	Audio visual preconstruction record
6	Progress estimates
4	Shop drawings
4	Certificates of compliance
2	Warranties
1*	Product samples
1	Record drawings
5	Final Record Drawings

\*Unless otherwise required in the specific Section where requested.

##### 1.02 SUBMITTAL PROCEDURES

- A. Transmit each submittal with a form acceptable to the Engineer, clearly identifying the project Contractor, the enclosed material and other pertinent information specified in other parts of this section. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- B. Revise and resubmit submittals as required, identify all changes made since previous submittals. Resubmittals shall be noted as such.

- C. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

#### CONSTRUCTION PROGRESS SCHEDULE

- A. The Contractor shall have the capability of preparing and utilizing the specified construction progress scheduling techniques. A statement of capability shall be submitted in writing to the Engineer with the return of the executed Agreement to the City and will verify that either the Contractor's organization has in-house capability qualified to use the technique or that the Contractor employs a consultant who is so qualified. Capability shall be verified by description of the construction projects to which the Contractor or its consultant has successfully applied the scheduling technique and which were controlled throughout the duration of the project by means of systematic use and updating of the construction progress schedule, the network analysis and associated reports. The submittal shall include the name of the individual on the Contractor's staff who will be responsible for the construction progress schedule, and associated reports and for providing the required updating information of same. The Contractor shall submit its proposed progress (baseline) schedule to the Engineer for review and comment within thirty days of the Notice to Award. The Engineer shall have the authority to determine acceptability/correctness of the schedule logic and activity interrelationships. The use of extraneous, nonworking activities and activities which add restraints to the construction schedule shall not be accepted. Baseline schedules that do not meet their contract completion dates shall not be accepted.
- B. The Contractor's progress schedule (baseline and monthly updates) shall be computer generated and resource loaded. Each construction progress schedule, and associated report shall include the following tabulations: a list of activities in numerical order, a list of activity precedence, schedules sequenced by Early Start Date, Total Float, and Late Start Date. Each schedule and report shall include the following minimum items.
  - 1. Activity Numbers
  - 2. Estimated Duration
  - 3. Activity Description
  - 4. Early Start Date (Calendar Dated)
  - 5. Early Finish Date (Calendar Dated)
  - 6. Latest Allowable Start Date (Calendar Dated)
  - 7. Latest Allowable Finish Date (Calendar Dated)
  - 8. Status (whether critical)
  - 9. Estimated Cost of The Activity
  - 10. Total Float and Free Float

- C. In addition, each construction progress schedule, network analysis and report shall be prefaced with the following summary data:
1. Contract Name and Number
  2. Contractor's Name
  3. Contract Duration and Float
  4. Contract Schedule
  5. The Effective or Starting Date of The Schedule (the date indicated in the Notice-to-Proceed)
- D. The work day to calendar date correlation shall be based on an 8-hour day and 40-hour week with adequate allowance for holidays and all other special requirements of the Work. A total of six (6) days for adverse weather shall also be allowed for in the progress schedule.
- E. If the Contractor desires to make changes in its method of operating which affect the construction progress schedule and related items, the Contractor shall notify the Engineer in writing stating what changes are proposed and the reason for the change. If the Engineer accepts these changes, in writing, the Contractor shall revise and submit, without additional cost to the City, all of the affected portions of the construction progress schedule, and associated reports. The construction progress schedule and related items shall be adjusted by the Contractor only after prior acceptance, in writing by the Engineer. Adjustments may consist of changing portions of the activity sequence, activity durations, division of activities, or other adjustments as may be required. The addition of extraneous, nonworking activities and activities which add restraints to the construction progress schedule shall not be accepted.
- F. Except where earlier completions are specified, schedule dates which show completion of all Work prior to the contract completion date shall, in no event, be the basis for claim for delay against the City by the Contractor.
- G. Construction progress schedules and related items which contain activities showing negative float or which extend beyond the contract completion date will not be accepted by the Engineer.
- H. Whenever it becomes apparent from the current construction progress schedule and associated reports that delays to the critical path have resulted and the contract completion date will not be met, or when so directed by the Engineer, the Contractor shall take some or all of the following actions at no additional cost to the City. They shall submit to the Engineer for approval, a written statement of the steps they intend to take to remove or arrest the delay to the critical path in the current construction progress schedule, including a computer generated schedule revision to reflect proposed actions.

1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.
  2. Increase the number of working hours per shift, shifts per day, working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work.
  3. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with the revised schedule.
- I. If when so requested by the Engineer, the Contractor should fail to submit a written statement of the steps they intend to take or should fail to take such steps as reviewed and accepted in writing by the Engineer, the Engineer may direct the Contractor to increase the level of effort in manpower (trades), equipment and work schedule (overtime, weekend and holiday work, etc.) to be employed by the Contractor in order to remove or arrest the delay to the critical path in the current construction progress schedule, and the Contractor shall promptly provide such level of effort at no additional cost to the City.
  - J. If the completion of any activity, whether or not critical, falls more than 100 percent behind its previously scheduled and accepted duration, the Contractor shall submit for approval a schedule adjustment showing each such activity divided into two activities reflecting completed versus uncompleted work.
  - K. Shop drawings which are not approved on the first submittal or within the time scheduled, and equipment which does not pass the specified tests and certifications shall be immediately rescheduled.
  - L. The contract time will be adjusted only in accordance with the General Requirements and other portions of the Contract Documents as may be applicable. If the Engineer finds that the Contractor is entitled to any extension of the contract completion date, the Engineer's determination as to the total number of days extension shall be based upon the current construction progress schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule and related items. Actual delays in activities which, according to the construction progress schedule, do not affect any contract completion date will not be the basis for a change therein.
  - M. From time to time it may be necessary for the contract schedule of completion time to be adjusted by the City in accordance with the General Requirements and other portions of the Contract Documents as may be applicable. Under such conditions, the Engineer will direct the Contractor to reschedule the Work or contract completion time to reflect the changed conditions, and the Contractor shall revise the construction progress schedule and related items accordingly, at no additional cost to the City.
  - N. Available float time may be used by the City through the City's Engineer.
  - O. The City controls the float time and, therefore, without obligation to extend either the overall completion date or any intermediate completion dates, the City may initiate

changes that absorb float time only. City initiated changes that affect the critical path on the network diagram shall be the sole grounds for extending the completion dates. Contractor initiated changes that encroach on the float time may be accomplished only with the City's concurrence. Such changes, however, shall give way to City initiated changes competing for the same float time.

- P. To the extent that the construction project schedule, or associated report or any revision thereof shows anything not jointly agreed upon or fails to show anything jointly agreed upon, it shall not be deemed to have been accepted by the Engineer. Failure to include on a schedule any element of Work required for the performance of this Contract shall not excuse the Contractor from completing all Work required within any applicable completion date, notwithstanding the review of the schedule by the Engineer.
- Q. Review and acceptance of the construction progress schedule, and related reports, by the Engineer is advisory only and shall not relieve the Contractor of the responsibility for accomplishing the Work within the contract completion date. Omissions and errors in the construction progress schedule, and related reports shall not excuse performance less than that required by the Contract and in no way make the Engineer an insurer of the Contractor's success or liable for time or cost overruns flowing from any shortcomings in the construction progress schedule, and related reports.
- R. The Contractor shall present and discuss the proposed schedule at the preconstruction conference.
- S. The construction progress schedule shall be based upon the precedence diagramming method of scheduling and shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the Work and identifying all construction activities included but not limited to yard piping, all structures and treatment units and all related Work specified herein to be performed under the Contract. The schedule shall be time scaled, identifying the first day of each week, with the estimated date of starting and completion of each stage of the Work in order to complete the project within the contract time. The project critical path shall be clearly identified in color or by other means acceptable to the Engineer.
- T. The progress schedule shall be plotted on 22-inch by 34-inch and 11-inch by 17-inch paper and shall be revised and updated monthly, depicting progress through the last day of the current month and scheduled progress through completion. Ten (one 22-inch by 34-inch and nine 11-inch by 17-inch), schedules, required schedule "sorts" (tabulations) and an electronic copy of the baseline schedule shall be submitted for review and acceptance. Five (one 22-inch by 34-inch and four 11-inch x 17-inch) up-to-date copies of the schedule and five copies of tabulations and an electronic copy shall be submitted along with the application for monthly progress payments for the same period.

- U. The construction progress schedule shall be developed and maintained using Primavera Sure Trak as manufactured by Primavera Systems, Inc., or equal.

#### 1.04 SCHEDULE OF PAYMENT VALUES

- A. The Contractor shall submit a Schedule of Payment Values, in accordance with Section 01025, for all items in the proposal that are to be paid for on a lump sum basis. The schedule shall contain the labor and material values of the component parts of Work for the purpose of making progress payments during the construction period. The Schedule of Payment Values shall directly correlate on an item by item basis (unless otherwise accepted by the Engineer) to each individual activity detailed in the construction progress schedule.
- B. The schedule shall be given in sufficient detail for the proper identification of Work accomplished. Each item shall include its proportional share of all costs including the Contractor's overhead, contingencies and profit. The sum of all scheduled items shall equal the total value of the Contract.
- C. If the Contractor anticipates the need for payment for materials stored on the project site, it shall also submit a separate list covering the cost of materials, delivered and unloaded with taxes paid. This list shall also include the installed value of the item with coded reference to the Work items in the Schedule of Payment Items.
- D. The Contractor shall expand or modify the above schedule and materials listing as required by the Engineer's initial or subsequent reviews.
- E. The Contractor shall update the Schedule of Payment Values monthly for reviewing by the Engineer. The payment applications shall be reviewed by the Engineer in accordance with the updated Schedule of Payment Values.

## 1.05 SHOP DRAWINGS, PROJECT DATA AND SAMPLES

- A. General: A Shop Drawing Submittal Schedule shall be provided by the Contractor within thirty (30) days of the Notice to Proceed.
- B. The Contractor shall furnish for review four (4) copies of shop drawings, project data, samples and other submittal items required by the Contract Documents. Two (2) copies shall be returned to the Contractor stamped "Furnish as Submitted" or "Furnish as Corrected". Where major corrections are indicated, two (2) copies will be returned stamped "Revise and Resubmit" and a new submittal is required (4 copies).
- C. The review of the Contractor's submissions shall in no way relieve the Contractor of any of his responsibilities under the Contract. An acceptance of a submission shall be interpreted to mean that there are no specific objections to the submitted material, subject to conformance with the Contract Drawings and Specifications.
- D. All submissions shall be dated and properly referenced to the specifications section and Contract Drawing number. The submittal number shall match the following submittal numbering system (or an equivalent system as approved by the Engineer):

### Submittal Numbering System

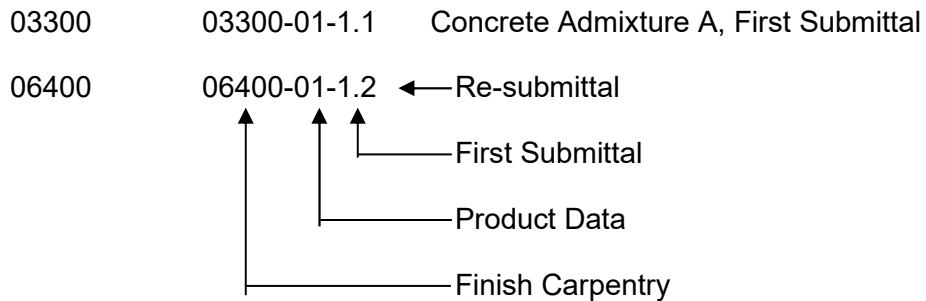
- 1. Package ID: The package number will reflect the CSI (specification) section number as it appears in the specifications.
- 2. Subgroup ID: The submittal number will include the CSI number followed by two additional codes. The first will define the type of submittal as follows:

- 01 - Product Data, Specifications, Cut Sheets, Manufacturers certification or approval letters.
- 02 - Shop Drawings
- 03 - Product Samples and Mock-Ups
- 04 - Special requirements as required in the contract documents
- 05 - As-Built Drawings
- 06 - Warranties
- 07 - O&M
- 08 - Spare Parts

The second code will identify individual submittals within that submittal type. The number to the left of the decimal represents the submittal number and the number to the right of the decimal represents the revision number.

Example:

<u>Package</u>	<u>Submittal</u>	<u>Description</u>
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By the following this code system, all submittals may be entered into the Document Tracking System prior to receipt of submittals. When a particular submittal is received, locate the entry in the Document Tracking project file, add the appropriate information and process. The Document Tracking System will provide the next sequence number.

- E. Shop Drawings and Project Data within practical limits shall be submitted as a single complete package for any operating system and shall include all items of equipment and mechanical units involved in the functioning of such system. Where applicable, the submission shall include elementary wiring diagrams showing circuit functioning and necessary interconnection wiring diagrams for construction.
- F. All submissions shall bear the Contractor'S stamp certifying that they have been checked for conformance and accuracy. Submissions without the Contractor'S stamp of approval will not be reviewed by the Engineer and will be returned to the Contractor.
- G. For any submission containing any departure from the Contract Documents and the Contractor shall include proper explanation in his letter of submittal.
- H. Work on fabricated or special items shall not be commenced until the required submission information has been reviewed and accepted.
- I. Standard items shall not be assembled or shipped until the required submission information has been reviewed and accepted.
- J. Prior review actions shall not relieve the Contractor of the responsibility for correcting errors, deviations, and/or omissions discovered at a later date.
- K. Shop Drawings: Shop Drawings include, but are not limited to, layout drawings, installation drawings, construction drawings, certified and interconnecting wiring diagrams, etc. The Contractor shall be responsible for security of all the information, details, dimension, drawings, etc. necessary to prepare submission drawings required and necessary under this Contract and to fulfill all other requirements of his Contract. The Contractor shall secure such information, details, drawings, etc. from all possible sources including the Contract Drawings, drawings prepared by subcontractors, Engineer, manufacturers, Contractors, etc.
- L. Submission drawings shall accurately and clearly present the following:

1. All working and installation dimensions.
  2. Arrangement and sectional views.
  3. Units of equipment in the proposed position for installation, details of required attachments and connections and dimensioned locations between units and in relation to the structures.
  4. Necessary details and information for making connections between the various trades including but not limited to, power supplies and interconnection wiring between units, accessories, appurtenances, etc.
- M. Product Data: Where manufacturer's publications in the form of catalogs, brochures, illustrations, or other data sheets are submitted in lieu of prepared shop drawings, such submission shall specifically indicate the particular item offered. Identification of such items and relative pertinent information shall be made with indelible ink. Submissions showing only general information will not be accepted.
- N. Product data shall include materials of construction, dimensions, performance characteristics, capacities, wiring diagrams, piping and controls, etc.
- O. Samples: Contractor shall furnish for review all samples as required by the Contract Documents or requested by the Engineer.
- P. Samples shall be of sufficient size or quantity to clearly illustrate the quality, type, range of color, finish or texture and shall be properly labeled to show the nature of the work where the material represented by the sample will be used.
- Q. Samples shall be checked by the Contractor for conformance to the Contract Documents before being submitted to the Engineer and shall bear the Contractor's stamp certifying that they have been so checked. Transportation charges on samples submitted to the Engineer shall be prepaid by the Contractor.
- R. Engineer's review will be for compliance with the Contract Documents, and his comments will be transmitted to the Contractor with reasonable promptness.
- S. Accepted samples will establish the standards by which the completed work will be judged.

#### 1.06 OPERATION AND MAINTENANCE INSTRUCTIONS (MANUALS)

- A. Individual Instructions: The Contractor, through manufacturer's representatives or other qualified individuals, shall provide instruction of designated employees of the OWNER in the operation and care of all equipment furnished.
- B. Written Instructions: The Contractor shall furnish and deliver to the Engineer, prior to the fifty percent completion point of construction, and no later than thirty (30) days prior to operator training, ten (10) complete sets of instructions, technical bulletins, and any other printed matter such as diagrams, prints or drawings, containing full information required for the proper operation, maintenance, and repair of the equipment. As a minimum, the following shall be included in this submittal:

1. Operating Instructions
  2. Troubleshooting Information
  3. Maintenance Schedule(s)
  4. Lubrication Schedule
  5. Location of Service Centers
  6. Parts Diagram and List
  7. Spare Parts List (spare parts furnished shall be defined)
  8. Special Tools List
  9. Installation Instructions
  10. Assembly & Erection Drawings
  11. Dimensional Drawings
  12. Wiring Diagram(s)
  13. Storage Instructions
- C. These requirements are a prerequisite to the operation and acceptance of equipment. Each set of instructions shall be bound together in appropriate three-ring binders. A detailed Table of Contents shall be provided for each set. Written operation and maintenance instructions shall be required for all equipment items supplied for this project. The amount of detail shall be commensurate with the complexity of the equipment item. Submittal shall be made for all mechanical and electrical equipment included but not limited to pumps, valves, gates, etc.
- D. Information not applicable to the specific piece of equipment installed on this project shall be struck from the submission. Information provided shall include a source of replacement parts and names of service representatives, including address and telephone number.
- E. Extensive pictorial cuts of equipment are required for operator reference in servicing.
- F. When written instructions include shop drawings and other information previously reviewed by the Engineer, only those editions thereof which were accepted by the Engineer, and which accurately depict the equipment installed, shall be incorporated in the instructions.

#### 1.07 RECORD DRAWINGS

- A. The Contractor shall keep and maintain, at the job site, one record set of Drawings. On these, it shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Drawings. As-Built furnished grade information shall be included on the record drawings. Said record drawings

shall be supplemented by detailed sketches as necessary or directed to indicate, fully, the Work as actually constructed. These master record drawings of the Contractor'S representation of as-build conditions, including all revisions made necessary by addenda and change orders shall be maintained up-to-date during the progress of Work.

- B. The record drawings shall be received on the 20th working day of every third month after the month in which the final notice to proceed is given as well as on completion of Work. Failure to maintain the record drawings up-to-date shall be grounds of withholding monthly progress payments until such time as the record drawings are brought up-to-date.
- C. In the case of those drawings which depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record drawing shall be updated by indicating those portions which are superseded by change order drawings or final shop drawings, and by including appropriate reference information describing the change orders by number and the shop drawings by manufacturer, drawing, and revision numbers.
- D. Record drawings shall be accessible to the Engineer at all times during the construction period.
- E. Upon substantial completion of the Work and prior to final acceptance, the Contractor shall finalize and deliver a complete set of final record drawings to the Engineer for transmittal to the City, conforming to the construction records of the Contractor. This set of drawings shall consist of corrected drawings showing the reported location of the Work. The information submitted by the Contractor and incorporated in the Final Record Drawings will be assumed to be correct, and the Engineer will not be responsible for the accuracy of such information, and for any errors or omissions which may appear on the Final Record Drawings as a result.
- F. The information submitted by the Contractor in the Final Record Drawings shall be certified by a land surveyor registered in the State of Florida. For clarity, Final Record Drawings needs to be redrawn and clearly labeled as "Record Drawings". Notations indicated in the drawings shall be legible and printed in black ink. No handwritten notes are allowed.
- G. Final payment will not be acted upon until the Engineer certifies the record drawings as required by the agencies having jurisdiction. Said up-to-date record drawings shall be in the form of a set of prints with carefully plotted information.
- H. All final record drawings shall be certified by the Engineer of Record. Such certification shall evidence that Engineer has reviewed the information, finds it in substantial accordance with the design; and where deviations from the design exist, that said deviations are not to the detriment of the system. Engineer's certification shall read as follows:

“I HEREBY NOTIFY THE OWNER OF THE COMPLETION OF CONSTRUCTION OF ALL THE COMPONENTS OF THE WATER, SEWER AND STORMWATER FACILITIES FOR THE ABOVE REFERENCED PROJECT AND CERTIFY THAT THEY HAVE BEEN CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE PLANS AND SPECIFICATIONS PERMITTED BY THE AGENCIES HAVING JURISDICTION”

- I. The Contractor shall submit all electronic media files of the paving, grading, water, sewer and drainage plans, reports, other supporting information, and the final version of as-built drawings shall be submitted to the Engineer’s office. The information provided shall contain an index file with a brief description of the electronic filing contents, and shall be labeled with project name, company name, and point of contact. Documents and spreadsheets shall be submitted in either MS Word, Word Perfect, Excel, Lotus, or other format approved by the Engineer. Drawings shall be submitted in AutoCAD, MicroStation, or other format approved by the Engineer.
- J. Final Record Drawings submitted to the City as part of the project acceptance shall contain at least the following information:
  1. Drawings shall be legibly marked to record actual construction.
  2. Drawings shall show actual location of all underground and above ground water and wastewater, stormwater piping and related appurtenances. All changes to piping location including horizontal and vertical locations of utilities and appurtenances shall be clearly shown and referenced to permanent surface improvements. Drawings shall also show actual installed pipe material, class, etc. Profile sheets shall be updated to include all field measurements and elevations taken during construction.
  3. Drawings shall clearly show all field changes of dimension and detail including changes made by field order or by change order.
  4. Drawings shall clearly show all details not on original contract drawings but constructed in the field. All equipment and piping relocation shall be clearly shown.
  5. Location of all manholes, hydrants, tees, reducers, crosses, valves, and valve boxes shall be shown. All tees, reducers, crosses, and valves shall be referenced from at least two (2) and preferably three (3) permanent points such as building corners and roadway intersections.
  6. Dimensions between all manholes shall be field verified and shown. The rim, inverts and grade elevations of all manholes shall be shown.

## 1.08 WARRANTIES

- A. Original warranties, called for in the Contract Documents, shall be submitted to the City through the Engineer. When warranties are required, they shall be submitted prior to request for payment.
- B. When advance copies of warranties are requested, they shall be submitted with, and considered as shop drawings.
- C. The Contractor shall warrant to the City that all material and labor used in the construction are covered by his warrantee for a minimum of a one year period upon approval and acceptance by the City. The Contractor shall replace or repair defects at no cost to the City during the warrantee period. No visible or potential leakage shall be allowed during the warrantee period.

## 1.09 CERTIFICATES

- A. Copies of certificates of compliance and test reports shall be submitted for requested items to the Engineer prior to request for payment.

## 1.10 NOT USED

## 1.11 AUDIO-VISUAL PRECONSTRUCTION RECORD

- A. General: Prior to commencing work, the Contractor shall have a continuous color audio-video DVD recording taken of the entire Project, including existing areas that will be disturbed by the Contractor's operations, to serve as a record of preconstruction conditions. No construction shall begin prior to review and acceptance of the tapes covering the respective, affected construction area by the Engineer. The Engineer shall have the authority to reject all or any portion of the video DVD not conforming to the specifications and order that it be redone at no additional charge. The Contractor shall reschedule unacceptable coverage within five days after being notified. The Engineer shall designate those areas, if any, to be omitted from or added to the audio-video coverage. Audio-video recordings shall not be performed more than ninety days prior to construction in any area. All DVDs and written records shall become property of the City.
- B. Services: The Contractor shall engage the services of a professional electrographer. The color audio-video tapes shall be prepared by a responsible commercial firm known to be skilled and regularly engaged in the business of preconstruction color audio-video tape documentation. The electrographer shall furnish to the Engineer a list of all equipment to be used for the audio-video taping, i.e., manufacturer's name, model number, specifications and other pertinent information. Additional information to be furnished by the electrographer is the names and addresses of two references that the electrographer has performed color audio-video taping for on projects of a similar nature within the last twelve months.
- C. Audio-Video DVDs: Audio-video DVDs shall be new. The DVDs shall be compatible for with a standard player-receiver.
- D. Equipment: All equipment, accessories, materials and labor to perform this service shall be furnished by the Contractor.
1. The total audio-video system shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume and clarity, and be free from distortion and interruptions.
  2. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than twelve feet. In some instances, audio-video tape coverage may be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance acceptable to the Engineer.
  3. The color video camera used in the recording system shall have a horizontal resolution of 300 lines at center, a luminance signal to noise ratio of 45 dB and a minimum illumination requirement of twenty-five foot-candles.

- E. Recorded Information - Audio: Each tape shall begin with the current date, project name and municipality and be followed by the general location; i.e., process structure, or area, viewing side and direction of progress. The audio track shall consist of an original live recording. The recording shall contain the narrative commentary of the electrographer, recorded simultaneously with his fixed elevation video record of the zone of influence of construction.
- F. Recorded Information - Video: All video recordings must, by electronic means, display continuously and simultaneously, generated with the actual taping, transparent digital information to include the date and time of recording. The date information shall contain the month, day and year. The time information shall contain the hours, minutes, and seconds. Additional information shall be displayed periodically. Such information shall include, but not be limited to, project name, bid package number, process structure or area, and the viewing side. This transparent information shall appear on the extreme upper left hand third of the screen.
- G. Conditions for Taping: All taping shall be done during times of good visibility. No taping shall be done during precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recordings and to produce bright, sharp video recordings of those subjects.
- H. Tape Coverage: Tape coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing road, driveways, sidewalks, curbs, pavement, landscaping, fences, signs and interior and exterior of existing structures affected by the work and the exteriors of structures adjacent to the work, and any other on-site area that will be occupied or impacted by the Contractor or any of his subcontractors or suppliers within the area covered.

Part 2 - PRODUCTS (Not Used)

Part 3 - EXECUTION (Not Used)

- END OF SECTION -

## SECTION 01400

### TESTING AND INSPECTION

#### PART 1 -- GENERAL

- A. All testing and inspection will be in accordance with Article 12 of the General Conditions (Attachment B).
- B. The work or actions of the testing laboratory shall in no way relieve the CONTRACTOR of his obligations under the Contract. The laboratory testing work will include such inspections and testing required by the Contract Document, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of the Contract Documents, nor perform or approve any of the CONTRACTOR'S work.
- C. The CONTRACTOR shall allow the ENGINEER ample time and opportunity for testing materials and equipment to be used in the work. He shall advise the ENGINEER promptly upon placing orders for materials and equipment so that arrangements may be made, if desired, for inspection before shipment from the place of manufacture. The CONTRACTOR shall at all times furnish the ENGINEER and his representatives, facilities including labor, and allow proper time for inspecting and testing materials, equipment, and workmanship. The CONTRACTOR must anticipate that possible delays may be caused him in the execution of his work due to the necessity of materials and equipment being inspected and accepted for use. The CONTRACTOR shall furnish, at his own expense, all samples of materials required by the ENGINEER for testing, and shall make his own arrangement for providing water, electric power, or fuel for the various inspections and tests of structures and equipment. As a minimum, 24-hours advance written notice shall be provided by the CONTRACTOR for rebar, structural and similar inspections by the ENGINEER. The amount of time required for advance written notice by the CONTRACTOR to the ENGINEER for other inspections depends upon other factors and shall be solely at the ENGINEER's discretion.
- D. The CONTRACTOR shall furnish the services of representatives of the manufacturers of certain equipment, as prescribed in other sections of the Specifications. The CONTRACTOR shall also place his orders for such equipment on the basis that, after the equipment has been tested prior to final acceptance of the work, the manufacturer will furnish to the CITY the certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required of equipment shall be paid for by the CONTRACTOR, unless specified otherwise in the section which covers a particular piece of equipment.
- E. The CITY will bear the cost of all additional tests, inspections, or investigations undertaken by the order of the ENGINEER for the purpose of determining conformance with the Contract Documents if such test, inspection, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the ENGINEER as a result of such test, inspections, or investigations, the CONTRACTOR shall bear the full cost thereof or shall reimburse the CITY for said cost. The cost of any additional tests and investigations, which are ordered by the ENGINEER to ascertain subsequent conformance with the Contract Documents, shall be borne by the CONTRACTOR.

#### PART 2 -- PRODUCTS (Not Used)

#### PART 3 -- EXECUTION (Not Used)

*IFB – 087-23-JJ*

*Project No.9626*

-END OF SECTION -

## SECTION 01410

### CONTRACTOR'S HEALTH AND SAFETY PLAN

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

###### A. Scope:

1. This Section describes CONTRACTOR's responsibilities for a written site-specific health and safety plan (SSHP). CONTRACTOR shall conduct all construction activities in a safe manner so as not to result in:
  - a. injuries to employees, Subcontractors or other persons with an interest at or near the Site;
  - b. employee exposures to health hazards above the occupational limits established by the Occupational Health and Safety Administration (OSHA), the American Conference of Governmental Industrial Hygienists (ACGIH), or the Nuclear Regulatory Commission (NRC);
  - c. exposure of area residents to air contaminants above the levels established for general public exposure by the Environmental Protection Agency (EPA), NRC, or the State in which the Project is located;
  - d. significant increases in the levels of contaminants in soil, water, or sediment near the Site; or
  - e. violations of OSHA, or other Laws or Regulations.

- B. Any disregard of the provisions of the SSHP may, without limitation, be deemed just and sufficient reason for termination of CONTRACTOR's services for cause.

##### 1.2 QUALITY ASSURANCE

###### A. Qualifications:

1. Engage an industrial hygienist certified by the American Board of Industrial Hygiene or a safety professional certified by the Board of Certified Safety Professionals to prepare or supervise the preparation of the SSHP.
2. Submit qualifications along with SSHP.

- B. Regulatory Requirements: CONTRACTOR's health and safety practices shall follow the standards and guidelines established in the following:

1. 29 CFR 1904, OSHA, Record Keeping.
2. 29 CFR 1910, OSHA, General Industry Standards.
3. 29 CFR 1926, OSHA, Construction Industry Standards.
4. 29 CFR 1926.65, OSHA, Hazardous Waste Operations and Emergency Response.
5. 49 CFR 171.8, DOT, Hazardous Materials in Transport.
6. 40 CFR Parts 261.3, 264 and 265, EPA, Resource Conservation and Recovery Act.
7. 29 CFR 1910.146, OSHA, Permit-Required Confined Spaces.
8. 29 CFR 1926.1101, OSHA, Asbestos

##### 1.3 SUBMITTALS

###### A. Submit to ENGINEER the following:

1. CONTRACTOR's SSHP.

2. Qualifications of industrial hygienist or safety professional.
3. Health and safety reports.
4. Accident reports.

## PART 2 - GENERAL

### 2.1 GENERAL PROVISIONS

- A. Submit SSHP to ENGINEER one week prior to the Preconstruction Conference, or 30 days prior to planned mobilization at the Site, whichever is sooner.
- B. The SSHP shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of the SSHP.
- C. ENGINEER will review and either accept or return for revision CONTRACTOR's SSHP in accordance with the Schedule of Submittals acceptable to ENGINEER. ENGINEER's review and acceptance will be only to determine if the topics covered by the SSHP conform to the Contract Documents.
- D. ENGINEER's review and acceptance will not extend to means, methods, techniques, procedures of construction, or to whether the representations made in the SSHP comply with regulatory standards or standards of good practice.
- E. At the time of submittal, CONTRACTOR shall give ENGINEER specific written notice of variations, if any, that the SSHP may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the submittal; and, in addition, by a specific notation made on each submittal to ENGINEER for review and acceptance of each such variation.
- F. No Work shall be performed on the Site until the written SSHP has been accepted by the ENGINEER.
- G. Notwithstanding any other provision of the Contract Documents, extensions to the Contract Times will not be granted if caused by undue delay by CONTRACTOR in developing or revising the SSHP.

### 2.2 WRITTEN HEALTH AND SAFETY PROGRAM

- A.. The SSHP, which shall be kept on the Site, shall address the safety and health hazards of each phase of operations on the Site and include the requirements and procedures for employee protection. The SSHP as a minimum, shall address and include the following:
  1. The organizational structure of CONTRACTOR's organization.
  2. A comprehensive work plan.
  3. A safety and health risk or hazard analysis for each task and operation found in the work plan.
  4. Employee training assignments including copies of 40-hour, 24-hour Supervised Field Activities, 8-hour Supervisors, and 8-hour Refresher Training Certificates for all CONTRACTOR's employees assigned to the Project.
  5. Personal protective equipment to be used by employees for each of the tasks and operations being conducted. Respirator fit test certificates for all CONTRACTOR employees assigned to the Project.

6. Medical Surveillance Requirements: Medical clearance certificates for all CONTRACTOR's employees assigned to the Project.
7. Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.
8. Site control measures for purposes, including but not limited to:
  - a. preventing trespassing;
  - b. preventing unqualified or unprotected workers from entering restricted areas;
  - c. preventing tracking of contaminants out of the Site;
  - d. maintaining log of employees on and visitors to the Site;
  - e. delineating hot, cold and support zones;
  - f. locating personnel and equipment decontamination zones; and
  - g. communicating routes of escape and gathering points.
9. Decontamination procedures.
10. An emergency response plan for safe and effective responses to emergencies, including the necessary PPE and other equipment.
11. Confined space entry procedures (if applicable).
12. A spill containment program.

C. Organizational Structure:

1. The organizational structure part of the SSHP shall refer to or incorporate information on the specific chain of command and specify the overall responsibilities of supervisors and employees, and shall include, at a minimum, the following elements:
  - a. designation of a general supervisor who has the responsibility and authority to direct all hazardous waste operations.
  - b. a Site safety and health supervisor who has the responsibility and authority to implement and modify the SSHP and verify compliance.
  - c. all other personnel needed for hazardous waste Site operations and emergency response and their general functions and responsibilities.
  - d. The lines of authority, responsibility, and communication.
2. The organizational structure shall be reviewed and updated as necessary to reflect the current status of Site operations.

D. Work Plan:

1. The comprehensive work plan part of the SSHP shall refer to or incorporate information on the following:
  - a. The tasks and objectives of the Site operations and the logistics and resources required to achieve those tasks and objectives.
  - b. The anticipated activities as well as the CONTRACTOR's normal operating procedures.
  - c. The personnel and equipment requirements for implementing the work plan.

- E. The SSHP shall include procedures that will be used to ensure safe waste handling during the excavating, handling, loading, and transporting activities.

## 2.3 ACCIDENT REPORTING AND INVESTIGATION

- A. Document all accidents resulting in bodily injury using OSHA 301 form.
- B. Submit copies of completed OSHA 301 forms to the ENGINEER weekly.

- C. Based upon the results of an accident investigation, make modifications to the SSHP by changing tasks or procedures to prevent a reoccurrence.
- D. Post a copy of CONTRACTOR's OSHA 300A report in a conspicuous place onsite.

#### 2.4 DAILY HEALTH AND SAFETY FIELD REPORTS

- A. Submit to ENGINEER daily health and safety field reports including, but not limited to, weather conditions, delays encountered in construction, and acknowledgment of deficiencies noted along with corrective actions taken on current and previous deficiencies. In addition, the daily health and safety air monitoring results, documentation of instrument calibration, new hazards encountered, and PPE utilized shall be included.
- B. The daily health and safety field reports shall include a description of problems, real or anticipated, encountered during the course of Work that should be brought to the attention of the ENGINEER and notification of deviations from planned Work shown in the previously submitted daily health and safety field report(s).

#### PART 3 - EXECUTION (Not Used)

- END OF SECTION -

## SECTION 01510

### TEMPORARY UTILITY SERVICES AND STAGING AREA

#### PART 1 -- GENERAL

##### 1.01 GENERAL

- A. The CONTRACTOR shall provide for temporary utilities and services for his own operations. These shall include electrical power, water, ventilation, sanitary facilities. The CONTRACTOR shall furnish, install and maintain all temporary utilities during the contract period including removal upon completion of the work. Such facilities shall comply with regulations and requirements of the National Electrical Code, OSHA, Florida Power and Light, and applicable Federal, State and local codes, etc. In addition, the CONTRACTOR shall provide the following:

##### 1.02 TEMPORARY POWER (NOT USED)

##### 1.03 TEMPORARY WATER

- A. The CONTRACTOR shall supply all water used for construction, flushing, testing, and temporary sanitary facilities. The CONTRACTOR shall provide and maintain all piping, fittings, adapters, and valving required. It is the CONTRACTOR'S responsibility to arrange through the City Underground Utilities Division for a 2-inch fire hydrant water meter. A deposit to be paid by the CONTRACTOR is required for meter rental and all water shall be purchased at the prevailing rate.

##### 1.04 TEMPORARY VENTILATION (NOT USED)

##### 1.05 TEMPORARY SANITARY FACILITIES

- A. The CONTRACTOR shall provide and maintain adequate and clean sanitary facilities for the construction work force and visitors. The facilities shall comply with local codes and regulations and be situated at approved locations.

##### 1.06 TEMPORARY TELEPHONE SERVICE (NOT USED)

##### 1.07 SECURITY (NOT USED)

##### 1.08 STAGING AREA

- A. The CONTRACTOR shall arrange, coordinate and take all necessary steps regarding his work effort to comply with constraints defined in Section 01550, including off site parking, staging, storage, etc., as required. Costs associated with these efforts shall be included in the bid for this project.

#### PART 2 -- PRODUCTS (Not Used)

#### PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

## SECTION 01530

### PROTECTION OF EXISTING FACILITIES

#### PART 1 -- GENERAL

##### 1.01 THE REQUIREMENT

- A. The CONTRACTOR shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.
- B. The CONTRACTOR shall verify the exact locations and depths of all utilities shown and the CONTRACTOR shall make exploratory excavations of all utilities that may interfere with the Work. All such exploratory excavations shall be performed as soon as practicable after award of Contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the CONTRACTOR'S Work. When such exploratory excavations show the utility location as shown to be in error, the CONTRACTOR shall so notify the CITY.
- C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

##### 1.02 RIGHTS-OF-WAY (NOT USED)

##### 1.03 PROTECTION OF STREET OR ROADWAY MARKERS (NOT USED)

##### 1.04 RESTORATION OF FACILITIES

- A. **General:** All paved areas including asphaltic concrete berms cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement CITY. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.
- B. **Temporary Restoration:** Temporary restoration includes repair to all driveways, sidewalks and roadways. They shall be swept clean and be maintained free of dirt and dust. All areas disturbed by the construction activities shall be restored to proper grade, cleaned up, including the removal of debris, trash, and deleterious materials. All construction materials, supplies, or equipment, including piles of debris shall be removed from the area. All temporarily restored areas shall be maintained by the CONTRACTOR. These areas shall be kept clean and neat, free of dust and dirt, until final restoration operations are completed. The CONTRACTOR is responsible to utilize dust abatement operations in the temporarily restored areas as required, to the satisfaction of the CITY.
- C. **Temporary Resurfacing:** Wherever required by the public authorities having jurisdiction, the CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration and improvements.

- E. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement, unless otherwise shown on the drawings.
- F. Final Restoration: Final restoration shall include the completion of all required pavement replacement of roadways, driveways, curbs, gutters, sidewalks and other existing improvements disturbed by the construction: final grading, placement of sod, installation or replacement of any trees or shrubs, repair of irrigation systems, pavement markings, etc., all complete and finished, acceptable to the ENGINEER.

#### 1.05 EXISTING UTILITIES AND IMPROVEMENTS

- A. General: The CONTRACTOR shall protect all underground utilities and other improvements which may be impaired during construction operations. It shall be the CONTRACTOR'S responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations.
- B. Utilities to be Moved: In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the CONTRACTOR, be notified by the CITY to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the CITY a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- C. Where the proper completion of the Work requires the temporary or permanent removal and / or relocation of an existing utility or other improvement which is shown, the CONTRACTOR shall remove and temporarily replace or relocate such utility or improvement in a manner satisfactory to the CITY and the OWNER of the utility/facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.
- D. CITY'S Right of Access: The right is reserved to the CITY and to the OWNER'S of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work of this Contract.
- E. Underground Utilities Shown or Indicated: Existing utility lines that are shown or the locations of which are made known to the CONTRACTOR prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired by the CONTRACTOR.
- F. Underground Utilities Not Shown or Indicated: In the event that the CONTRACTOR damages any existing utility lines that are not shown or the locations of which are not made known to the CONTRACTOR prior to excavation by the CITY and Sunshine One-Call Notification, a written report thereof shall be made immediately to the CITY. The CONTRACTOR shall make the repairs immediately under the provisions for changes and extra work contained in the General Conditions.

- G. Approval of Repairs: All repairs to a damaged improvement are subject to inspection and approval by an authorized representative of the CITY before being concealed by backfill or other Work.
- H. No fill, excavation material, construction generated debris or equipment shall obstruct water valves, gas meters or sewer manholes. Water, sewer and gas service shall be made accessible to repair or maintenance crews representing the CITY or a privately-owned utility company.
- I. Maintaining in Service: All oil and gasoline pipelines, power, and telephone or other communication cable ducts, gas and water mains, irrigation lines, reuse lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the Work shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the CITY are made with the owner of said utilities. The CONTRACTOR shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

1.06 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

If any tree removal or relocation is required, the CONTRACTOR needs to coordinate with the CITY, accordingly. All required permits related to tree removal are the responsibility of the CONTRACTOR.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

## SECTION 01550

### SITE ACCESS AND STORAGE

#### PART 1 – GENERAL

##### 1.01 SITE ACCESS

- A. The CONTRACTOR shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the Work. It shall be the CONTRACTOR's responsibility to construct and maintain any haul roads required for its construction operations.
- B. The CONTRACTOR will be responsible for monitoring the main gate for its personnel, equipment and material deliveries.

##### 1.02 STORAGE

- A. Limited storage area is available within the work areas shown on the Drawings. Any equipment and materials stored here shall be in accordance with the manufacturer's recommendations and as indicated by the CITY.
- B. Responsibility for protection and safekeeping of equipment and materials will be solely that of the CONTRACTOR, and no claim shall be made against the CITY by reason of any act of an employee or trespasser. Should an occasion arise necessitating access to an area occupied by stored equipment and/or materials, the CONTRACTOR shall immediately move them.
- C. If the CONTRACTOR requires additional staging and storage area than shown on the Drawings, the CONTRACTOR shall obtain such areas from off site sources at no additional cost to the CITY.
- D. Upon completion of the Contract, the CONTRACTOR shall remove from the storage and work areas all of their equipment, temporary fencing, surplus materials, rubbish, etc., and restore the area to its original or better conditions.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

SECTION 01560  
SPECIAL CONTROLS

PART 1 -- GENERAL

1.01 CHEMICALS

- A. All chemicals used during project construction or furnished for testing of project operation, whether herbicide, pesticide, disinfectant, polymer, reactant of other classification, will be required to show approval of either EPA or HUD. The handling, use, storage and disposal of such materials, containers or residues shall be in strict conformance with manufacturer and/or CONTRACTOR'S secured storage. Copies of antidote literature and a supply of antidotes shall be kept at the job site office.

1.02 DUST

- A. During all work for this Contract, the CONTRACTOR shall by the application of water and/or calcium chloride or other means, approved by the ENGINEER, eliminate dust annoyance to adjacent property, business establishments and the plant site in accordance with Article 7.21, Dust Control, of the General Conditions. The CONTRACTOR shall take all protective measures, to the satisfaction of the ENGINEER, necessary to ensure that dust and debris does not enter any of the mechanical or electrical equipment. The CONTRACTOR shall be responsible for the cleanup of existing buildings, equipment, controls, etc., which have become soiled due to the lack of proper dust control as determined by the ENGINEER. The CONTRACTOR shall provide daily application of water to all unpaved areas designated by the ENGINEER in the field and to the satisfaction of the ENGINEER in the field.

1.03 NOISE

- A. Noise resulting from the CONTRACTOR'S work shall not violate the Hollywood Code of Ordinance Chapter 100, with specific note to the restrictions of paragraph 100.05 or exceed the noise levels and other requirements stated in the Broward County Chapter 27 Pollution Control, relating to noise abatement in Broward County. The CONTRACTOR shall be responsible for curtailing noise resulting from his operation. He shall, upon written notification from the ENGINEER or the noise control officers, make any repairs, replacements, adjustments, additions and furnish mufflers when necessary to fulfill requirements.

1.04 EROSION ABATEMENT AND WATER POLLUTION

- A. It is imperative that the CONTRACTOR'S dewatering operations not contaminate or disturb the environment or properties adjacent to the Work. The CONTRACTOR, shall, therefore, schedule and control his operations to confine all runoff water from disturbed surfaces, water from dewatering and/or from excavation below the ground water table operations that becomes contaminated with lime silt, muck and other deleterious matter, fuels, oils, bitumens, calcium chloride, chemicals and other polluting materials.
- B. The CONTRACTOR shall construct temporary stilling basin(s) of adequate size and provide all necessary temporary materials, operations and controls including, but not limited to, filters, coagulants, screens and other means necessary to attain the required discharge water quality.

- C. The CONTRACTOR shall be responsible for providing, operating and maintaining materials and equipment used for conveying the clear water to the point of discharge. All pollution prevention procedures, materials, equipment and related items shall be operated and maintained until such time as the dewatering operation is discontinued. Upon the removal of the materials, equipment and related items the CONTRACTOR shall restore the area to the condition prior to his commencing work.

#### 1.05 HURRICANE AND STORM WARNINGS

- A. As the schedule for this project coincides, in part, with the recognized South Florida hurricane season, the CONTRACTOR's attention is drawn to the possibility of hurricane conditions, or severe storm conditions, occurring at the plant site during the course of Contract work.
- B. Within 30-days of the date of Notice-to-Proceed, the CONTRACTOR shall submit to the ENGINEER and Owner a Hurricane Preparedness Plan. The plan should outline the necessary measures which the CONTRACTOR proposes to perform at no additional cost to the Owner in case of a hurricane warning.
- C. In the event of inclement weather, or whenever the ENGINEER shall direct, the CONTRACTOR shall, and will cause Sub-Contractors to protect carefully the Work and materials against damage or injury by reasons of failure on the part of the CONTRACTOR to so protect the Work. Such Work and materials so damaged shall be removed and replaced at the expense of the CONTRACTOR.
  - 1. Hurricane Watch: Upon designation of a hurricane watch, CONTRACTORS shall be responsible for storing all loose supplies and equipment on the job site that may pose a danger. In addition, the CONTRACTOR shall remove all bulkheads and plugs in pipelines that would impede drainage in the case of flooding. Structures that may be in danger of floatation shall be flooded. The CONTRACTOR shall also cooperate with CITY personnel in protecting other structures at the site.
  - 2. Hurricane Warning: No mobile "temporary facility" under the control of the City of Hollywood, or on City property, shall be staffed during a hurricane warning. CONTRACTOR facilities meeting these criteria shall comply.
- D. The CONTRACTOR is advised to take all necessary precautions to protect his equipment by moving it to higher ground if in an area subject to flooding. Known areas of Hollywood that would be subject to flooding from storm tides include:

Hollywood Blvd.  
A1A  
US Highway 1

North Lake Area  
Sheridan Street  
46<sup>th</sup> Avenue

South Lake Area  
Dania Beach Blvd.  
Hallandale Beach Blvd.

#### 1.06 PESTS AND RODENTS

- A. The CONTRACTOR shall be responsible for maintaining the jobsite free from litter, rubbish and garbage. He shall provide containers for the disposal of garbage and other materials that attract and are breeding places for pests and rodents. The CONTRACTOR shall provide the services of an exterminator to inspect the jobsite on a periodic basis and to provide service as required to control pests and rodents.

## 1.07 PERIODIC CLEAN-UP; BASIC SITE RESTORATION

- A. During construction, the CONTRACTOR shall regularly remove from the site all accumulated debris and surplus materials of any kind which result from his operations, or whenever the accumulation in excess of one truck load. Unused equipment and tools shall be stored at the CONTRACTOR'S yard or base of operations for the project.
- B. When the work involves installation of sewers, drains, water mains, manholes, underground structures, or other disturbance of existing features in or across streets, rights-of-way, easements, or private property, the CONTRACTOR shall (as the work progresses) promptly backfill, compact, grade and otherwise restore the disturbed area to a basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or function consistent with the original use of the land. Unsightly mounds of earth, large stones, boulders, and debris shall be removed so that the site presents a neat appearance.
- C. The CONTRACTOR shall perform the clean-up work on a regular basis and as frequently as ordered by the ENGINEER. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the ENGINEER, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.
- D. Upon failure of the CONTRACTOR to perform periodic clean-up and basic restoration of the site to the ENGINEER'S satisfaction, the ENGINEER may, upon five (5) days prior written notice to the CONTRACTOR, employ such labor and equipment as he deems necessary for the purpose, and all costs resulting therefrom shall be charged to the CONTRACTOR and deducted from the amounts of money that may be due him.

## 1.08 SECURITY

- A. The CONTRACTOR shall care for and protect against loss or damage of all material to be incorporated in the construction for the duration of the Contract and shall repair or replace damaged or lost materials and damage to structures.
- B. The CONTRACTOR shall be responsible for providing, and maintaining temporary fencing and gates and the daily securing of temporary fencing and gates used for construction purposes for the duration of the project.
- C. The CONTRACTOR shall strictly comply with working hours on the project site. Prior to any work outside of the standard working hours, the CONTRACTOR shall request the City's approval via written request (at least 8 hours in advance). The written request shall clearly define the work to be performed, the names of the employees, their employer and their trade and the hours and days during which the work is planned.

The City is considering and the CONTRACTOR shall comply with additional security requirements including employee photo identification at all times on-site and employee parking passes.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

## SECTION 01700

### PROJECT CLOSEOUT

#### PART 1 -- GENERAL

##### 1.01 PROJECT CLOSEOUT

- A. As construction of the project enters the final stages of completion, the CONTRACTOR shall, in accordance with the requirements set forth in the Contract Documents, attend to or have already completed the following items:
1. Scheduling start-up and initial operation.
  2. Correcting or replacing defective work, including completion of items previously overlooked or work which remains incomplete, all as evidenced by the CITY's "Punch" lists.
  3. Make final submittals.
  4. Attend to any other items listed herein or brought to the CONTRACTOR's attention by the CITY.

##### 1.02 CLOSEOUT TIMETABLE

- A. The CONTRACTOR shall establish dates for equipment testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow the CITY, the ENGINEER, and their authorized representatives sufficient time to schedule attendance at such activities.

##### 1.03 FINAL SUBMITTALS

- A. Before the acceptance of the project major milestones for substantial completion, the CONTRACTOR shall submit to the ENGINEER (or to the CITY if indicated) certain records, certifications, etc., which are specified elsewhere in the Contract Documents. Missing, incomplete or unacceptable items, as determined by the ENGINEER or the CITY, shall indicate non-compliance with substantial completion major milestone dates. A partial list of such items appears below, but it shall be the CONTRACTOR'S responsibility to submit any other items which are required in the Contract Documents:
1. Written Test results of project components.
  2. Performance affidavits for equipment and materials.
  3. Operation and Maintenance Manuals for equipment.
  4. Record Drawings: During the entire construction operation, the CONTRACTOR shall maintain records of all deviations from the Drawings and Specifications and shall prepare therefrom record drawings showing correctly and accurately all changes and deviations from the Work made during construction to reflect the Work as it was actually constructed. These drawings shall conform to recognized industry standards of drafting,

shall be neat and legible, and provided in both electronic (AutoCAD "dwg") file format and hardcopies signed and sealed by a professional Land Surveyor registered in the State of Florida.

5. Written guarantees, where required.
6. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
7. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.

#### 1.04 PUNCH LISTS

- A. Final cleaning and repairing shall be scheduled upon completion of the project.
- B. The ENGINEER will make his final inspection whenever the CONTRACTOR has notified the ENGINEER that the work is ready for the inspection. Any work not found acceptable and requiring cleaning, repair and/or replacement will be noted on the "Punch" list. Work that has been inspected and accepted by the ENGINEER shall be maintained by the CONTRACTOR, until final acceptance of the entire project.
- C. Whenever the CONTRACTOR has completed the items on the punch list, he shall again notify the ENGINEER that it is ready for final inspection. This procedure will continue until the entire project is accepted by the ENGINEER. The "Final Payment" will not be processed until the entire project has been accepted by the ENGINEER and all of the requirements in previous Article 1.03 "Final Submittals" have been satisfied.

#### 1.05 MAINTENANCE AND GUARANTEE

- A. The CONTRACTOR shall comply with all maintenance and guarantee requirements of the Contract Documents.
- B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as a part of such required repair work, and any repair or resurfacing constructed by the CONTRACTOR which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work unless the CONTRACTOR shall have obtained a statement in writing from the affected private CITY or public agency releasing the CITY from further responsibility in connection with such repair or resurfacing.
- C. The CONTRACTOR shall make all repairs and replacements promptly upon receipt of written order from the CITY. If the CONTRACTOR fails to make such repairs or replacements promptly, the CITY reserves the right to do the Work and the CONTRACTOR and his surety shall be liable to the CITY for the cost thereof.

#### 1.06 FINAL CLEANUP

- A. The CONTRACTOR shall promptly remove from the vicinity of the completed Work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by the CITY will be withheld until the CONTRACTOR has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

SECTION 01710

AS BUILT DATA SPECS

# **SURVEY/AS-BUILT CAD DRAWING STANDARDS**

This document serves as City of Hollywood Department of Public Utilities - Computer Aided Design and Drafting (CADD) data standard for any Public Utilities related project

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# City of Hollywood - Department of Public Utilities

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## Public Utilities – GIS: As-Built CAD Standards

Engineering firms have their own standards for creating CAD drawings. These standards are inconsistent between the firms. A lot of time is spent due to the persisting inconsistencies and complexity when transferring the drawings from “Native digitizing Software” to that of “Final deliverable format”.

This document is developed to provide Computer Aided Drafting (CAD) standards and guidelines for use by Contractors, Engineers, and Contractors who are involved in digitizing of Potable, Sanitary, Drainage, Raw, Reclaimed, and Brine water features with reference to hard copy As-Built drawings for the City of Hollywood - Department of Public Utilities.

As of October 1, 2016, all As-Built plans submitted to the City of Hollywood - Department of Public Utilities must be provided in electronic computer aided design (CAD) format. The following standards must be followed for all plans. Construction Drawings will not be approved until these standards are met. OR Applications for payment will not be approved without updated redline As-Built accepted by the project manager. Final Payment will not be approved without acceptance of the As-Built in the CAD format prescribed in this document.

## As-Built Drawing Procedures

During the construction of the project, the Contractor shall be responsible for maintaining a set of As-Built drawings. The basis of the As-Built drawings shall be the Construction Drawings as reviewed and approved by the Project Manager - City of Hollywood - Department of Public Utilities.

1. The Contractor shall maintain one set of As-Built drawings at the Project Site. On these, all project conditions, locations, configurations, and any other changes or deviations that may vary from the information represented on the original Construction Design Drawings shall be noted; including buried or concealed construction and utility features that are revealed during the course of construction. *Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Construction Design Drawings.* Drawings shall also note the location of any other buried infrastructure such as landscape irrigation, onsite drainage, etc., as well as any surface building obstacles such as ponds, fences, walls, rocks,

etc. As-Built drawings shall be supplemented by any detailed sketches as necessary or directed to fully indicate the facilities as actually constructed.

2. The master As-Built drawings shall be maintained up-to-date during the progress of the Project. Red ink shall be used for alterations and notes. Notes shall identify relevant changes by number and date.
3. As-Built drawings shall be accessible to the Department of Public Utilities personnel at all times during the construction period.
4. The As-Built drawings shall be submitted to the Department of Public Utilities upon completion of the project.
  - a. The Department of Public Utilities staff will review for completeness, accuracy, and format of submitted As-Built drawings. If the As-Built drawings are considered unacceptable, they will be returned to the Contractor for correction and resubmitted.

### **Drafting Software**

AutoCAD MAP/AutoCAD Civil 3D and higher version software should be used for drafting/attribution the potable, sanitary, drainage, raw, reclaimed, and brine water features. The main reason is that they support object data required for Department of Public Utilities - GIS project. All drawings shall be DWG format.

### **Drawing File Naming Convention, Setup and Structure**

- All drafting shall be done at 1:1 (1 AutoCAD unit = 1 foot), in engineering units, in the AutoCAD model space environment
- It is important to create the drawings using a standard schema that will allow smoother transition to the GIS platform. Drawings must be created in NAD 1983 HARN State Plane Florida East FIPS 0901 Feet coordinate system.

## Layerization

- **Table 1: Feature Class Names and Geometry Types** illustrates the Layer name naming convention that should be used for each asset. It also identifies how Blocks should be named when applicable.
- All layers must conform to the proper geometry type (Line, Arc, LWPolyline, PolyLine, 3DPolyline, MPolygon, Insert, Point/Block) as indicated in **Table 1**.
- All layers must contain only the features that are described for that layer. For example, the Manhole Drainage layer must only contain the Storm Water manhole points and not such features as control valve, clean out, or water fittings.
- All layers must be clearly differentiated from each other.
- All layers must be differentiated among Abandoned, New, and Existing utility related features. For example, 20-WATER LINE-ABANDONED, 20-WATER LINE-NEW, 20-WATER LINE-EXISTING.
- All layers must be differentiated according to the size of the pipe. For example, 20-WATER LINE.
- Point / Block features should not be exploded. If exploded, they will need to be joined again prior to submitting the deliverable(s).
- All annotations should be in model space properly created when a layer requires it. The layer name must match the layer name for the particular feature.

**Table 1**  
**Feature Class Names and Geometry Types**

<b>FEATURE CLASS NAMES AND GEOMETRY TYPES</b>			
<b>Asset</b>	<b>Entity</b>	<b>Layer</b>	<b>RefName</b>
Anchor Guy Wire	Insert, Point, Block	XUTILS	046C
Asphalt Pavement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	AP	
Back Flow Preventor	Insert, Point, Block	WATERLINE	BFP
Back of Sidewalk	Line, Arc, LWPolyline, PolyLine, 3DPolyline	SWKB	
Bollard	Insert, Point, Block	XMISC	042C
Brine Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	BRINE WATER	
Brine Water Valve	Insert, Point, Block	BRINE WATER	025C
Buried Electric	Line, Arc, LWPolyline, PolyLine, 3DPolyline	ELECTRIC	
Buried Fiber Optic FPL	Line, Arc, LWPolyline, PolyLine, 3DPolyline	FPLFO	
Buried Telephone	Line, Arc, LWPolyline, PolyLine, 3DPolyline	BELLSOUTH	
Cable TV	Insert, Point, Block	CABLE TV	CATV
Catch Basin	Insert, Point, Block	CB	
Cleanout	Insert, Point, Block	CLNO	
Concrete Light Pole	Insert, Point, Block	XUTILS	055C
Concrete Pavement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	CPVT	
Concrete Power Pole	Insert, Point, Block	XUTILS	051C
Concrete Sidewalk	Line, Arc, LWPolyline, PolyLine, 3DPolyline	CONC SWLK	
Curb Inlet	Insert, Point, Block	CI	039C
Easement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	ESMT	
Edge of Asphalt	Line, Arc, LWPolyline, PolyLine, 3DPolyline	ASPH EDGE	
Edge of Asphalt Pavement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	ASPH EOP	
Edge of Concrete	Line, Arc, LWPolyline, PolyLine, 3DPolyline	CONC EDGE	
Edge of Concrete Curb	Line, Arc, LWPolyline, PolyLine, 3DPolyline	CONC CURB	

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Asset	Entity	Layer	RefName
Edge of Curb	Line, Arc, LWPolyline, PolyLine, 3DPolyline	EOCURB	
Edge of Pavement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	EOP	
Electric Box	Insert, Point, Block	ELECTRIC BOX	EB
Fire Hydrant	Insert, Point, Block	FIRE HYDT	033C
Flag Pole	Insert, Point, Block	XMISC	FP
Force Main Sanitary Sewer Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	FM SANITARY SEWER	
Force Main Storm Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	FM STORM DRAINAGE	
Front of Sidewalk	Line, Arc, LWPolyline, PolyLine, 3DPolyline	SWKF	
Gas Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	GAS LINE	
Gas Meter	Insert, Point, Block	GAS	027C
Gas Riser	Insert, Point, Block	GAS	GAS
Gas Valve	Insert, Point, Block	GAS	025C
Gravity Sanitary Sewer Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	G SANITARY SEWER	
Gravity Storm Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	G STORM DRAINAGE	
Handhole	Insert, Point, Block	XUTILS	HH
Irrigation Control Valve	Insert, Point, Block	XUTILS	IRRCV
Irrigation Meter	Insert, Point, Block	XUTILS	IRRM
Mail Box	Insert, Point, Block	XMISC	MBX
Manhole Drainage	Insert, Point, Block	MHD	041C-DRAINAGE
Manhole Electric	Insert, Point, Block	MHE	ELECMH
Manhole FPL	Insert, Point, Block	MHFPL	041C
Manhole Sanitary	Insert, Point, Block	MHS	041C-SANITARY
Manhole Telephone	Insert, Point, Block	MHT	BSMH
Mast Arm	Insert, Point, Block	XUTILS	059C
Metal Light Pole	Insert, Point, Block	XUTILS	MLP
Metal Pipe Iron Rod	Insert, Point, Block	PIP	004C
Monitoring Well	Insert, Point, Block	XUTILS	MW
Paver Walk	Line, Arc, LWPolyline, PolyLine, 3DPolyline	PAVER WALK	
Railroad Crossing Gates	Insert, Point, Block	XUTILS	079C

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Asset	Entity	Layer	RefName
Raw Water	Insert, Point, Block	RWATR STRC	RW
Raw Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	RWATR	
Reclaimed Water Valve	Insert, Point, Block	RCWATR	025C
Reclaimed Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	RCWATR	
Sanitary Sewer Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	SANITARY SEWER	
Sanitary Sewer Valve	Insert, Point, Block	SANITARY SEWER	025C
Sign	Insert, Point, Block	XMISC	001T
Signal Pole	Insert, Point, Block	XUTILS	057C
Sprinkler	Insert, Point, Block	XUTILS	SPKR
Storm Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	STORM DRAINAGE	
Storm Water Valve	Insert, Point, Block	STORM DRAINAGE	025C
Street Light Pole	Insert, Point, Block	XUTILS	053C
Traffic Signal Box	Insert, Point, Block	XUTILS	073C
Valve	Insert, Point, Block	XUTILS	025C
Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	WATER LINE	
Water Meter	Insert, Point, Block	WATERLINE	027C
Water Valve	Insert, Point, Block	WATERLINE	025C
Wood Light Pole	Insert, Point, Block	XUTILS	WLP
Wood Power Pole	Insert, Point, Block	XUTILS	WPP

## Note

- It is not mandatory for all Layers listed above to exist in a drawing. Layers / Tables should be created / populated only when a feature occurs in a particular drawing.
- The Drawing can contain other layers for plan, profile, streets, text, information pertinent to engineering, etc.
- Any feature not included in the above list should be informed to the City of Hollywood - Department of Public Utilities and shared in table format (CSV, TXT, or Excel). This will allow us to refine our list of possible survey features for data processing and GIS integration purposes.
- **Table 2: Enterprise GIS Database Model - Feature Class Names and Geometry Types** in the Appendix section illustrates all utility related features supported in the City of Hollywood - Department of Public Utilities GIS Enterprise database model.

- The information presented here is subject to change in order to support the Department of Public Utilities' mission. Any updates will be shared with Contractors, Engineers, and Contractors

## PolyLines

Break Mains at:

- All Pressurized Mains intersections
  - Fittings
    - Cross
    - Reducer
    - Tee
  - System valves
    - Ball, butterfly, gate, plug valves
    - pressure reducer valves
    - pressure (zone) separation valves
    - reservoir valves
    - system separation (normally closed)
    - altitude valves
  - Pump stations
  - Treatment plant
  - Reservoir

### Do NOT break Mains at:

- Fittings
  - Bend
  - Tap
  - Wye
  - Clamp
- Laterals or lateral services
- Check valves
- Connection points

## **Polygons**

- All Polygon type features must be completely closed.
- All edges on polygon features must be snapped together at the vertices. Gaps in polygon boundaries will not be accepted.

## **Deliverables**

- The Contractor shall submit three hardcopy of the As-Built drawings.
- The Contractor shall also submit electronic CAD files containing the information depicted on the As-Built drawings.
- Files shall be submitted on portable media such as CD-ROM, or DVD in AutoCAD format. Files may be compressed in a format that is compatible with the WinZip decompression software. Email is also acceptable but the City of Hollywood may request the file(s) in digital format at any moment.

## **Datum Policy**

Datum policy is for electronic submittals only. As-Built drawings shall be referenced to at least three points on the drawing that have noted horizontal and vertical datum information. These three points may be existing control, new control, or parcel corners. As long as the drawing has a 1:1 relationship with these three points, the remainder of the drawing can be in a project coordinate system. The Department of Public Utilities will use these three points for location and rotation of the project coordinates at a later date.

## **Horizontal Datum**

The coordinate system for all As-Built drawings shall be Florida East State Plane Coordinates, NAD 1983 HARN in US Survey feet. (NAD 1983 HARN State Plane Florida East FIPS 0901 Feet)

## **Vertical Datum**

All elevations shall be referenced to the NAVD 88 datum with elevations given in US Survey feet. Any elevation using NGVD 29 vertical datum must be converted to NAVD 88.

## **Accuracy**

Control discovery information is to be survey accurate.

The Department of Public Utilities is looking for accurate enough information to:

- Geolocate buried facilities, and
- Incorporate the As-Built information into the Department of Public Utilities' geographic information system.

## **Metadata Policy**

All new land survey information (parcel meets & bounds, control, topographic information) within the submitted As-Built shall be accompanied with metadata, describing the following:

- Surveyor Name
- Survey Company
- Date Surveyed
- Control Reference Used (Control ID, Type, Coordinate Datum)
- Control Type (PK nail, Brass Marker, etc.)

## **Other Information**

All files associated with the post-processing of GPS data including raw and post-processed GPS data shall be included in the submitted deliverable to the City of Hollywood - Department of Public Utilities. These files can include but not be limited to: .ssf GPS data, import files, export files, and correction files.

Elevation files must be delivered as well in text file format. At a minimum, these files must include unique ID, X-Coordinate, Y-Coordinate, Elevation, collected feature code, and collected feature description.

# Appendix

Table 2: Enterprise GIS Database Model - Feature Class Names and Geometry Types

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Feature Class Name	Dataset Name	Type	Example: Layer Contents
<b>Sewer Features</b>			
sCleanOut	Sewer	Point/Block	Clean Out, Flushing Structure
sControlValve	Sewer	Point/Block	Air Release
sDischargePoint	Sewer	Point/Block	Discharge Point
sElevationPt	Sewer	Point/Block	Elevation Points
sFitting	Sewer	Point/Block	Tee, Bends, Pipe Change, Reducer, Wye, Dead End, Transition, Reducing Tee, Plug, Cross, Coupling, Cap, 90 Bend, 45 Bend, 22 1/2 Bend, 11 1/4 Bend
sLiftStation	Sewer	Point/Block	Lift Station
sLUMConnection	Sewer	Point/Block	LUM Connection
sManhole	Sewer	Point/Block	Standard, Drop, Monitoring, Diversion, Dog House, Metering
sNetworkStructure	Sewer	Point/Block	Grease Trap, Metering Facility, Sampling Station, Septic Tank, Wet Well, Dry Well
sPump	Sewer	Point/Block	Booster, Chopper, Grinder, Non-Clog, Submersible
sServiceConnection	Sewer	Point/Block	Service Connection
sSystemValve	Sewer	Point/Block	Gate, Plug
sTestStation	Sewer	Point/Block	test Station
sValveOperator	Sewer	Point/Block	Valve Operator
sVault	Sewer	Point/Block	Vault

sGravityMain	Sewer	PolyLine	Collector, Inverted Siphon, Trunk
sLateralLine	Sewer	PolyLine	Lateral
sPressurizedMain	Sewer	PolyLine	Vitrified Main, Pre-Stressed Concrete Cylinder, Polyvinyl Chloride, Polyethylene, High Density Polyethylene, Ductile Iron, Cured in Place, Cast Iron, Asbestos Cement
sCasing	Sewer	MPolygon	Pipe Casing (Steel Casing, Concrete Encasement, High Density Polyethylene, Polyvinyl Chloride, Reinforced Concrete)
Feature Class Name	Dataset Name	Type	Example: Layer Contents
Water Features			
wControlValve	Water	Point/Block	Air Release, Altitude, Anti-Back Flow, Back Flow Control, Blow Off, Detector Check, Double Check, Pressure Relief, Pressure Vacuum, Reduce Pressure Zone, Simple Check, Surge Relief
wCurbStopValve	Water	Point/Block	Curb Stop Valve
wElevationPt	Water	Point/Block	Elevation Points
wFitting	Water	Point/Block	11 1/4 Bend, 22 1/2 Bend, 45 Bend, 90 Bend, Bend, Cap, Coupling, Cross, Other, Plug, Reducer, Reducing Tee, Sleeve, Tap, Tee, Transition, Wye
wHydrant	Water	Point/Block	Fire Hydrant
wLUMConnection	Water	Point/Block	LUM Connection
wManhole	Water	Point/Block	Manhole
wNetworkStructure	Water	Point/Block	Access Manhole, Pneumatic Tank, Treatment Plant
wPump	Water	Point/Block	Pump
wSamplingStation	Water	Point/Block	Sampling Point / Station
wServiceConnection	Water	Point/Block	Service Connection, Water Meter
wSiameseConnection	Water	Point/Block	Siamese Connection

wStorageTank	Water	Point/Block	Storage Tank
wSystemValve	Water	Point/Block	Gate, Butterfly, Tapping, Hydrant, Zone, Meter, Air Release, Blow Off, Main Line, Plug, Gate
wTestStation	Water	Point/Block	Test Station
wAbandonedLine	Water	PolyLine	Abandoned Lines
wCasing	Water	PolyLine	Pipe Casing (Steel Casing, Concrete Encasement, Ductile Iron)
wConstructionLine	Water	PolyLine	Construction Line
wLateralLine	Water	PolyLine	Residential, Fire, Commercial, Irrigation, Sampling
wMainLine	Water	PolyLine	Distribution, Transmission
wPressureZone	Water	MPolygon	Pressure Zone
<b>Feature Class Name</b>	<b>Dataset Name</b>	<b>Type</b>	<b>Example: Layer Contents</b>
<b>Storm Water Features</b>			
swCleanOut	Storm Water	Point/Block	Clean Out, Flushing Structure
swControlValve	Storm Water	Point/Block	Flap Gate
swDischargePoint	Storm Water	Point/Block	Discharge Point
swElevationPt	Storm Water	Point/Block	Elevation Points
swFitting	Storm Water	Point/Block	Tee, reducer Plug, Cross, Cap, 90 Bend, 45 Bend, 22 1/2 Bend
swInlet	Storm Water	Point/Block	Inlet
swManhole	Storm Water	Point/Block	Conflict, Pollution Control, Sedimentation, Split, Standard
swNetworkStructure	Storm Water	Point/Block	Diversion Chamber, Diversion Point, Junction Chamber, Pump Station, Split Manhole, Storage Basin, Tide Chamber, Lift Station, Discharge Structure, Virtual Junction
swPump	Storm Water	Point/Block	Pump
swPumpStation	Storm Water	Point/Block	Pump Station

swSystemValve	Storm Water	Point/Block	Ball, Butterfly, Cone, Gate, Plug, Round way
swTestStation	Storm Water	Point/Block	Test Station
swWeirStructure	Storm Water	Point/Block	Broad-Crested, Combination, Labyrinth, Minimum Energy Loss, Sharp-Crested, V-Notch
swWell	Storm Water	Point/Block	Well
swCasing	Storm Water	PolyLine	Access Tunnel, Casement, Conduit Bridge, Protective Tunnel
swCulvert	Storm Water	PolyLine	Culvert
swDrainfield	Storm Water	PolyLine	DF, INF
swGravityMain	Storm Water	PolyLine	Gravity Main
swOpenDrain	Storm Water	PolyLine	Open Drain
swPressurePipe	Storm Water	PolyLine	Pressure Pipe
swVirtualDrainline	Storm Water	PolyLine	Virtual Drain line
swDetention	Storm Water	MPolygon	Detention
<b>Feature Class Name</b>	<b>Dataset Name</b>	<b>Type</b>	<b>Example: Layer Contents</b>
<b>Brine Disposal</b>			
bdControlValve	Brine Disposal	Point/Block	Casement
bdElevationPt	Brine Disposal	Point/Block	Elevation Points
bdFitting	Brine Disposal	Point/Block	Wye, Transition, Tee, reducer Plug, Cap, 90 Bend, 45 Bend, 22 1/2 Bend
bdManhole	Brine Disposal	Point/Block	Manhole
bdNetworkStructure	Brine Disposal	Point/Block	Network Structure
bdPump	Brine Disposal	Point/Block	Pump
bdSystemValve	Brine Disposal	Point/Block	Gate, Butterfly
bdCasing	Brine Disposal	PolyLine	Casement
bdPressurizedMain	Brine Disposal	PolyLine	Transite, Polyvinyl Chloride, Polyethylene, High Density Polyethylene, Chlorinated Polyvinyl

			Chloride
Feature Class Name	Dataset Name	Type	Example: Layer Contents
<b>Raw Water</b>			
rwAbandonedPoint	Raw Water	Point/Block	Abandoned Point
rwControlValve	Raw Water	Point/Block	Air Release, Altitude, Atmospheric Vacuum, Blow Off, Simple Check
rwElevationPt	Raw Water	Point/Block	Elevation Points
rwFitting	Raw Water	Point/Block	Wye, Transition, Tap, Sleeve, Reducer, Plug, Cross, Coupling, Cap, 90 Bend, 45 Bend, 22 1/2 Bend, 11 1/4 Bend
rwNetworkStructure	Raw Water	Point/Block	Meter Station
rwPump	Raw Water	Point/Block	Pump
rwSamplingStation	Raw Water	Point/Block	Sampling Station
rwSystemValve	Raw Water	Point/Block	Butterfly, Gate, tapping
rwTestStation	Raw Water	Point/Block	Test Station
rwAbandonedLine	Raw Water	PolyLine	Abandoned Line
rwCasing	Raw Water	PolyLine	Casing
rwConstructionLine	Raw Water	PolyLine	Construction Line
rwMain	Raw Water	PolyLine	CIP, DIP, HDPE, PVC, RCP, SP, SSP
Feature Class Name	Dataset Name	Type	Example: Layer Contents
<b>Reclaimed Water</b>			
rcControlValve	Reclaimed Water	Point/Block	Air Release, Back Flow Control, Double Check, Simple Check
rcDischargePoint	Reclaimed Water	Point/Block	Meter
rcElevationPt	Reclaimed Water	Point/Block	Elevation Points
rcFitting	Reclaimed Water	Point/Block	Tee, Reducer, Plug, Coupling, Cap, 90 Bend, 45 Bend, 22 1/2 Bend, 11 1/4

			Bend
rcManhole	Reclaimed Water	Point/Block	Manhole
rcNetworkStructure	Reclaimed Water	Point/Block	Flow Meter, Monitoring Well, Pump Station, Storage Basin, Treatment Plant
rcPump	Reclaimed Water	Point/Block	Pump
rcSystemValve	Reclaimed Water	Point/Block	Ball, Butterfly, Gate, Tapping
rcTestStation	Reclaimed Water	Point/Block	Test Station
rcCasing	Reclaimed Water	PolyLine	Casement
rcPressurizedMain	Reclaimed Water	PolyLine	CIP, DIP, HDPE, PVC
rcDetention	Reclaimed Water	MPolygon	Detention
<b>Feature Class Name</b>	<b>Dataset Name</b>	<b>Type</b>	<b>Example: Layer Contents</b>
<b>Annotation Features</b>			
sPipe_Annos	Sewer	Text	Text associated with sewer mainlines such as Diameter, Material, Offset, Slope, As-Built # etc.
sPoint_Annos	Sewer	Text	Text associated with sewer point features such as Manholes, Lift Stations etc.
wPipe_Annos	Water	Text	Text associated with water mainlines such as Diameter, Material, Offset, As-Built # etc.
wPoint_Annos	Water	Text	Text associated with water point features such as Hydrants, Valves, etc.
swPipe_Annos	Storm Water	Text	Text associated with storm water mainlines such as Diameter, Material, Offset, Slope, As-Built #

			etc.
swPoint_Annos	Storm Water	Text	Text associated with storm water point features such as clean outs, valves, fittings, inlets, manholes, etc.
Miscellaneous_Annos	W/S	Text	Miscellaneous annotations such as Schools, Parks, etc.
Address_Annos	W/S	Text	Street postal address number
StreetNames	W/S	Text	Street Names

SECTION 01740  
PERMITS

Part 1 - GENERAL

1.01 General:

- A. The Contractor shall obtain and pay for all permits and fees in connection with the work. The Contractor shall also initiate the City's review and secure City approval prior to commencement of the work. Inspection by City personnel is required in addition to, not in lieu of, other municipal, county, state and/or federal regulatory agency inspections. No project will be accepted until it has passed all inspections, including pavement installation or replacement.
  
- B. The Contractor shall familiarize himself with, and comply with, all requirements of required permits governing all work under this Contract. The Contractor's particular attention is called to any Special Conditions of the permits relating to construction procedures, excavation and backfill requirements, open trench restrictions, turbidity control, traffic control, pavement restoration and all other general and special conditions. In the event any of the conditions of the permits are in conflict with the requirements of these Specifications, the most stringent conditions shall take precedence.
  
- C. Any deviations from the Plans, Specifications or required permits, must first be approved by the City even if approval for the change has been given by the permitting agency.
  
- D. The Contractor shall fully assume all obligations and responsibilities, monetary and otherwise, imposed by the permits throughout the life of the project, including but not limited to:
  - 1. Proper maintenance of permit documentation and field records
  - 2. Proper maintenance of all permit-required field controls, including but not limited to the following:
    - (a) Chemical spill prevention
    - (b) Erosion, sedimentation, turbidity and dust retention
    - (c) Protection of storm drainage facilities
    - (d) Temporary vehicular and pedestrian traffic controls
  - 3. Payment of fines resulting from permit non-compliance
  - 4. Maintaining active permits and obtaining permit extensions when needed

5. Providing certifications of all materials and equipment installed
6. Performing successful inspections and tests required by the permits
7. Correcting any work that is not in compliance with permits
8. Performing successful equipment start-ups
9. Providing Operation and Maintenance (O&M) manuals for installed equipment as required by permits
10. Repair of any permanent traffic controls impacted by Contractor
11. Close-out of all permits

E. All surveying required by the project permits will be done by the Contractor's Florida registered Land Surveyor. This includes staking out limits of construction.

Part 2 - PRODUCTS

(Not Used)

Part 3 - EXECUTION

(Not Used)

END OF SECTION

**DIVISION 2**  
**SITE WORK**

## SECTION 02100

### CLEARING AND GRUBBING

#### **GENERAL**

##### 1.01 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all materials, equipment and labor necessary to complete all clearing and grubbing as specified herein and in accordance with the Drawings.
- B. The CONTRACTOR shall box and protect all trees, shrubs, lawns, and the like where to be preserved.

##### 1.02 STANDARDS AND REGULATIONS

- A. The CONTRACTOR shall comply with all state, county and local regulations regarding disposal of debris resulting from the clearing and grubbing operation.
- B. The CONTRACTOR shall dispose of debris resulting from the clearing and grubbing operation at off-site locations in a lawful manner.

##### 1.03 PROTECTION OF PERSONS AND PROPERTY

- A. All work shall be performed in such a manner to protect all personnel, workmen, pedestrians, and adjacent property and structures from possible injury or damage.
- B. Required wind load calculation for equipment mounted outside. CONTRACTOR to submit equipment support detail for approval.

#### **PRODUCTS (Not Used)**

#### **EXECUTION**

##### 1.04 GENERAL

- A. The Work specified in this section consists of clearing and grubbing within the areas required in the easements and right-of-ways to install the pipeline and appurtenances. The Work shall include the disposal of the resultant products and debris in areas provided by the CONTRACTOR unless noted otherwise.

- B. Property obstructions which are to remain in place, such as buildings, sewers, drains, pipelines, conduits, poles, walls, posts, bridges, etc., are to be carefully protected from injury and are not to be displaced, except for unusual cases when so specified by the ENGINEER.
- C. Standard clearing and grubbing shall consist of the complete removal and disposal of all trees, shrubs, timber, brush, stumps, roots, grass, weeds, rubbish and other obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas.
- D. Excavation resulting from the removal of trees, roots, and the like shall be filled with suitable material, as approved by the ENGINEER, and thoroughly compacted per the requirements contained in Section 02222 – Excavation and Backfill for Utilities.

#### 1.05 DISPOSAL OF MATERIALS

- A. Timber, stumps, muck, brush, roots, rubbish and other objectionable material resulting from clearing and grubbing shall be disposed of in a lawful manner, off site by the CONTRACTOR.
- B. Burning of any debris resulting from the clearing and grubbing work will not be permitted at the site.

- END OF SECTION -

## **SECTION 02140**

### **DEWATERING**

#### **GENERAL**

##### 1.01 DESCRIPTION

- A. Design, furnish, operate, maintain, and remove temporary dewatering systems to control groundwater and surface water to maintain stable, undisturbed subgrades, and permit work to be performed under dry and stable conditions. Work to be done as part of dewatering includes, but is not limited to:
1. Lower the groundwater level
  2. Lower hydrostatic pressure.
  3. Prevent surface water from entering the excavation during construction.
  4. Implement erosion control measures for disposing of discharge water.
- B. Groundwater within the excavation area shall be lowered to at least 1 foot below the lowest excavation levels as specified and as indicated.
- C. Common groundwater recharge methods include, but are not limited to, deep wells, large sumps or any combination thereof.
- D. The Contractor shall obtain the required permits for discharge from the Contractor's dewatering systems in accordance with Broward County Water Management Division and South Florida Water Management District (SFWMD) requirements. The Contractor shall conform with all permit requirements.

##### 1.02 RELATED WORK

- A. Section 01560 - Special Controls
- B. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- C. Section 02222 - Excavation and Backfill for Utilities.

##### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01300, "Submittals":
1. Qualification of the Contractor's dewatering specialist's or firm's qualifications a minimum of four (4) weeks prior to execution of any dewatering. The submittal shall include, but not be limited to:

- (a) Qualifications of specialist's or firm's Registered Professional Engineer as specified in Paragraph 1.04 B.
  - (b) Qualifications of specialist's or firm's field representative, as specified in paragraph 1.04 B, who shall oversee the installation, operation and maintenance of the dewatering system.
2. Submit a dewatering plan at least two weeks prior to start of any dewatering operation. Do not submit design calculations. The review will be only for the information of the CITY and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum:
- (a) Dewatering plan and details stamped and signed by a Registered Professional Engineer.
  - (b) Certificate of Design: Refer to Section 01300, "Submittals"
  - (c) A list of equipment including, but not limited to, pumps, prime movers, and standby equipment.
  - (d) Detailed description of dewatering, maintenance, and system removal procedures.
  - (e) Monitoring plan and details, including, but not limited to, number and locations of observation wells, and geotechnical instruments such as settlement markers and piezometers, and frequency of reading the monitoring devices.
  - (f) Erosion/sedimentation control measures, and methods of disposal of pumped water.
  - (g) List of all applicable laws, regulations, rules, and codes to which dewatering design conforms.
  - (h) List of assumptions made for design of dewatering and for groundwater recharge systems, including but not limited to groundwater levels, soil profile, permeability, and duration of pumping and or recharge.
  - (i) Turbidity measurements in receiving waters as required by the permit. A turbidity control and monitoring where discharge is to a body of water.

3. Measurement records consisting of observation well groundwater records and the geotechnical instrumentation readings within one day of monitoring.
4. A modified dewatering plan within 24 hours, if open pumping from sumps and ditches results in boils, loss of fines, sinkholes or softening of the ground.

#### 1.04 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400 (Testing and Inspection) and as specified.
- B. Employ the services of a dewatering specialist or firm having the following qualifications:
  1. Have completed at least five (5) successful dewatering projects of equal size and complexity and with equal systems within the last five (5) years.
  2. Retain the services of a Florida Registered Professional Engineer having a minimum of five (5) years of experience in the design of well points, deep wells, or equal systems.
  3. Retain the services of a field representative having a minimum of five (5) years of experience in installation of well points, deep wells, or equal systems.
- C. If subgrade soils are disturbed or become unstable due to dewatering operation or an inadequate dewatering system, notify the CITY's representative, stabilize the subgrade, and modify system to perform as specified at no additional cost to the CITY.
- D. Notify the CITY's representative immediately if any settlement or movement is detected on structures. If the settlement or movement is deemed by the CITY's representative to be related to the dewatering, take actions to protect the adjacent structures and submit a modified dewatering plan to the CITY's representative within 24 hours. Implement the modified plan and repair any damage incurred to the adjacent structures at no additional cost to the CITY.
- E. If oil and/or other hazardous materials are encountered after dewatering begins, immediately notify the CITY's representative.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with Section 01610 and as specified.

#### 1.06 PROJECT/SITE CONDITIONS

- A. Subsurface Conditions: Refer to Geotechnical Report provided specifically for the project. The Contractor is responsible for investigating existing soil conditions as the Geotechnical Report does not assure all subsurface site conditions are represented.

## **PRODUCTS**

### 1.07 MATERIALS

- A. Provide settlement markers, observation wells, piezometers and/or any other geotechnical instruments in accordance with the submitted dewatering plan.
- B. Provide casings, well screens, piping, fittings, pumps, power and other items required for dewatering system.
- C. Provide sand and gravel filter around the well screen. Wrapping geotextile fabric directly around the well screen shall not be allowed.
- D. When deep wells, well points, or vacuum well points are used, provide pumping units capable of maintaining high vacuum and handling large volumes of air and water at the same time.
- E. Provide and store auxiliary dewatering equipment, consisting of pumps and hoses on the site in the event of breakdown, at least one (1) pump for every five (5) used.
- F. Provide and maintain erosion/sedimentation control devices as indicated or specified and in accordance with the dewatering plan.
- G. Provide temporary pipes, hoses, flumes, or channels for the transport of discharge water to the discharge location.
- H. Provide cement grout having a water cement ratio of 1 to 1 by volume.

## **EXECUTION**

### 1.08 EXECUTION

- A. Execution of any earth excavation, installing earth retention systems, and dewatering shall not commence until the related submittals have been reviewed by the CITY' representative with all CITY's representative comments satisfactorily addressed, and the geotechnical instrumentation has been installed.
- B. Furnish, install and maintain dewatering system in accordance with the dewatering plan.
- C. Carry out dewatering program in such a manner as to prevent undermining or disturbing foundations of existing structures or of work ongoing or previously completed.

- D. Do not excavate until the dewatering system is operational.
- E. Unless otherwise specified, continue dewatering uninterrupted until all structures, pipes, and appurtenances below groundwater level have been completed such that they will not be floated or otherwise damaged by an increase in groundwater elevation.
- F. Discontinue open pumping from sumps and ditches, if such pumping is resulting in boils, loss of fines, softening of the ground, or instability of the slopes. Modify dewatering plan and submit to the CITY's representative at no additional cost to the CITY.
- G. Where subgrade materials are disturbed or become unstable due to dewatering operations, remove and replace the materials in accordance with Section 02210 – Earth Excavation, Backfill, Fill and Grading at no additional cost to the CITY.
- H. Dewatering Discharge:
  - 1. Install and monitor recharge systems when specified and/or indicated and in accordance with the submitted dewatering plan.
  - 2. Install sand and gravel filters in conjunction with well points and deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
  - 3. Transport pumped or drained water to discharge location without interference to other work, damage to pavement, other surfaces, or property.
  - 4. Provide separately controllable pumping lines.
  - 5. The CITY's representative reserves the right to sample discharge water at any time.
  - 6. Immediately notify the CITY's representative if suspected contaminated groundwater is encountered. Do not pump water found to be contaminated with oil or other hazardous material to the discharge locations.
- I. Monitoring Devices and Records:
  - 1. Install, maintain, monitor and take readings from the observation wells and geotechnical instruments in accordance with the dewatering plan.
  - 2. Install settlement markers on structures within the zone of influence for dewatering a distance equal to twice the depth of the excavation, from the closest edge of the excavation. Conduct and report settlement surveys to 0.01 feet.

3. For large rectangular, square or circular mass excavations the zone of influence shall be defined by the actual cone of watering influence corresponding to a 10% increase in effective vertical stress.
- J. Install and maintain erosion/sedimentation control devices at the point of discharge as indicated or specified during the pre-construction meeting and in accordance with the dewatering plan.
- K. Removal:
1. Do not remove dewatering system without written approval from the Engineer.
  2. Backfill and compact sumps or ditches with clean fill in accordance with Section 02210 – Earth Excavation, Backfill, Fill and Grading.
  3. All dewatering wells shall be abandoned upon completion of the work, and completely backfilled with cement grout.

1.09 CONTRACT CLOSEOUT:

- A. Provide in accordance with Section 01700.

- END OF SECTION -

## SECTION 02210

### EARTH EXCAVATION, BACKFILL, FILL AND GRADING

#### **GENERAL**

##### 1.01 DESCRIPTION

- A. Perform the following earth excavation, backfill, fill and grading as indicated or specified:
1. Make excavations to accommodate piping, conduits, foundations and other structures.
  2. Provide materials for backfilling excavations and constructing embankments and fills as indicated and specified.
  3. Construct embankments of compacted materials.
  4. Grade surfaces to meet finished grades indicated.
  5. Immediately notify the Engineer if suspected hazardous materials are encountered and cease operations in that part of work.
  6. Immediately stop work and notify the Engineer if historical artifacts or human remains are encountered.
  7. Remove boulders within the excavation limits.

##### 1.02 RELATED WORK

- A. Section 01560: Special Controls  
B. Section 02100 - Clearing and Grubbing

##### 1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM) Publications:
1. C33: Specification for Concrete Aggregates.
  2. C136: Sieve Analysis of Fine and Coarse Aggregates.
  3. D421: Practice for Dry Preparation of Soil Samples for Particle Size Analysis and Determination of Soil Constants.
  4. D422: Test Method for Particle-Size Analysis of Soils.
  5. D1140: Test Method for Amount of Material in Soils Finer than the No. 200 (75 Fm) Sieve.
  6. D1556: Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
  7. D1557: Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
  8. D2167: Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

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9. D2922: Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods. (Shallow Depth).
10. D3017: Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
11. D4318: Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
12. D4718: Practice for Correction of Unit Weight and Water Content for Soils Containing Oversized Particles.
13. D4944: Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Pressure Tester Method.
14. D4959: Test Method for Field Determination of Water (Moisture) Content of Soil by Direct Heating Method.
15. D5080: Test Method for Rapid Determination of Percent Compaction.

- B. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29: Subpart P - Excavations, Trenching and Shoring

#### 1.04 DEFINITIONS

- A. Percentage of compaction is defined as the ratio of the field dry density, as determined by ASTM D1556 to the maximum dry density determined by ASTM D1557 Procedure C, multiplied by 100.
- B. Proof Roll: Compaction with a minimum of 4 passes of a vibratory steel drum or rubber tire roller. Vibratory plate compactors shall be used in small areas where vibratory steel drum or rubber tire roller cannot be used.
- C. Acceptable Material: Material which does not contain organic silt or organic clay, peat, vegetation, wood or roots, stones or rock fragments over 6-inch [15 cm] in diameter, porous biodegradable matter, loose or soft fill, excavated pavement, construction debris, or refuse. Stones or rock fragments shall not exceed 40% by weight of the backfill material.
- D. Unacceptable Materials: Materials that do not comply with the requirements for the acceptable material or which cannot be compacted to the specified or indicated density.

#### 1.05 SUBMITTALS

- A. Submit the following in accordance with Section 01300 - Submittals:
  1. Submit an excavation, backfilling, and filling plan at least two weeks prior to start of any earth moving activities. The review will be only for the information of the CITY and third parties for an overall understanding of

## SECTION 02210

### EARTH EXCAVATION, BACKFILL, FILL AND GRADING

the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include, but not be limited to the following items:

- (a) Detailed sequence of work.
  - (b) General description of construction methods.
  - (c) Numbers, types, and sizes of equipment proposed to perform excavation and compaction.
  - (d) Details of dust control measures.
  - (e) Proposed locations of stockpiled excavation and/or backfill materials.
  - (f) Proposed surplus excavated material off-site disposal areas and required permits.
  - (g) Details of erosion and sedimentation control measures which will prevent erosion and sedimentation during the earth moving activities.
2. Laboratory testing results of gradation and moisture-density relationship. Submittal shall include specific location of the source and the date when sample was taken.
  3. During Construction, submit written confirmation of fill lift thickness, in-place soil moisture content, and percentage of compaction to the Engineer before placing the next lift or constructing foundations.

#### 1.06 QUALITY ASSURANCE AND CONTROL

- A. Provide in accordance with Section 01400 and as specified.
- B. The Contractor shall be solely responsible for making all excavations in a safe manner. All excavation, trenching, and related sheeting, bracing, etc. shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P) and State requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.
- C. Do not excavate, construct embankments, or fill until all the required submittals have been reviewed by the Engineer.
- D. Formulate excavation, backfilling, and filling schedule and procedures to eliminate possibility of undermining or disturbing foundations of partially and completed structures, pipelines and embankments or existing structures and pipelines.
- E. Field and Laboratory Testing and Inspections:

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### EARTH EXCAVATION, BACKFILL, FILL AND GRADING

1. Field and laboratory testing shall be performed by an independent testing laboratory (the Testing Laboratory) selected by the City. The first round of tests will be paid from the "Cost Allowance for Permits, Licenses and Fees".
2. The location of tests shall be mutually acceptable to Testing Laboratory and the Engineer, or as directed by the Engineer.
3. In the event compacted material does not meet specified in-place density, re-compact material and re-test this area until specified results are obtained. All costs shall be borne by the Contractor at no additional cost to the City.
4. The Testing Laboratory shall perform inspections at least once daily to confirm lift thickness and compaction effort for entire fill area.

#### F. Methods of Field Testing

1. In-Place Density: ASTM D1556, ASTM D2167, or ASTM D2922.
2. In-Place Moisture Content: ASTM D3017, ASTM D4944, or ASTM D4959.

#### G. Material Testing Frequency: The following testing frequencies are minimum required for all structural and non-structural fill, grading and embankment.

1. Field In-Place Density and Moisture Content - Screened gravel and crushed stone shall be compacted as specified and indicated. For other backfill and fill materials, minimum test frequency shall be as follows, and no less than one test per:
  - (a) Trenches under structures, foundation preparation, or roadways subbase: Every 500' lin. ft. [150 m.] per lift.
  - (b) Trenches in areas without structures or roadways: Every 1000 lin. ft. [300 m.] per alternate lift.
  - (c) Paved Roadways: Every 200 lin. ft. [60 m.] per lift.
  - (d) Paved Areas: 3,500 sq. ft. [350 sq. m.] per lift.
  - (e) Under each structure: 1,000 sq. ft. [100 sq. m.] per lift.
  - (f) Around each structure: 1,500 sq. ft. [150 sq. m.] per lift.
  - (g) Embankment Fills: 10,000 sq. ft. [1000 sq. m.] per lift.
2. Moisture Density - One per source, except for screened gravel and crushed stone. Repeat the moisture density test for every 5,000 cubic yard of material use, and whenever visual inspection indicates a change in material gradation as determined by the Engineer.

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3. Gradation Analysis - A minimum of one per source and for each moisture density test and whenever visual inspection indicates a change in material gradation.

#### H. Construction Tolerances

1. Construct finished surfaces to plus or minus 1 inch [2.5 cm] of the elevations indicated.
  2. Grade cut and fill areas to plus or minus 0.20 foot [6.0 cm] of the grades indicated.
  3. Complete embankment edges to plus or minus 6 inches [15 cm] of the slope lines indicated.
  4. Provide the Engineer with adequate survey information to verify compliance with above tolerances.
- I. Cut pavement with a saw or pneumatic tools to prevent damage to remaining pavement without extra compensation. Where pavement is removed in large pieces, dispose of pieces before proceeding with excavation.
- J. Pipes, drains, and other utilities may exist in certain locations not indicated on drawings. No attempt has been made to show all services. Completeness or accuracy of information given is not guaranteed. Contractor is to conform with all Sunshine One Call (811) requirements.
- K. Dig test pits considered as incidental to the normal excavation as indicated and specified in this Section, at no additional compensation.
- L. Carefully support and protect from damage, existing pipes, poles, wires, fences, curbs, property line markers, and other structures, which the Engineer determines must be preserved in place without being temporarily or permanently relocated. Should such items be damaged, restore without compensation therefore, to at least as good condition as that in which they were found immediately before the work was begun.
- M. Whenever certain existing structures, as described below, are encountered, and the Engineer so directs, change the location, remove and later restore, or replace such structures, or assist the CITY in doing so.
- N. In removing existing pipes or other structures, include for payment only those new materials which are necessary to replace those unavoidably damaged as determined by the Engineer.
- O. The preceding two paragraphs apply to pipes, wires, and other structures which meet the following: (a) are not indicated on the drawings or otherwise provided for, (b) encroach upon or are encountered near and substantially parallel to the edge of the excavation, and (c) in the opinion of the Engineer, will impede progress to such an extent that satisfactory construction cannot

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proceed until they have been changed in location, removed (to be later restored), or replaced.

- P. Restore existing property or structures as promptly as practicable.
- Q. If material unacceptable for foundation (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the drawings and/or specifications, remove such material to the required width and depth as directed by the Engineer and replace it with screened gravel, select borrow, or concrete.
- R. Do not remove excavation materials from the site of the work or dispose of except as directed or permitted by the Engineer.
- S. Haul away and dispose of surplus excavated materials at locations directed by the Engineer at no additional cost to the CITY.
- T. During progress of work, conduct earth moving operations and maintain work site so as to minimize the creation and dispersion of dust. Furnish and spread calcium chloride if the Engineer decides that it is necessary for more effective dust control.
- U. Provide suitable and safe bridges and other crossings where required for accommodation of travel, and to provide access to private property during construction, and remove said structures thereafter.

#### 1.07 SITE CONDITIONS:

- A. Subsurface Conditions: Refer to Front End documents.

### **PRODUCTS**

#### 1.08 GENERAL

- A. Use only acceptable materials from excavations or borrows.
- B. Provide 3,000 psi concrete.
- C. Provide Fine Aggregate conforming to ASTM C33.

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#### 1.09 EQUIPMENT

- A. The compaction equipment shall be selected by the Contractor, and shall be capable of consistently achieving the specified compaction requirements. The selected compaction equipment shall meet the following minimum requirements:
1. Manually operated vibratory plate compactors weighing no less than 200 pounds [90 kg] with vibration frequency no less than 1600 cycles per minute.
  2. Vibratory steel drum or rubber tire roller weighing at least 12,000 pounds [5450 kg].

#### **EXECUTION**

#### 1.10 SITE MAINTENANCE

- A. Roadway and Site Leveling: Grade roadway and site as to maintain them in a level unrutted condition and to eliminate puddling of surface and subsurface water.

#### 1.11 EXCAVATION

- A. Execution of any earth excavation shall not commence until the related excavation support systems, and backfill and fill materials submittals are reviewed by the Engineer and all Engineer's comments satisfactorily addressed.
- B. Carry out program of excavation, and excavation support systems to eliminate possibility of undermining or disturbing foundations of existing structures or of work previously completed under this contract.
- C. Excavate to widths that give suitable room for building structures or laying and jointing piping.
- D. Do not plow, scrape or dig by machinery near to finished subgrade in a manner that would result in disturbance of subgrade.
- E. Excavate to lines and grades indicated in an orderly and continuous program.
- F. Establish limits of excavation to allow adequate working space for installing forms and for safety of personnel.
- G. Excavate to elevations indicated, or deeper, as directed by the Engineer, to remove unacceptable material.
- H. Exercise care to preserve material below and beyond the lines of excavations.

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- I. Place excavated material at the approved stockpile locations and in no case closer than 3 feet [90 cm] from edge of excavations to prevent cave-ins of bank slides.
- J. Regard small, less than one cubic yard, boulders, rock fragments, and concrete encountered during excavation as a normal part of in-place soils and not included for payment as rock.

#### 1.12 SEPARATION OF EXCAVATED MATERIALS FOR REUSE

- A. Remove only existing pavement that is necessary for prosecution of work.
- B. Carefully remove loam and topsoil from excavated areas. Store separately for further use or furnish equivalent loam and topsoil as directed.
- C. Carefully remove acceptable material from excavated areas and store separately for further use as backfill material.

#### 1.13 TRENCH EXCAVATION

- A. When pipe is to be laid in gravel bedding or concrete cradle, excavate trench by machinery to, or just below designated subgrade. If material remaining at bottom of trench is disturbed, recompaction shall be required.
- B. When pipe is to be laid directly on bottom of trench, do not excavate lower part of trenches by machinery to subgrade. Remove remainder of material to be excavated just before placing of pipe by use of hand tools. Form a flat or shaped bottom, true to grade, so pipe will have a uniform and continuous bearing. Support on firm and undisturbed material between joints, except for limited areas where use of pipe slings have disturbed bottom.
- C. Depth and width of trench are to conform with OSHA and Florida Trench Safety Act requirements, whichever are more stringent.

#### 1.14 TRENCH EXCAVATION IN FILL

- A. Place and compact material to top of fill or to a minimum height of 1 ft. [30 cm] above top of pipe, whichever is less, when pipe is to be laid in embankment or other recently filled material. Take particular care to ensure maximum consolidation of material under pipe location. Excavate pipe trench as though in undisturbed material.

#### 1.15 EXCAVATION NEAR EXISTING STRUCTURES

- A. Discontinue digging by machinery when excavation approaches pipes, conduits, or other underground structures. Continue excavation by use of

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hand tools. Include such manual excavation in work to be done when incidental to normal excavation and under items involving normal excavation.

- B. Excavate test pits when determination of exact location of pipe or other underground structure is necessary for doing work properly.

#### 1.16 REMOVAL OF SUBSURFACE OBSTRUCTIONS

- A. Remove indicated subsurface structures and related obstructions to extent shown
- B. Promptly notify the Engineer when any unexpected subsurface facilities are encountered during excavation such as utility lines and appurtenances, walls and foundations.

#### 1.17 UNAUTHORIZED EXCAVATION

- A. When the bottom of any excavation for structures is taken out beyond limits indicated or specified, backfill, with screened gravel and crushed stone wrapped with non-woven geotextile fabric or with 1,500 psi (10 Mpa) concrete.

#### 1.18 REUSE AND DISPOSAL OF SURPLUS EXCAVATED MATERIALS

- A. Reuse surplus acceptable excavated materials for backfill; deposit neatly and grade so as to make or widen fills, flatten side slopes, or fill depressions; or legally dispose off-site; all as directed or permitted and without additional compensation.

#### 1.19 SUBGRADE PREPARATION AND PROTECTION

- A. Remove loam and topsoil, loose vegetable matter, stumps and large roots from areas upon which embankments will be built or material will be placed for grading. Shape subgrade as indicated on drawings, and prepare by forking, furrowing, or plowing so that the first layer of new material placed thereon will be well bonded to it.
- B. As directed by the Engineer, over excavate unacceptable materials below the foundation subgrade. Backfill the over excavation with compacted screened gravel or crushed stone wrapped with nonwoven geotextile fabric. In no case shall the screened gravel be placed directly on the exposed subgrade prior to placing the geotextile fabric.
- C. Proof roll the foundation subgrade prior to backfilling and filling operation, or placing foundation concrete.
- D. Proof roll the pipe trench foundation subgrade prior to backfilling and filling operation, or placing soil-supported pipeline.

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- E. Utilize excavating equipment equipped with a toothless or smooth edged, excavating bucket to expose the pipe trench foundation subgrade to avoid disturbance of the bearing surface. Tamp the exposed subgrade with the excavating bucket prior to backfilling and filling operation, or placing soil-supported pipeline.

#### 1.20 CARE AND RESTORATION OF PROPERTY

- A. Enclose uncut tree trunks adjacent to work in wooden boxes of such height as may be necessary for protection from injury from piled material, equipment, operations, or otherwise due to work. Operate excavating machinery and cranes of suitable type with care to prevent injury to trees not to be cut and particularly to overhanging branches and limbs.
- B. Cut all branches, limbs, and roots smoothly and neatly without splitting or crushing. Neatly trim, cut the injured portions and cover with an application of grafting wax or tree healing paint as directed.
- C. Protect cultivated hedges, shrubs, and plants which might be injured by the Contractor's operations by suitable means or dig up and temporarily replant and maintain. After construction operations have been substantially completed, replant in original positions and care for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to effect their growth or diminish in their beauty or usefulness, replace by items of equal kind and quality existing at the start of the work.
- D. Do not use or operate tractors, bulldozers, or other power-operated equipment on paved surfaces when their treads or wheels of which are so shaped as to cut or otherwise damage such surfaces.
- E. Restore surfaces damaged by the Contractor's operations to a condition at least equal to that in which they were found immediately before work commenced. Use suitable materials and methods for such restoration.

#### 1.21 BACKFILLING - GENERAL

- A. Do not place, spread, roll or compact fill material during unfavorable weather conditions. If interrupted by heavy rain or other unfavorable conditions, do not resume until ascertaining that the moisture content and density of the previously placed soil are as specified.
- B. Do not use puddling, ponding or flooding as a means of compaction.

#### 1.22 MATERIAL PLACEMENT AND COMPACTION REQUIREMENTS

- A. Select Borrow, and Fine Aggregate

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1. Dump and spread in layers not to exceed 8-in. [20 cm] uncompacted thickness.
2. Compacted fill and backfill under structures and used for pipe bedding (from below pipe to spring line) shall be as indicated but not less than 95%. Other areas to be compacted to not less than 90% unless otherwise indicated.

#### B. Screened Gravel and Crushed Stone

1. Dump and spread in layers not to exceed 8-in. [20 cm] uncompacted thickness.
2. Compact using self-propelled vibratory steel drum or rubber tire rollers with a minimum of 4 passes in directions perpendicular to one another in open areas. In small areas, use manually operated vibratory plate compactors with a minimum of 4 passes.

#### C. Bank-run Gravel and Acceptable materials for use as non-structural fill

1. Dump and spread in layers not to exceed 12-in. [30 cm] uncompacted thickness.
2. Compact to not less than 90% unless otherwise indicated.

- D. Backfilling and filling operation shall be suspended in areas where tests are being made until tests are completed and the Testing Laboratory has advised the Engineer that adequate densities are obtained.

### 1.23 STRUCTURAL FILL AND BACKFILL UNDER STRUCTURES

- A. Compact fill and backfill under structures and pavements with screened gravel, crushed stone, select borrow, or fine aggregate as specified and indicated.

### 1.24 NON-STRUCTURAL BACKFILL AROUND STRUCTURES

- A. Use acceptable materials for non-structural backfill around structures and compacted as specified and indicated.
- B. Conduct hydraulic testing as soon as practicable after structures are constructed and other necessary work has been done. Start backfilling promptly after completion of tests.
- C. Deposit material evenly around structure to avoid unequal soil pressure.
- D. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking, or other damage.

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### EARTH EXCAVATION, BACKFILL, FILL AND GRADING

#### 1.25 BACKFILLING PIPE TRENCHES

##### A. General

1. Begin backfilling and proceed until completed after: the pipes and conduits have been laid, joints have acquired maximum degree of hardness, pipelines and conduits have successfully passed tests and inspections as required in the Specifications, and concrete or masonry structures within the trench have reached their design strength to support all loads.
2. Backfill and compact indicated material under, around, and above pipes, conduits, and other structures to the indicated or specified compaction density requirement. Utilize compaction devices which will not damage the pipe, conduit, or structure within the trench.
3. Do not drop backfill material into trench from a height of more than 5 ft. [150 cm], or in a manner which will damage the pipe, conduit, or other structure within trench.

##### B. Pipe Trenches

###### 1. Materials

- (a) From below pipe to 1 ft. [30 cm] above top of pipe: Use screened gravel or crushed stone if the pipe is below the ground water table, or clean sand if above the water table, unless otherwise indicated.
- (b) One foot [30 cm] above top of pipe to finished grade or to pavement subbase: Use clean well graded fill or acceptable materials, unless otherwise indicated.

2. Compacting Around Pipes: Compact material around circumference of pipe and the area between the trench wall and the pipe by hand tamping in 6 inches [15 cm] layers.
3. Compacting Above Pipe: Compact material by hand tamping. If trench width is wide enough to accommodate power tools and the compacted material over the pipe will support the load of the power tools without damage to the pipe, use rollers or other powered compaction equipment able to more readily achieve compaction requirements.

#### 1.26 MATERIAL FOR FILLING AND EMBANKMENTS

- A. Use acceptable materials for filling and building embankments unless otherwise indicated.

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### EARTH EXCAVATION, BACKFILL, FILL AND GRADING

#### 1.27 PLACING AND COMPACTING EMBANKMENT MATERIAL

- A. Compact fill material as specified and indicated.
- B. Perform fill operation in an orderly and systematic manner using equipment in proper sequence to meet the specified compaction requirements.
- C. Place fill on surfaces which are free of unacceptable materials.
- D. Begin filling in lowest section of work area. Grade surface of fill approximately horizontal but provide with sufficient longitudinal and transverse slope to allow for runoff of surface water from every point.
- E. Conduct filling so that no obstruction to drainage from other sections of fill area is created at any time.
- F. Reduce moisture content of fill material, if necessary, in source area by working it over under warm and dry atmospheric conditions. A large disc harrow with two to three foot diameter disks may be required for working soil in a drying operation.
- G. Compact uniformly throughout. Keep surfaces of fill reasonably smooth and free from humps and hollows which would prevent proper and uniform compaction. Do not permit hauling equipment to follow a single track on the same layer but direct equipment to spread out to prevent overcompaction in localized areas. Take care in obtaining thorough compaction at edges of fill.
- H. Slightly slope surface of fill to ensure drainage during periods of wet weather. Do not place fill while rain is falling or after a rain-storm until the Engineer considers conditions satisfactory. During such periods and upon suspension of filling operations for any period in excess of 12 hours, roll smooth the surface of fill using a smooth wheel static roller to prevent excessive absorption of rainfall and surface moisture. Prior to resuming compaction operations, remove muddy material off surface to expose firm, compacted material, as determined by the Engineer.
- I. When fill is placed against an earlier fill or against in-situ material under and around structures, including around piping beneath structures or embankments, slope junction between two sections of fill, 1 vertical to 1.5 horizontal. Bench edge of existing fill 24-in. [60 cm] to form a serrated edge of compact stable material against which to place the new fill. Ensure that rolling extends over junction between fills.
- J. When fill is placed directly upon another older fill, clean surface thoroughly of debris and remove any loose material. Then proof roll the entire old surface.
- K. After spreading each loose lift to the required thickness and adjusting its moisture content as necessary, roll with sufficient number of passes to obtain the required compaction. One pass is defined as the required number of successive trips which by means of sufficient overlap will insure complete

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coverage and uniform compaction of an entire lift. Do not make additional passes until previous pass has been completed.

- L. In case material of any fill sinks and weaves under roller or under hauling units and other equipment, required degree of compaction is not being obtained. Reduce the moisture content. If such sinking and weaving produces surface cracks, suspend operations on that part of the embankment until it becomes sufficiently stabilized. Ideal condition in fill is that attained when the entire fill below the surface being rolled is so firm and hard as to show only the slightest weaving and deflection as roller passes. Spread out rolling operations over the maximum practicable area to minimize condition of sinking and weaving.
- M. If because of defective workmanship, compaction obtained over any area is less than that required, remedy condition at no cost to CITY. If additional rolling or other means fail to produce satisfactory results, remove material in that area down to a level of satisfactory density. Perform removal, replacement, and rerolling without additional compensation

#### 1.28 COMPACTION CONTROL OF BACKFILL, FILL, AND EMBANKMENT

- A. Compact to density specified and indicated for various types of material. Control moisture content of material being placed as specified or if not specified, at a level slightly lower than optimum.
- B. The Testing Laboratory shall provide inspection during filling or backfilling operations to ensure compaction of screened gravel or crushed stone and record compaction equipment in use.
- C. Moisture control may be required either at the stockpile area, pits, or on embankment or backfill. Increase moisture content when material is too dry by sprinkling or other means of wetting uniformly. Reduce moisture content when material is too wet by using ditches, pumps, drainage wells, or other devices and by exposing the greatest possible area to sun and air in conjunction with harrowing, plowing, spreading of material or any other effective methods.

#### 1.29 ALLOWANCE FOR SHRINKAGE

- A. Build embankments or backfill to a height above finished grade which will, in the opinion of the Engineer, allow for the shrinkage or consolidation of material. Initially, provide at all points, an excess of at least 1% of total height of backfill measured from stripped surface to top of finished surface.
- B. Supply specified materials and build up low places as directed, without additional cost if embankment or backfilling settles so as to be below the indicated level for proposed finished surface at any time before final acceptance of the work.

SECTION 02210

EARTH EXCAVATION, BACKFILL, FILL AND GRADING

1.30 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

- END OF SECTION -

## SECTION 02220

### EXCAVATION, BACKFILL AND COMPACTION

#### **Part 1 - GENERAL**

##### 1.01 WORK INCLUDED

- A. The work included under this section consists of excavating, grading, backfilling and compacting for general construction.
- B. For Excavation and Backfill for Utilities refer to Section 02222.
- C. Excavation shall include the removal of all material of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of said material shall conform to the lines and grades indicated.
  - i) When excavations are to be made in paved surfaces, the pavement shall be saw-cut ahead of the excavation by means of suitable sharp tools to provide a uniform sharp edge, with minimum disturbance of remaining material.

##### 1.02 PROTECTION

###### A. Excavations

- 1. Notify ENGINEER of unexpected subsurface conditions and discontinue work in affected area until notification to resume work.
- 2. Provide and maintain adequate barricades and warning lights to protect open trenches.
- 3. All trenches shall be fully backfilled at the end of each day.

###### B. Existing Utilities

- 1. Those existing utilities that are to be retained shall be protected, and if damaged, shall be repaired by the CONTRACTOR at no additional cost to the CITY.
- 2. The CONTRACTOR shall notify CALL SUNSHINE at their toll free number 1-800-432-4770 and/or each utility individually, forty-eight (48) hours prior to any excavation.

- C. Contractor shall exercise care during excavation in areas of environmental sensitivity and advise the project engineer if any hazardous material is encountered.

#### **Part 2 - PRODUCTS**

## SECTION 02220

### EXCAVATION, BACKFILL AND COMPACTION

#### 2.01 MATERIAL

- A. Material shall comply with Section 125-8 of the FDOT specifications for Road and Bridge Construction, the drawings and other contract documents.
- B. Material used for backfill shall be select granular material, free from grass, roots, brush or other vegetation, rubbish, clay, marl, lumps of broken paving or boulders having maximum dimension larger than six (6") inches. Unsuitable material shall be removed from the site at the CONTRACTOR'S expense away from the project.
- C. Material coming within one foot (1'-0") of any structure or pipe shall be free of rocks or unbroken masses of earthy material having maximum dimension larger than two inches (2").
- D. If, in the ENGINEER'S opinion, material is unsuitable for backfill purposes, imported material having sand equivalent value of no less than twenty percent (20%) shall be used for this portion of the trench backfill. Imported sand backfill, when ordered by the ENGINEER, will be paid for under a separate unit bid item if such bid item has been established, otherwise payment will be made in accordance with a negotiated price.
- E. Suitable For Fills: Material classified as A-1, A-3, or A-2-4 under AASHTO M 145, free from vegetation and organic material, and with not more than 10 percent by weight passing the No. 200 sieve.
- F. Unsuitable For Fills: Materials classified as A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 and A-8 under AASHTO M 145.
- G. Select Material: Suitable material containing no pieces or rock fragments larger than will pass a 3-inch diameter ring.

#### **Part 3 - EXECUTION**

##### 3.01 EXCAVATION

- A. Work shall comply with Section 120 of the FDOT Standard Specifications for Road and Bridge Construction.
- B. Trench and Excavation:

## SECTION 02220

### EXCAVATION, BACKFILL AND COMPACTION

1. Work shall comply with Section 125 of the 1991 FDOT Standard Specifications for Road and Bridge Construction.
2. The maximum amount of open trench permitted in any one (1) location shall be one hundred feet (100'), unless the trench is located within a State of County right-of-way, in which case the requirement would defer to the more stringent of those agencies.
3. All trenches shall be fully backfilled at the end of each day or, in lieu thereof, when approved by the ENGINEER, heavy steel plate adequately braced and capable of supporting vehicular traffic may be used in certain locations where it is impractical to backfill at the end of each day.

#### C. Over-excavation When Ordered:

1. Trenches shall be over-excavated beyond the depth shown, when ordered by the ENGINEER. Such over-excavation shall be to the depth ordered.
2. The trench shall be refilled to the grade of the bottom of the pipe with either selected granular material obtained from the excavation, sand or crushed rock, at the option of the ENGINEER. When crushed rock bedding is ordered, the material shall be a well-graded material with maximum particle size of three-quarters of an inch (3/4").
3. Bedding material shall be placed in layers, brought to optimum moisture content, and compacted to ninety-five percent (95%) of maximum density.
4. Payment for over-excavation shall be paid for either on a negotiated price basis, or as the ENGINEER may determine in accordance with Section 10.4 of the General Conditions.

#### D. Over Excavation not Ordered, Specified or Shown:

1. Any over-excavation carried below the grade ordered, specified or shown, shall be refilled to the required grade with suitable selected granular material.
2. Refilled material shall be moistened as required and compacted to ninety-five percent (95%) of maximum density.
3. Work required due to over excavation when not ordered shall be performed by the CONTRACTOR at his own expense.

#### E. Disposal of Excess Excavated Material:

1. The CONTRACTOR shall remove and dispose of all excess excavated material at his own expense, in accordance with Paragraph 7.14 C of the General Conditions.

## SECTION 02220

### EXCAVATION, BACKFILL AND COMPACTION

2. All excess suitable material that cannot be used as fill on the site(s), is to remain property of the CITY and shall be removed by the CONTRACTOR to a disposal site(s) as directed by ENGINEER.
3. All materials suitable for use as backfill shall be hauled to and used in areas where not enough suitable material is available from the excavation.
4. Unsuitable material such as trees, shrubs, etc. shall be the CONTRACTORS responsibility to load, haul and provide a disposal site.

#### 3.02 BACKFILLING

- A. Work shall comply with Section 125-8 of the FDOT Specifications for Road and Bridge Construction, the drawings and all other contract documents.
- B. Backfill shall not be dropped directly upon any structure or pipe.
- C. Backfill shall not be placed around or upon any structure until the concrete has attained sufficient strength to withstand the loads imposed.
- D. Backfill around and beneath structures, and beneath paved areas:
  1. Except where otherwise specified for a particular structure or ordered by the ENGINEER, backfill placed around and beneath structures, and beneath paved areas, shall be placed in horizontal layers not to exceed eight inches (8") in thickness, as measured before compaction.
  2. The backfill shall be brought up evenly with each layer moistened and compacted by mechanical means to ninety-five percent (95%) of maximum density.

#### 3.03 COMPACTION TESTING

- A. Compaction testing specified herein are expressed as a percentage of maximum density. Maximum density shall be determined by AASHTO T-180, Method D.
- B. The CITY shall retain the services of an independent materials testing laboratory to perform laboratory and field density tests which, in the opinion of the ENGINEER, are necessary to establish compliance with the compaction requirements of these specifications. The first round of tests will be paid from the "Testing Allowance".

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EXCAVATION, BACKFILL AND COMPACTION

- C. The costs of subsequent recompaction and retesting due to not achieving the required minimum compaction shall be borne by the CONTRACTOR at no additional cost to the CITY.
- D. Compaction density tests shall be scheduled by the ENGINEER. CONTRACTOR shall give notice to the ENGINEER 24 hours in advance of required density tests.
- E. All tests which fail to meet minimum compaction requirements shall be paid by the CONTRACTOR. All tests shall be performed in the presence of the ENGINEER or his representative.
- F. Trench backfill which does not comply with the specified densities, as indicated by such tests, shall be reworked and recompacted until the required compaction is secured, at no additional cost to the CITY.

- END OF SECTION -

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

#### **Part 1 - GENERAL**

##### 1.01 THE REQUIREMENT

- A. Excavate, grade and backfill as required for underground piping systems and appurtenances as shown on the Drawings and specified herein.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02500 - Surface Restoration
- B. Division 3 - Concrete

##### 1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Codes: All codes, as referenced herein, are specified in Section 01090, "Reference Standards".
- B. Commercial Standards:

ASTM C33	Standard Specification for Concrete Aggregates
ASTM D 422	Method for Particle-Size Analysis of Soils.
ASTM D 698	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in (304.8-mm) Drop.
ASTM D 1556	Test Method for Density of Soil in Place by the Sand-Cone Method.
ASTM D 1557	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in (457-mm) Drop.
ASTM D 2419	Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
ASTM D 2922	Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

##### 1.04 SUBMITTALS

- A. General: Submit information and samples to the CITY for review as specified herein in accordance with Section 01300, "Submittals".

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

- B. Dewatering: The CONTRACTOR shall submit to the CITY its proposed methods of handling trench water and the locations at which the water will be disposed of. Methods shall be acceptable to the CITY before starting the excavation.
- C. Bedding and Backfill Materials: The CONTRACTOR shall notify the CITY of the off-site sources of bedding and backfill materials, and submit to the CITY a representative sample weighing approximately 50 lbs. The sample shall be delivered to a location on site determined by the CITY.
- D. Sheet Piling System: Drawings of the sheet piling system and design computations shall be submitted to the CITY; however, the review of these drawings shall in no way relieve the CONTRACTOR of the responsibility to provide a safe and satisfactory sheet piling and shoring system. Sheet piling and shoring shall be designed by the CONTRACTOR, and the proposed design shall be sealed by a Professional Engineer registered in the State of Florida. If the CITY is of the opinion that at any point sufficient or proper supports have not been provided, it may order additional supports put in at the CONTRACTOR's expense.
- E. Dewatering Permits: If the quantity or nature of water withdrawn requires approval/permits from regulatory agencies, the CONTRACTOR shall procure such permits at its expense and submit copies to the CITY before commencing the work. The CONTRACTOR will not be granted contract time extensions due to dewatering permit processing delays.

#### 1.05 QUALITY CONTROL

- A. An independent testing laboratory (Testing Laboratory) will be selected by the CITY to perform field and laboratory soil testing as described in Section 01400, "Testing and Inspection". The cost of the first round of tests will be paid from the "Test Allowance". The costs of subsequent recompaction and retesting resulting from not achieving the required minimum compaction shall be borne by the CONTRACTOR at no additional cost to the CITY.
- B. The CONTRACTOR shall schedule its work so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the Testing Laboratory informed of his progress. A minimum of 48 hours of notice shall be provided to the Testing Laboratory to mobilize its activities.

#### 1.06 SUBSURFACE INFORMATION

- A. The CONTRACTOR shall be responsible for anticipating groundwater conditions and shall provide positive control measures as required. Such measures shall ensure stability of excavations, groundwater pressure control,

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

prevention of tanks, pipes, and other structures from being lifted by hydrostatic pressures, and avoiding the disturbance of subgrade bearing materials.

#### 1.07 TRENCH SAFETY ACT COMPLIANCE

- A. The CONTRACTOR by signing and executing the contract is, in writing, assuring that it will perform any trench excavation in accordance with the Florida Trench Safety Act, Section 553.60 et. seq.. The CONTRACTOR has further identified the separate item(s) of cost of compliance with the applicable trench safety standards as well as the method of compliance as noted in the "Bid Forms" Section of the Contract front-end documents.
- B. The CONTRACTOR acknowledges that this cost is included in the applicable items of the Proposal and Contract and in the Grand Total Bid and Contract Price.
- C. The CONTRACTOR is, and the CITY and CITY are not, responsible to review or assess the CONTRACTOR's safety precautions, programs or costs, or the means, methods, techniques or technique adequacy, reasonableness of cost, sequences or procedures of any safety precaution, program or cost, including but not limited to, compliance with any and all requirements of Florida Statute Section 553.60 et. seq. cited as the "Trench Safety Act". The CONTRACTOR is, and the CITY and CITY are not, responsible to determine if any safety or safety related standards apply to the project, including but not limited to, the "Trench Safety Act".

#### 1.08 PROTECTION OF PROPERTY AND STRUCTURES

- A. The CONTRACTOR shall, at its own expense, sustain in place and protect from direct or indirect injury, all pipes, poles, conduits, walls, buildings, and all other structures, utilities, and property in the vicinity of its Work. Such sustaining shall be done by the CONTRACTOR. The CONTRACTOR shall take all risks attending the presence or proximity of pipes, poles, conduits, walls, buildings, and all other structures, utilities, and its Work. It shall be responsible for all damage, and assume all expenses, for direct or indirect injury and damage, caused by its Work, to any such pipe, structures, etc., or to any person or property, by reason of injury to them, whether or not such structures, etc., are shown on the Drawings.
- B. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations. Barricades with flashing lights shall also be placed along excavation from sunset each day to sunrise of the next day until such excavation is entirely refilled, compacted, and paved. All excavations shall be

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EXCAVATION AND BACKFILL FOR UTILITIES

barricaded where required to meet OSHA, local and Federal Code requirements, in such a manner to prevent persons from falling or walking into any excavation within the site fenced property limits.

1.09 DEWATERING PERMITS

- A. The CONTRACTOR shall be responsible for obtaining all permits required for the dewatering operation.

**Part 2 - PRODUCTS**

2.01 BEDDING MATERIAL

- A. Bedding materials shall be furnished from acceptable off-site sources. The CONTRACTOR shall submit to the CITY the sources of each material for review in accordance with Section 01300, "Submittals".
- B. Crushed stone (or drainfield limerock) shall be used as bedding material for piping (except for copper pipe) and/or manholes as shown on the Standard Details when the installation is below the ground water table elevation. Crushed stone shall consist of hard, durable, sub-angular particles of proper size and gradation, and shall be free from organic material, wood, trash, sand, loam, clay, excess fines, and other deleterious materials.

- 1. For pipe diameters less than 24 inches, the stone shall conform to the requirements of ASTM C 33, Size No. 57 (3/4-inch rock) and be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
1-½ inch	100
1 inch	95 - 100
½ inch	25 - 60
No. 4	0 - 10
No. 8	0 - 5

- 2. For bedding of 24 inch and larger diameter pipe, the stone shall conform to the requirements of ASTM C 33 and be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
5/8 inch	100
1/2 inch	40 - 100
3/8 inch	15 - 45
No. 10	0 - 5

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### EXCAVATION AND BACKFILL FOR UTILITIES

- C. Sand shall be used for bedding pipe when installed under dry trench conditions, or above the ground water table. Sand shall also be used for bedding copper pipe under all conditions. Sand shall be dry, screened, graded sand with 100 percent passing a 3/8-inch sieve and not more than 5 percent passing a No. 200 sieve.
- D. Limerock screenings, sand or other fine material shall not be used for bedding.
- E. All pipe bedding material shall be new, unless otherwise approved by the CITY. Existing pipe bedding material may not be used.

#### 2.02 SELECT BACKFILL

- A. Select Backfill: Select backfill shall be clean sandy material passing through a 3/4-inch sieve as select backfill material.

#### 2.03 GENERAL BACKFILL

- A. All other backfill (general backfill) placed above the select backfill shall pass through a 6-inch ring. General backfill shall contain no more than 10 percent organics. General backfill used under roadways shall be compatible with the materials and compaction specified under Section 02510 – Asphaltic Concrete Pavement and 02526 – Concrete Pavement, Curbs and Sidewalk.

### **Part 3 - EXECUTION**

#### 3.01 EXCAVATION

- A. The CONTRACTOR shall perform all excavation of every description and of whatever substance encountered, to the dimensions, grades and depths shown on the Drawings, or as required for a proper installation. All excavations shall be made by open cut and in accordance with the Trench Safety Act. All existing utilities such as pipes, poles and structures shall be carefully located, supported and protected from injury; in case of damage, they shall be restored at the CONTRACTOR's expense.
- B. Pipe trenches for piping shall be excavated to a width within the limits of the top of the pipe and the trench bottom so as to provide a clearance on each side of the pipe barrel, measured to the face of the excavation, or sheeting if used, of 6 inches to 12 inches as defined on the Drawings. All pipe trenches shall be excavated to a level where suitable material is reached, a minimum of 8 inches below the pipe barrel or that will allow for a minimum of 36 inches of covering unless otherwise indicated on the Drawings.
- C. Ladders or steps shall be provided for and used by workmen to enter and leave trenches.

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

- D. Excavated unsuitable material shall be removed from the site and disposed of by the CONTRACTOR. Materials removed from the trenches shall be stored and in such a manner that will not interfere unduly with traffic on public roadways and sidewalks and shall not be placed on private property. In congested areas, such materials that cannot be stored adjacent to the trench or used immediately as backfill shall be removed to other convenient places of storage acceptable to the CITY at the CONTRACTOR's expense.
- E. Excavated material that is suitable for use as backfill shall be used in areas where sufficient material is not available from the excavation. Suitable material in excess of backfill requirements shall be disposed off-site at the CONTRACTOR's expense.

#### 3.02 SHEETING AND BRACING

- A. The CONTRACTOR shall furnish, place and maintain sheeting and bracing to support sides of the excavation as necessary to provide safe working conditions in accordance with OSHA requirements, and to protect pipes, structures and other Work from possible damage. Where wood sheeting or certain designs of steel sheeting are used, the sheeting shall be cut off at a level of 2 feet above the top of the installed pipe and that portion below the level shall be left in place. If interlocking steel sheeting is used, it may be removed providing removal can be accomplished without disturbing the bedding, pipe or alignment of the pipe. Any damage to the pipe bedding, pipe or alignment of the constructed utility caused by the removal of sheeting shall be cause for rejection of the affected portion of the work. The CITY may permit sheeting to be left in place at the request and expense of the CONTRACTOR, or the CITY may order him in writing to leave in place, for the preventing of damage to structures or property. Payment for sheeting ordered to remain in place shall be paid for at a negotiated price.
- B. If the CITY is of the opinion that at any point sufficient or proper supports, have not be provided, he may order additional supports put in at the CONTRACTOR's expense. The CONTRACTOR shall be responsible for the adequacy of all sheeting used and for all damage resulting from sheeting and bracing failure or from placing, maintaining and removing it.

#### 3.03 REMOVAL OF WATER

- A. General: It is a basic requirement of these Specifications unless otherwise authorized per Article 3.09 that excavations shall be free from water before pipe or structures are installed.

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

- B. The CONTRACTOR shall provide pumps, and other appurtenant equipment necessary to remove and maintain water at such a level as to permit construction in a dry condition. The CONTRACTOR shall continue dewatering operations until backfilling has progressed to a sufficient depth over the pipe to prevent flotation or movement of the pipe in the trench or so that it is above the water table. If at any point during the dewatering operation it is determined that fine material is being removed from the excavation sidewalls, the dewatering operation shall be stopped. If any of the subgrade or underlying material is disturbed by movement of groundwater, surface water, or any other reason, it shall be replaced at the CONTRACTOR's expense with crushed stone or gravel.
- C. The CONTRACTOR shall use dewatering systems that include automatic starting devices, and standby pumps that will ensure continuous dewatering in the event of an outage of one or more pumps.
- D. Disposal: Water from the trenches and excavation shall be disposed of in such a manner as will not cause injury to public health, to public or private property, to the Work completed or in progress, to the surface of the streets, cause any interference with the use of the same by the public, or cause pollution of any waterway or stream. The CONTRACTOR shall submit his proposed methods of handling trench water and locations at which the water will be disposed of to the CITY for review and shall receive acceptance before starting the excavation. Disposal to any surface water body will require silt screens to prevent any degradation in the water body. The CONTRACTOR shall have responsibility for acquiring all necessary permits for disposal.

#### 3.04 TRENCH STABILIZATION

- A. No claim for extras, or additional payment will be considered for cost incurred in the stabilization of trench bottoms which are rendered soft or unstable as a result of construction methods, such as improper or inadequate sheeting, dewatering or other causes. In no event shall pipe be installed when such conditions exist and the CONTRACTOR shall correct such conditions so as to provide proper bedding or foundations for the proposed installation at no additional cost to the CITY before placing the pipe or structures.

#### 3.05 PIPE BEDDING IN DRY TRENCHES

- A. Pipe trenches shall be excavated as described in Article 3.01. The resulting excavation shall be backfilled with acceptable pipe bedding material, up to the level of the centerline of the proposed pipe barrel. This backfill shall be tamped and compacted to provide a proper bedding for the pipe and shall then

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

be shaped to receive the pipe. Bedding shall be provided under the branch of all fittings to furnish adequate support and bearing under the fitting.

- B. Any over excavation below the levels required for installation of the pipe shall be backfilled with acceptable bedding material, tamped, compacted and shaped to provide proper support for the proposed pipe, at the CONTRACTOR's expense.

#### 3.06 BACKFILL

- A. The CONTRACTOR shall not backfill trenches until the piping has been inspected and tested in accordance with Section 15995 - Pipeline Testing and Disinfection.
- B. Pipelines: Pipeline trenches shall be backfilled to a level 12 inches above the top of the pipe with select backfill. When placed in the dry, such material shall be placed in 9-inch layers, each compacted to the densities specified in Article 3.07. Only hand operated mechanical compacting equipment shall be used within six inches of the installed pipe.
- C. After the select backfill has been placed as specified above, and after all excess water has completely drained from the trench, general backfilling of the remainder of the trench may proceed. General backfill shall be placed in horizontal layers, the depth of which shall not exceed the ability of the compaction equipment employed, and in no event shall exceed a depth of 12 inches. Each layer shall be moistened, tamped, puddled, rolled or compacted to the densities specified in Article 3.07.
- D. Manholes and Vaults: Any excavation below the levels required for the proper construction of manholes or vaults shall be filled with Class B concrete. The use of earth, rock, sand or other materials for this purpose will not be permitted.

#### 3.07 COMPACTION AND DENSITIES

- A. Compaction of backfill shall be 98% of the maximum density where the trench is located under structures or paved areas, and 95% of the maximum density elsewhere. Methods of control and testing of backfill construction are:
  - 1. Maximum density of the material in trenches shall be determined by ASTM D 1557.
  - 2. Field density of the backfill material in place shall be determined by ASTM D 1556 or D 2922.
- B. Density Test Locations for Pipelines: The compacted backfill/fill shall be tested for in-place density at the rate of one test location per 200 lineal feet (or

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

fraction thereof) of trench, or as shown on the Drawings or as directed by the CITY. The density tests shall be taken at the trench bottom and at each location in one foot intervals beginning from the top of the piping and ending at the final grade. At existing road or pavement crossings, a minimum of two (2) density tests per crossing per lift is required.

- C. Trench backfill which does not comply with the specified densities, as indicated by such tests, shall be reworked and recompacted until the required compaction is secured, at no additional cost to the CITY. The costs for retesting such Work shall be paid for by the CONTRACTOR.

#### 3.08 ADDITIONAL EXCAVATION AND BACKFILL

- A. Where organic material, such as roots, muck, or other vegetable matter, or other material which, in the opinion of the CITY, will result in unsatisfactory foundation conditions, is encountered below the level of the proposed pipe bedding material, it shall be removed to a depth of two feet below the outside bottom of the pipe or to a greater depths as directed by the CITY and removed from the site. Sheeting shall be installed if necessary to maintain pipe trenches within the limits identified by the CITY. The resulting excavation shall be backfilled with suitable backfill material, placed in 12-inch layers, tamped and compacted up to the level of the bottom of the proposed pipe bedding material. Sufficient compaction of this material shall be performed to protect the proposed pipe against settlement. Lean concrete may be used in lieu of backfill when pipe installation is in the wet or at the CONTRACTOR's option. Construction shall then proceed in accordance with the provisions of Article 3.05.
- B. Additional excavation (more than two feet below the pipe) shall be performed when ordered by the CITY. Where organic or other material is encountered in the excavation, the CONTRACTOR shall bring the condition to the attention of the CITY and obtain his determination as to whether or not the material will require removal, prior to preparing the pipe bedding. The excavation of material up to a depth of two feet below the outside bottom incidental items of construction and the Work shall be done at no additional cost to the CITY. Where ordered by the CITY, excavation greater than two feet below the pipe, backfill and additional sheeting, will be compensated by the CITY.

#### 3.09 ALTERNATE METHOD OF CONSTRUCTION

- A. Use of This Method: A combination of conditions in the substrate, water table, or method of disposal may be encountered during the course of the work which makes dewatering impossible. When such conditions are encountered,

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

but only after all reasonable means (pumps, well points, etc.) to dewater the excavation have been employed without success, the CONTRACTOR, may request to employ the following Alternate Method of Construction. The concurrence of the CITY shall be obtained in writing and shall limit the use of the alternate method of construction to such specific portions of the Work as the CITY shall determine.

- B. The requirements set forth in other sections of these Specifications shall establish the required standards of construction quality for this work. Use of the alternate method of construction described hereinafter shall in no way be construed as relieving the CONTRACTOR of the work. No additional payment will be made to the CONTRACTOR for excavation, backfill, sheeting or any cost incurred for Work or materials, or any other costs incurred as a result of the use of this alternate method of construction. The prices established in the Proposal shall be for full payment for the various items of work.
- C. Subject to all the requirements stated herein, including written acceptance of the CITY, construction will be permitted in accordance with the following specifications. All requirements of these Specifications shall apply to this construction unless otherwise specifically modified herein.
- D. Removal of Water: The installation of pipe and appurtenances under water will be permitted and the requirements of Article 3.03 will be waived.
- E. Excavation shall be performed in accordance with Article 3.01 to the specified limits. The excavation shall be completely cleaned of silt and other fines.
- F. Pipe Bedding: Pipe bedding shall be placed from the bottom of the excavation to six inches above the top of the pipe. The bedding material shall be screened gravel or crushed stone as specified in Article 2.01. Limerock screenings, sand or other fine organic material shall not be used.
- G. The bedding material shall be placed to the lower third of the pipe barrel and then be shaped to receive the pipe at the intended elevation. Bedding shall be provided under the branch of all fittings to furnish adequate support and bearing under the fitting. After the pipe section is installed and tested if required, the remaining bedding shall be placed to the top of the pipe.
- H. Select backfill material shall be used to backfill from 6 inches above the top of the pipe to a level one foot above standing ground water. The lift shall then be compacted per Article 3.07. General backfill shall then be placed in 8-inch lifts and compacted per Article 3.07.
- I. If the Alternate Method of Construction is used, all backfill material, including specified pipe bedding material, shall be carefully lifted into the trench and not released to fall freely therein until the bucket or container is at or just above water level. Under no circumstances shall backfill material be dumped or pushed into the trenches containing water. Below water level, the bedding and

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES

backfill material shall be carefully rammed into place in uniform layers, of equal depth on each side of the pipe, up to one foot above the water level. Above the water level, backfill material shall be placed and compacted for normal backfill as previously specified.

#### 3.10 RESTORATION OF EXISTING SURFACES

- A. Restore all grassed areas disturbed by the trenching operations by resodding in accordance with Section 02900 – Sodding.

- END OF SECTION -

SECTION 02225

CONTAMINATED SOILS AND GROUNDWATER

**Part 1 - GENERAL**

1.01 THE REQUIREMENT

- A. This Section includes, except as elsewhere provided, the work necessary to remove, transport, and properly dispose of contaminated soils and groundwater required for complete construction of structures and underground piping systems and appurtenances as shown on the Drawings and specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02222 – Excavation and Backfill for Utilities

1.03 QUALITY CONTROL

- A. Codes and Standards: All work associated with dewatering, excavation, removal, transportation and disposal of contaminated soils and groundwater shall be performed in compliance with applicable codes, standards and requirements of governing authorities having jurisdiction in the area.
- B. Testing and Inspection Service: A testing laboratory certified by the Broward County Environmental Protection and Growth Management Department (BCEPGMD) and the State of Florida shall be retained by the CONTRACTOR to conduct appropriate soils and groundwater testing in accordance with regulatory requirements and the Contract Documents.

1.04 SUBMITTALS

- A. The CONTRACTOR shall submit information and samples to the CITY for review as specified herein in accordance with Section 01300. The information shall include:
1. Detailed description of the proposed methods for temporary stockpiling, transportation, and disposal of all contaminated soils and groundwater.
  2. Copies of permits for all disposal facilities.
  3. Copies of all manifest and documentation for handling and disposing of all contaminated soil and groundwater in full compliance with local, state and federal requirements. This documentation must be provided prior to requesting payment under this Bid item.
  4. Copies of all laboratory analyses required for transportation and disposal of all contaminated soils and groundwater in full compliance with local, state and federal requirements.
  5. Names, addresses and contact numbers of all subcontractors.

## SECTION 02225

### CONTAMINATED SOILS AND GROUNDWATER

6. Copy of Contractor's Health and Safety Plan and training certificates of personnel who will be handling the contaminated material in accordance with OSHA requirements.

#### **Part 2 - PRODUCTS (NOT USED)**

#### **Part 3 - PART 3 - EXECUTION**

##### 3.01 CONTAMINATED SOILS

- A. The CONTRACTOR shall retain a laboratory certified by the BCEPGMD and the State of Florida to sample the groundwater in the excavation, the stored soil and soil samples in the perimeter of the excavated hole for petroleum contamination (EPA Methods 601, 602, 610). The number of samples shall be sufficient to comply with the requirements of the CONTRACTOR's approved Dewatering Plan and all local, state and federal regulations. The results of the tests shall be forwarded to the CITY.
- B. Excavated materials which are deemed to be contaminated shall be removed, treated and disposed of by the CONTRACTOR in accordance with all applicable regulatory requirements. The soil may be contaminated with petroleum product which may be partly or entirely diesel fuel or gasoline. When such soil conditions are encountered, they shall be brought to the CITY's attention. The extent of excavation shall be determined in the field by the CITY. Payment for this work shall be in accordance with the allowance bid item for excavation, treatment and disposal of contaminated soil, included in the Schedule of Prices Bid.
- C. All contaminated soil which is excavated shall be stockpiled in an area designated for contaminated soils. The CONTRACTOR shall take whatever precautions are necessary to ensure that contaminated soils are not co-mingled with non-contaminated stockpiled soils and/or mucks.
- D. Contaminated soils must be placed on an impermeable barrier when temporarily stockpiled and must be covered with visquine to prevent runoff. All stockpile leachate or runoff must be collected for disposal in accordance with federal, state and local regulations.
- E. Contaminated soils shall be processed and treated at a state licensed facility. These soils shall be transported and disposed of in accordance with federal, state and local regulations.
- F. The CONTRACTOR shall be responsible for testing soil which has been treated to certify treated soil meets applicable federal, state, and local regulations for final disposal.

## SECTION 02225

### CONTAMINATED SOILS AND GROUNDWATER

#### 3.02 CONTAMINATED GROUNDWATER

- A. All water generated, pumped or removed from excavations as a result of excavation dewatering activities shall be collected, containerized, and managed prior to discharge and/or treatment at an approved discharge point in accordance with local, state and federal regulations and the requirements of the Contract Documents. If groundwater contamination is identified at any time during the performance of the Work, CONTRACTOR shall immediately notify the CITY.
- B. If contaminated groundwater in the dewatering excavation area is encountered, the contaminated groundwater shall be removed, treated and discharged by the CONTRACTOR in accordance with all applicable regulatory requirements. Payment for this work shall be in accordance with the allowance bid item for treatment and discharge of contaminated groundwater, included in the Schedule of Prices Bid.
- C. Treatment of contaminated groundwater will include the following options, depending on the magnitude of the contamination in the trench: Granular Activated Carbon (GAC) Treatment vessels, mobile air stripping units, vacuum truck removal and disposal or other method as approved by the CITY and regulatory agencies with jurisdiction.
- D. If contaminated groundwater is encountered during construction, CONTRACTOR shall provide reference information for the qualified groundwater remediation subcontractor to be utilized, including phone number, contact name, and address. The selected groundwater treatment/recycling facility for hauling contaminated groundwater shall also be identified.
- E. Effluent water from the treatment system will be analyzed by the certified laboratory to confirm that concentrations are below regulatory limits. Effluent water will then be directed to a pre-approved location as determined by local regulatory agencies and/or the CITY.

#### 3.03 TRANSPORT AND DISPOSAL

- A. Transport Regulations: The CONTRACTOR shall be responsible for the loading, labeling, placarding, marking, weighing, and transporting of all waste materials in accordance with the Florida Department of Transportation Regulations, and U.S. Department of Transportation Regulations. The CONTRACTOR shall use only transporters that are licensed and competent to haul these wastes.

#### 3.04 WASTE CONTAINERS

## SECTION 02225

### CONTAMINATED SOILS AND GROUNDWATER

- A. Each transport container of waste shall be visually inspected by the CONTRACTOR for leaks, drips, or container damage prior to being loaded. Containers which are found to be leaking or damaged shall not be loaded until the damage is repaired. The CONTRACTOR shall prepare the transport container to prevent spillage or contamination. The CONTRACTOR shall notify the CITY two hours before any loaded transport leaves the site.
- B. All transport containers leaving the site shall be inspected by the CONTRACTOR to ensure that no waste material adheres to the wheels or undercarriage.
- C. All vehicles on which waste is adhering shall be cleaned by sweeping tires and undercarriage or by other dry methods prior to leaving the site.

#### 3.05 SHIPPING RECORDS

- A. The CONTRACTOR shall prepare accurate shipping records for any wastes leaving the site in accordance with applicable federal and state regulations. The CONTRACTOR shall be responsible for providing copies of the records to the CITY and shall immediately notify the CITY of any problems in completing shipments and disposal of wastes.
- B. The CONTRACTOR shall:
  - 1. Be responsible for appropriate measurement of unit quantity (weight or volume) of waste material removed from the site.
  - 2. Coordinate vehicle inspection and recording of quantities leaving the site with the CITY. These quantities shall be compared to recorded quantities received at the treatment or disposal facilities. The CONTRACTOR shall resolve any discrepancies occurring immediately, determining the probable cause for the discrepancy.
  - 3. Be solely responsible for any and all actions necessary to remedy situations involving waste spiked in transit.
- C. The CONTRACTOR shall ensure that a copy of the manifest and disposal receipt/bill of lading are returned to the CITY by the designated treatment or disposal facility within 14 days of receipt of the material to be disposed.

- END OF SECTION -

SECTION 02260

FINISH GRADING

**Part 1 - GENERAL**

1.01 WORK INCLUDED

- A. The CONTRACTOR shall, under this Section, supply, place, compact and roll finish grade materials prior to landscaping work.
- B. Finish grade sub-soil.
- C. Cut out areas to receive stabilizing base course materials for paving and sidewalks.
- D. Place, finish grade and compact topsoil.

1.02 RELATED WORK

- A. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- B. Section 02222 - Excavation and Backfill for Utilities
- C. Section 02930 - Sodding

1.03 PROTECTION

- A. The CONTRACTOR shall prevent damage to existing fencing, trees, landscaping, natural features, bench marks, pavement, utility lines, and sprinkler system. Correct damage at no cost to the CITY.

**Part 2 - PRODUCTS**

2.01 MATERIALS

- A. Topsoil shall be friable loam free from subsoil, roots, grass, excessive amount of weeds, stones and foreign matter; acidity range (pH) of 5.5 to 7.5; containing a minimum of 4% and a maximum of 25% organic matter.

2.02 CRUSHED STONE

- A. Crushed stone for general grading purposes shall be hard, durable, subangular particles of proper size and gradation, and shall be free from organic materials, wood, trash, sand, loam, chalk, excess fines and other deleterious materials. Maximum aggregate size shall be ¾ inches.

**Part 3 - EXECUTION**

3.01 SUBSOIL PREPARATION

## SECTION 02260

### FINISH GRADING

- A. Rough grade subsoil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc., in excess of 2 inches in size. Remove sub-soil which has been contaminated with petroleum products.
- B. Cut out areas, to subgrade elevation, which are to receive stabilizing base for paving and sidewalks.
- C. Bring subsoil to required levels, profiles and contours. Make changes in grade gradual. Blend slopes in to level areas.
- D. Slope grade away from building minimum 4 inches in 10 feet (unless indicated otherwise on Drawings).

#### 3.02 PLACING TOPSOIL

- A. Place topsoil in area where seeding, sodding and planting is to be performed. Place to the following minimum depths, up to finished grade elevations:
  - 1. 6-inches for seeded areas.
  - 2. 4 1/2-inches for sodded areas.
  - 3. 24-inches for shrub beds.
  - 4. 18-inches for flower beds.
- B. Use topsoil in relatively dry state. Place during dry weather.
- C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles and contours of subgrade.
- D. Remove stones, roots, grass, weeds, debris and other foreign material while spreading.
- E. Manually spread topsoil around trees, plants, buildings and other structures to prevent damage which may be caused by grading equipment.
- F. Lightly compact placed topsoil.

#### 3.03 SURPLUS MATERIAL

- A. Remove surplus sub-soil and topsoil from site.
- B. Leave stockpile areas and entire job site clean and raked, ready to receive landscaping and or sodding.

- END OF SECTION -

## SECTION 02900

### LANDSCAPING

#### **Part 1 - GENERAL**

##### 1.01 THE REQUIREMENT

- A. Items specified in this Section include the installation of new landscaping, or repairs to existing landscaped and grassed areas that may be damaged or disturbed by CONTRACTOR activities.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- B. Section 02930 - Sodding

##### 1.03 SUBMITTALS

- A. The CONTRACTOR shall submit submittals for review in accordance with the Section 01300 - Submittals.

##### 1.04 DEFINITIONS

- A. The phrase "DOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. The DOT Specifications are referred to herein and are hereby made a part of this Contract to the extent of such references and shall be as binding upon the Contract as though reproduced herein in their entirety.

##### 1.05 PROTECTION OF EXISTING IMPROVEMENTS

- A. The CONTRACTOR shall be responsible for the protection of all pavements and other improvements within the work area. All damage to such improvements, as a result of the CONTRACTOR'S operations, beyond the limits of the work of pavement replacement shall be repaired by the CONTRACTOR at his expense.

##### 1.06 GUARANTEE

- A. The CONTRACTOR shall guarantee all trees, ground cover or shrubs planted or replanted under this Contract for a period of one year beyond acceptance of the project. In the event that any new tree, plant or shrub dies within the guarantee period, the CONTRACTOR shall be responsible for replacement in kind. In the event that a transplanted (reused) tree dies within the guarantee period, the CONTRACTOR shall be responsible for replacement in kind, except that the maximum height of any new tree shall be eight feet as measured from the ground surface, once planted, to the top of the tree.

## SECTION 02900

### LANDSCAPING

#### **Part 2 - PRODUCTS**

##### 2.01 REPLACEMENT TREES, GROUND COVER AND SHRUBS

- A. Replacement trees, ground cover and shrubs shall be of the same type and size and sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall have healthy, well developed root systems and shall be free of disease and insect pests, eggs or larvae.

##### 2.02 MULCH

- A. Mulch shall be windproof shredded eucalyptus, mulch shall be clean, fresh, free of branches and other foreign matter. Mulch shall be used around all shrubs, ground covers and tree trunks, and placed to a minimum depth of 2 inches extending from the tree trunk outward two feet. Mulch shall not be placed within 6 inches of tree trunks.

##### 2.03 GRAVEL BEDS

- A. Filter Fabric: Filter fabric shall be nonwoven polyester material Trevia Type 1120 as manufactured by Hoechst Fibers Industries, or equal. Fabric weight shall be 6 ounces per square yard, puncture strength maximum 40 pounds, minimum Flux 240 gallons per minute per square foot. Fabric shall be installed in accordance with the manufacturer's recommendations, with precautions taken to avoid tearing the fabric. Fabric shall be laid in strips with a minimum overlap of one foot.
- B. Limerock: Limerock shall meet ASTM A57 standards and shall be prewashed. Maximum size shall be 3/4 inches. Limerock shall be carefully placed and spread on the fabric to a minimum depth of 6 inches. Final grades and locations shall be as designated on the Drawings.

#### **Part 3 - EXECUTION**

##### 3.01 GRADING AND SODDING

- A. The CONTRACTOR shall re-grade the work areas disturbed by his construction activities to the existing grade prior to commencement of construction.
- B. Sodding shall be as required by Specification Section 02930, "Sodding".

##### 3.02 TREES, GROUND COVER AND SHRUBS

- A. Excavation and Plant Holes: Plant hole excavations shall be roughly cylindrical in shape, with the side approximately vertical. Plants shall be centered in the hole.

## SECTION 02900

### LANDSCAPING

Bottoms of the holes shall be loosened at least six inches deeper than the required depth of excavation.

- B. Holes for balled and burlaped plants shall be large enough to allow at least eight inches of backfill around the earth ball. For root balls over 18 inches in diameter, this dimension shall be increased to 12 inches. Where excess material has been excavated from the plant hole, the excavated material shall be disposed of as and where directed by the ENGINEER.
- C. Setting of Plants: When setting plants in holes the CONTRACTOR shall make sure that, when lowered into the hole, the plant shall:
  - 1. Rest on a prepared hole bottom such that the roots are level with, or slightly above, the level of their previous growth
  - 2. Be oriented such as to present the best appearance.
  - 3. Make allowances for any anticipated settling of plants.
- D. Palms of the Sabal species may be set deeper than the depth of their original growth, provided that the specified clear trunk height is attained.
- E. The backfill shall be made with planting mixture and shall be firmly rodded and watered-in, so that no air pockets remain. The quantity of water applied immediately upon planting shall be sufficient to thoroughly moisten all of the backfilled earth. Plants shall be kept in a moistened condition for the duration of the Contract.
- F. Staking and Guying: Plants shall be staked in accordance with the following provisions:
  - 1. Small Trees: For trees and shrubs of less than one-inch caliper, the size of stakes and the method of tying shall be such as to rigidly support the staked plant against damage caused by wind action or other effects.  
Trees larger than one inch and smaller than one and one-half inch caliper shall be staked with a two-inch stake, set at least 24 inches in the ground and extending to the crown of the plant. The plant shall be firmly fastened to the stake with two strands of 14 gauge soft wire, enclosed in rubber hose, or other approved covering. The wire shall then be nailed or stapled to the stake to prevent slippage.
  - 2. Medium Trees: All trees, other than palm trees, larger than one and one-half inch caliper and smaller than two and one-half inch caliper shall be staked with two or more, two-inch by two-inch stakes, eight feet long, set two feet in the ground. The tree shall be midway between the stakes and held firmly in place by two strands of 12-gauge wire, applied as specified above for single stakes. The wires shall be tightened and kept tight by twisting.
  - 3. Large Trees: All trees, other than palm trees, larger than two and one-half inch caliper, shall be braced with three or more two-inch by four-inch wood braces,

## SECTION 02900

### LANDSCAPING

toenailed to cleats which are securely banded at two points to the palm, at a point at least six feet above the ground. The trunk shall be padded with five layers of burlap under the cleats. Braces shall be approximately equidistantly spaced and secured underground with two-inch by four-inch by 24-inch stake pads. In firm rock soils, Number 4 steel reinforcing rods or one-half inch pipe is acceptable.

4. Palm Trees: Palm trees shall be braced with three or more two-inch by four-inch wood braces, toenailed to cleats which are securely banded at two points to the palm, at a point at least six feet above the ground. The trunk shall be padded with five layers of burlap under the cleats. Braces shall be approximately equidistantly spaced and secured underground with two-inch by four-inch by 24-inch stake pads. In firm rock soils, Number 4 steel reinforcing rods or one-half inch pipe is acceptable.

- G. Pruning: All broken or damaged roots shall be cut off smoothly, and the tops of all trees shall be pruned in a manner complying with standard horticultural practice. At the time pruning is completed, all remaining wood shall be alive. All cut surfaces of one inch or more in diameter, above the ground, shall be treated with approved commercial tree paint.
- H. Maintenance: Maintenance shall begin immediately after each plant is planted and shall continue until all work under this Contract has been completed and accepted by the CITY. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated and otherwise maintained and protected. Settled plants shall be reset to proper grade position, planting saucer restored and dead material removed. Guys shall be tightened and repaired.
- I. Defective work shall be corrected as soon as possible after it becomes apparent. Upon completion of planting, the CONTRACTOR shall remove excess soil and debris, and repair any damage to structures, etc., resulting from planting operations.

#### 3.03 GRAVEL BEDS

- A. Clean, grade and place geotextile prior to placing gravel in gravel beds.

- END OF SECTION -

## SECTION 02930

### SODDING

#### **Part 1 - GENERAL**

##### 1.01 SCOPE

- A. Provide all labor, materials and equipment necessary for the installation of new sodding, or complete sodding of existing grassed areas that may have been damaged or disturbed by CONTRACTOR activities. This shall include, but not be limited to: fertilizing, sodding, tests and all incidentals to make the work complete.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02500 - Landscaping
- B. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- C. Section 02260 - Finish Grading

##### 1.03 WORK INCLUDED

- A. Testing of topsoil.
- B. Raking and leveling topsoil as required for sodding.
- C. Liming and fertilizing of topsoil.
- D. Laying and rolling of sod.
- E. Maintaining

##### 1.04 SUBMITTALS

- A. Submit product source and information sheets in accordance with Section 01300, "Submittals".

#### **Part 2 - PRODUCTS**

##### 2.01 MATERIALS

- A. Fertilizer
  - 1. Fertilizer shall be commercial fertilizer, as manufactured by International Chemical Company or equal.
  - 2. Said fertilizer shall have a 10-20-6 N.P.K. content and contain a minimum of 60% of organic material.
  - 3. It shall be delivered at the site in the original sealed containers.
- B. Sod

## SECTION 02930

### SODDING

1. Sod from right-of-way swales within the work area shall be Bahia sod or replaced in-kind, whichever is finer quality.
2. Sod shall be first quality Bahia sod of firm texture having a compacted growth and good root development.
3. Sod shall be absolutely true to varietal type, live, fresh and free from weeds or objectionable vegetation, fungus, insects and disease of any kind. Sod shall be kept moist from the time it is field cut until it is laid at the proposed site.
4. The sod shall be as grown by a certified turf nursery and CONTRACTOR shall inform ENGINEER as to the source of the sod to be utilized prior to ordering and delivery of sod.
5. Sod shall be furnished and installed in rectangular sod strips measuring 12 to 16-inches in width of standard lengths of not less than 2 feet and delivered on pallets.

### **Part 3 - EXECUTION**

#### 3.01 INSTALLATION

- A. Sod shall be placed on all grassed areas disturbed by construction activities, unless otherwise indicated on the Drawings. Sodding shall be in accordance with these specifications and Sections 575 and 981 of FDOT Specifications, whichever is more stringent.
- B. Lawn areas damaged by CONTRACTOR's operations shall be repaired at once by proper sod bed preparation, fertilization and re-sodding, in accordance with these specifications. Regardless of the condition of the lawn area (weed content etc.) prior to the CONTRACTOR working in the area, all repairs shall be made with sod.
- A. These areas shall be fine graded to achieve the finished subgrade after compaction which shall be obtained by rolling, dragging or by an approved method which obtains an equivalent compaction to that produced by a hand roller weighing from 75 to 100 pounds per foot of width. All depressions caused by settlement or rolling shall be filled with additional existing or furnished topsoil and re-graded and prepared as specified above until it presents a reasonably smooth and even finish at the required sod sub-grade.
- B. All sod furnished shall be living sod containing at least 70% of thickly matter grasses as specified and free from noxious weeds. All sod shall be certified free of fire ants.
- C. No broken pads or torn or uneven ends will be accepted. Standard size sections of sod shall be strong enough to support own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10% of the section. Sod shall not be harvested when its moisture content (excessively wet or dry) may adversely affect its survival.

## SECTION 02930

### SODDING

- D. Sod shall be harvested, delivered, and installed within a period of 24 hours. Sod not installed within this time period shall be subject to inspection and rejection by ENGINEER, and shall be removed from the site and a fresh sod supply shall be furnished at no extra cost to CITY.
- E. The topsoil shall not be moist at time of installation; however, it shall contain sufficient moisture so as not be powdery or dusty, both as determined by the supplier's representative.
- F. The overlapping of existing lawn with new sod along limit of work lines will not be permitted. Sod shall be laid in strips, edge to edge, with the lateral joints staggered. All minor or unavoidable openings in the sod shall be closed with sod plugs or with topsoil, as directed by ENGINEER. However, sod laid with joints determined to be too large shall be lifted and re-laid as specified herein at no extra cost to CITY.
- G. Immediately after the sod is laid, the sod shall be watered thoroughly by hand or mechanical sprinkling until the sod and at least 2-inch of the top soil bed have been thoroughly moistened.
- H. Sufficient watering shall be done by the CONTRACTOR to maintain adequate moisture for optimum development of the sodded areas. Sodded areas shall receive no less than 1.5 inches of water per week.
- I. CONTRACTOR shall be responsible to furnish his own supply of water to the site at no extra cost. If possible, CITY shall furnish CONTRACTOR, upon request, with a source and supply of water. CONTRACTOR shall apply for temporary meter and pay CITY for water used at current utility billing rates. However, if CITY's water supply is not available or not functioning, CONTRACTOR shall be responsible to furnish adequate supplies at his own cost. All work injured or damaged due to the lack of, or the use of too much water, shall be CONTRACTOR's responsibility to correct.

#### 5.02 MAINTENANCE

- A. Maintain the entire sodded areas at least a 30-day period or until final acceptance at the completion of the Contract, whichever is longer. Maintenance shall include watering as specified, weeding and removal of stones which may appear. All bare or dead spots which become apparent shall be properly prepared, limed and fertilized, and re-sodded at CONTRACTOR's expense as many times as necessary to secure a good growth. In the event that the sod installation is not accepted by ENGINEER, the entire area shall be maintained and cut by CONTRACTOR until final acceptance of the sod installation.
- B. Take whatever measures are necessary to protect the sod while it is developing. These measures shall include furnishing of warning signs, barriers, or any other necessary measures of protection.

- END OF SECTION -

**DIVISION 3**  
**CONCRETE**

## SECTION 03000

### REHABILITATION AND LINING FOR CONCRETE WASTEWATER STRUCTURES WITH ULTRA-HIGH BUILD STRUCTURAL EPOXY

#### **Part 1 - GENERAL**

##### 1.01 DESCRIPTION

###### (a) Scope:

A manufacturer certified Applicator shall provide all labor, materials, equipment, incidentals, and quality requirements for concrete for surface preparation, repair or resurfacing, and ultra-high build, Structural Epoxy lining work to the entire interior surfaces of the structures as shown on drawings and specified herein.

This Section's intent is to provide minimum requirements of an installation of an ultra-high build, high strength, structural epoxy system; and the lining of newly installed, existing, and/or defective specified concrete/masonry structures and surfaces exposed to domestic wastewater and/or municipal sanitary sewage by an applied and bonded application of high performance, 100% solids, ultra-high build, structural grade, applied fiber-reinforced-polymer (FRP) epoxy coating/lining system (Structural Epoxy).

This Section's intent is for concrete and/or other masonry structures which are exposed to or in contact with domestic wastewater service; constituting domestic municipal wastewater and plant treatment and municipal sanitary sewage from collection systems (sanitary sewer and/or stormwater), where sewage contact and exposure to hydrogen sulfide are present. Not intended for non-sewage applications or industrial waste.

Structural Epoxy minimum film thickness specified herein is designed and intended for applied and bonded coating/lining, delivering barrier protection with high mechanical strength with a reinforced film to bridge and seal against low pressure forces of effective lateral earth pressure, moisture vapor transmission (MVT), hydrostatic head pressure, and inflow and infiltration (I&I) once cured; while protecting from effluent and H<sub>2</sub>S. Design thickness herein also accounts for long term performance; as unintentionally there may be circumstances that may prevent bonding in certain areas that an engineered Structural Epoxy is designed to bridge (with limitations), whereas non-structural coatings may not. Not intended: excessive or high-pressure forces and loading, or other force considerations for full structural reinstatement without a qualified assessment with calculated, verified and adjusted structural thickness calculations performed and certified by a registered Professional Engineer (film or system thicknesses may change depending on types of forces, force values and other variables, engineering assessments and calculations).

Types of Structural Epoxy lining for concrete Work required include but are not necessarily limited to the following:

- (1) Hydraulic water plug
- (2) Cementitious repair mortar
- (3) Epoxy cementitious resurfacer

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## SECTION 03000

### REHABILITATION AND LINING FOR CONCRETE WASTEWATER STRUCTURES WITH ULTRA-HIGH BUILD STRUCTURAL EPOXY

- (4) Structural epoxy lining
- (5) Miscellaneous materials

(b) Coordination:

- (1) Coordinate surface preparation of substrates to avoid later difficulty or delay in performing the Work of this Section.
- (2) Review installation procedures under other Sections and coordinate the installation of items that must be installed prior to application of the Structural Epoxy lining.
- (3) The Contractor shall coordinate with Engineer regarding the availability of work areas, completion times, safety, access, and other factors which can impact plant operations.

(c) Related Sections:

- (1) Section 01300, Submittals

#### 1.02 REFERENCES

- (d) This Section contains references to the governing standards and documents listed below. They are a part of this Section as specified and modified; the current version shall apply unless otherwise noted. In case of conflict between the requirements of this section and those of the listed documents, the more stringent of the requirements shall prevail.

American Concrete Institute, (ACI)

- (1) ACI 301 – Specifications for Structural Concrete

ASTM International, (ASTM)

- (2) ASTM C 868 – Standard Test Method for Chemical Resistance of Protective Linings
- (3) ASTM C 1583/1583M – Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)
- (4) ASTM D 4060 – Standard Test Method for Abrasion Resistance of Organic Linings by the Taber Abraser
- (5) ASTM D 4285 – Standard Test Method for Indicating Water or Oil in Compressed Air

## SECTION 03000

### REHABILITATION AND LINING FOR CONCRETE WASTEWATER STRUCTURES WITH ULTRA-HIGH BUILD STRUCTURAL EPOXY

- (6) ASTM D 4414 – Standard Practice for Measurement of Wet Film Thickness by Notch Gages
- (7) ASTM D 7682 – Standard Test Method for Replication and Measurement of Concrete Surface Profiles Using Replica Putty

#### International Concrete Repair Institute, (ICRI)

- (8) Guideline No. 310.1R – Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion
- (9) Guideline No. 310.2 – Selecting and Specifying Concrete Surface Preparation for Sealer, Linings, and Polymer Overlays

#### NACE International, (NACE)

- (10) NACE SP0188 – Standard Practice for Discontinuity (Holiday) Testing of Protective Linings
- (11) NACE No. 6/SSPC-SP13 – Surface Preparation of Concrete

#### Occupational Safety and health Administration, (OSHA)

- (12) Safety and health Standards (29 CFR 1910/1926)

#### SSPC: The Society for Protective Coatings, (SSPC)

- (13) SSPC-SP13/NACE No. 6 – Surface Preparation of Concrete
- (14) SSPC-Guide 12 – Guide for Illumination of Industrial Painting Projects

- (e) Unless otherwise specified, references to documents shall mean the documents in effect at the time of receipt of Bids. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents, the last version of the document before it was discontinued.

### 1.03 SUBMITTALS

- (a) In accordance with the procedures and requirements set forth in the General Conditions and Section 01300 entitled “Submittals”, the Contractor shall submit all required information as specified herein.
- (b) Shop Drawings: Submit for approval prior to commencing any Work:

## SECTION 03000

### REHABILITATION AND LINING FOR CONCRETE WASTEWATER STRUCTURES WITH ULTRA-HIGH BUILD STRUCTURAL EPOXY

- (1) Manufacturer's project reference lists with coating systems specified herein, stating project location, Owner contact information, Engineer contact information, Installer contact information, containing a minimum of 10 projects of similar capacity with a minimum of 5 years of satisfactory service.
  - (2) Product Data Sheets: Copies of current technical data for each component specified and applied as outlined in this Section.
  - (3) Safety Data Sheets: Copies of current SDS for any materials brought on-site including all clean-up solvents, repair or resurfacing mortars and lining materials.
  - (4) Qualification Data: Approved Installer Certification from manufacturer.
  - (5) Performance Testing Reports: Copies of test data for the entire physical, chemical, and permeation properties listed herein and as outlined within this Section.
  - (6) Installation Instructions: Manufacturer's written installation instructions for the materials specified in this Section.
- (c) Product Substitution: The specified corrosion protection system is the minimum standard of quality for this project. Equivalent materials of other manufacturers may be substituted only by approval of Engineer. Requests for material substitutions shall be in accordance with requirements of the project specification.
- (1) All Contractors must provide pricing based on the compliant system of Epoxytec Company in the Base Bid. Other approved coating manufacturer system, if provided, will be shown in the Bid Schedule as Additive Bid Item as an ADD or DEDUCT to overall Base Bid.
  - (2) Manufacturers of "or equal" products shall provide direct property comparison with the materials specified in addition to complying with all other requirements of these Specifications. "Or equal" products shall employ the same generic materials and system components as the Structural Epoxy lining specified and shall provide same intent by description and equivalent performance as the specified Structural Epoxy lining to protect against H<sub>2</sub>S corrosion and seal from I&I.
  - (3) "Or equal" products' manufacturer must provide documentation supporting product's success and history in severe wastewater environments for at least ten (10) years; must also provide samples of cured material covering at least one (1) square foot of

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surface, at the specified thickness; and must provide written repair instruction and a list of materials should a repair be needed in the future.

- (4) Bidders desiring to use linings other than those specified shall submit proposed system with their proposal at the time of bid, together with the information required herein, and indicate the sum which will be deducted from the base bid should alternate materials be accepted.

#### (d) Jobsite Reports: Submit at the completion of Work

- (1) Daily Reports: Include surface preparation, substrate conditions, ambient conditions application procedures, lining materials applied, material quantities, material batch number(s), description of work completed and location thereof.
- (2) Quality Control Reports: Include all quality control testing and physical specimens.
- (3) Contractor shall maintain a copy of records until the expiration of the specified warranty period.

### 1.04 QUALITY ASSURANCE

#### (a) Applicator Qualifications:

- (1) Contractor shall be a certified Applicator by the Structural Epoxy manufacturer prior to bid date. Submit proof of Applicator certification by manufacturer to Engineer.
- (2) Installation equipment shall be acceptable to the Structural Epoxy manufacturer. If spraying Structural Epoxy, Applicator must utilize equipment approved by Structural Epoxy manufacturer.
- (3) Applicator shall establish quality control procedures and practices to monitor phases of surface preparation, storage, mixing, application, and inspection throughout the duration of the project. Contractor to provide a fulltime, on-site person whose dedicated responsibilities will include quality control of the Structural Epoxy linings and completed manufacturing certification training.
- (4) Applicator's quality control procedures and practices must include the following items:

- i) Training of personnel in the proper surface preparation requirements.

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- ii) Training of personnel in the proper storing, mixing, and application and quality control testing of the Structural Epoxy linings.
- iii) If spraying, training of personnel with the spray equipment to ensure proper film build, film quality, and ratio control.

#### (b) Mock-Ups:

- (1) Prior to the installation of the Structural Epoxy lining and auxiliary system components, but after Engineer's approval of the Samples and Shop Drawings, install 150 square foot (14 square meters) stepped-back mock-ups of the systems showing surface preparation and each system component in an area selected by Engineer to show representative installation of the Work.
- (2) Engineer shall approve the mock-up before the start of Work.
- (3) Retain and protect mock-ups during construction as one standard for judging completed corrosion protection lining Work. Do not alter mock-ups after approval by Engineer.
- (4) Contractor shall build as many mock-ups as required to achieve Engineer's acceptance of the corrosion protection lining.
- (5) The approved mock-up shall be considered the acceptable minimum standard of quality.
- (6) Any corrosion protection lining Work that proceeds without approved mock-ups will not be accepted by the Engineer and removed at no cost to the Owner.

#### (c) Pre-Installation Conference:

- (1) Before erecting mock-ups Contractor, Installer and technical representative of the corrosion protection lining manufacturer shall meet on-site with Engineer to discuss approved products and workmanship to ensure proper application of the corrosion protection lining components and substrate preparation requirements.
- (2) Review foreseeable methods and procedures related to the Structural Epoxy lining of coating Work including but not necessarily limited to the following:
  - i) Review Project requirements and the Contract Documents.
  - ii) Review required submittals, both completed and yet to be completed.
  - iii) Review status of substrate Work, including approval of surface preparations and similar considerations.

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- iv) Review requirements of on-Site quality control testing and requirements for preparing Site Quality Control Report as specified herein.
  - v) Review availability of materials, tradesmen, equipment and facilities needed to make progress and avoid delays.
  - vi) Review required inspection and testing.
  - vii) Review environmental conditions, other Project conditions, and procedures for coping with unfavorable conditions.
  - viii) Review regulations concerning code compliance, environmental protection, health, safety, fire and similar considerations.
  - ix) Review procedures required for the protection of the Structural Epoxy lining during the remainder of the construction period.
- (3) Record the discussions of the Pre-Installation Conference and the decisions and agreements or disagreements reached and furnish a copy of the minutes to each party attending. Record any revision or changes agreed upon, reasons therefore, and parties agreeing or disagreeing with them.
  - (4) Reconvene the conference at the earliest opportunity if additional information must be developed in order to conclude the subjects under consideration.
- (d) Performance Criteria: Structural Epoxy lining shall be capable of withstanding under constant exposure to raw wastewater, permeation from hydrogen sulfide and other sewer gases, and attack from organic acids generated by microbial sources with no adverse effects; cured film at specified thickness must withstand negative side film forces from inflow and infiltration. Products must have sufficient field history and accelerated laboratory testing to substantiate product viability for these exposures.
  - (e) Source Quality Control: Provide each component of Structural Epoxy lining produced by a single manufacturer, including recommended repair mortar, repair overlay (resurfacer), base coat and topcoat materials.
  - (f) Reference Standards: Comply with applicable provisions and recommendations of all standards listed in Section 1.2 except as otherwise shown or specified.

#### 1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- (a) Delivery of Materials:

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- (1) Deliver material in manufacturer's original, unopened and undamaged packages.
- (2) Clearly identify manufacturer's, brand name, contents, color, batch number, and any personal safety hazards associated with the use of or exposure to the materials on each package.
- (3) Packages showing indications of damage that may affect condition of contents are not acceptable.

#### (b) Storage of Materials:

- (1) Materials shall be stored in accordance with manufacturer's recommendations in enclosed structures and shall be protected from weather and adverse temperature conditions. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life as defined by the manufacturer shall be removed promptly from the site. Store all materials only in area or areas designated by the Engineer solely for this purpose.
- (2) Store in original packaging under protective cover and protect from damage.
- (3) Stack containers in accordance with manufacturer's recommendations.

#### (c) Handling of Materials: Handle materials in such a manner as to prevent damage to products or finishes.

## 1.06 JOB CONDITIONS

#### (a) Environmental Requirements:

- (1) Proceed with Work only when temperature and moisture conditions of substrates, air temperature, relative humidity, dew point and other conditions comply with the Structural Epoxy lining manufacturer's written recommendations and when no damaging environmental conditions are forecasted for the time when the material will be vulnerable to such environmental damage. Record all such conditions and include in final Site Quality Control Report.
- (2) Maintain substrate temperature and ambient temperature before, during and after installation above 45°F (8°C) and rising in accordance with Structural Epoxy lining material manufacturer's instructions.

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- (3) Provide adequate ventilation during instillation and full curing periods of the Structural Epoxy lining.
  - (4) Structural Epoxy lining shall not be applied when ambient air temperature is within 5°F (3°C) of the dew point.
  - (5) Structural Epoxy lining shall not be applied when relative humidity is outside of material manufacturer's recommendations. Do not prepare surfaces or apply materials in rain, snow, fog, mist, or otherwise inclement weather as per material manufacturer's instructions.
- (b) Dust and Contaminants: Protect work and adjacent areas from excessive dust and airborne contaminants during Structural Epoxy lining application and curing. Schedule Work to avoid excessive dust and airborne contaminants.

#### 1.07 WARRANTY

- (a) Structural Epoxy lining Manufacturer shall warranty its products as free from material defects for a minimum period of ten (10) years. Provide associated Warranty Certificate.
- (b) Contractor shall warranty the installed Structural Epoxy lining system as free from workmanship defects for a minimum period of ten (10) years.

## **Part 2 - PRODUCTS**

### 2.01 MATERIALS

#### A. Products and Manufacturer:

1. Materials specified are those that have been evaluated for the specific service. Products of Epoxytec LLC (a Tnemec company, [www.tnemec.com](http://www.tnemec.com), +1-800-863-6321) [www.epoxytec.com](http://www.epoxytec.com) are specified as a standard of quality and basis of design. The specified basis of design is intended to provide the longest service life possible, lowest life cycle cost, and most sustainable solution. All Contractors must provide pricing based on the compliant system of Epoxytec in the Base Bid.
2. Or Engineer Approved Equal. Materials specified herein shall not preclude consideration of equivalent or superior materials. Alternate materials shall include the following:

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- a. Shown in the Bid Schedule as Additive Bid Item as an ADD or DEDUCT to overall Base Bid.
  - b. Completion of Appendix A of this Section. The burden of proof of performance equality is the responsibility of the Party requesting a substitution in materials. Standardized industry test methods in Appendix A shall be used in part for comparison.
  - c. Materials must have a proven track record of successful installation. Provide Manufacturer's project reference lists with coating systems specified herein stating project location, Owner contact information, Engineer contact information, Installer contact information, containing a minimum of 10 projects of similar capacity with a minimum of 5 years of satisfactory service.
  - d. The owner will decide which Bid Item to accept.
- B. Contractor shall provide all accessory components, as specified or recommended by the manufacturer for optimal application of the Structural Epoxy lining system's adhesion to substrate and long-term service performance.
- C. Hydraulic Water Plug:
1. Active leak control materials are to be utilized for I&I abatement, to stop leaks, running water, infiltration, and other water stop needs. Material must be a quick setting, hydraulic cement compound designed for minor patching, and as a leak stopper and water plug which stops running water and/or seepage through concrete. Materials must be designed to set rapidly, in dry powder form, with no prior mixing of water needed (if necessary), to apply directly to active leaks under hydrostatic pressure in manholes or related structures, in accordance with the manufacturer's recommendations.
- D. Cementitious Repair Mortar:
1. Rapid-setting, cementitious repair mortar when concrete is deteriorated greater than a depth of 1/2-inch (12.7 mm) and when recommended by the Manufacturer to rehabilitate and restore concrete and provide level substrate for application of the protective lining. Cementitious repair mortar shall be a rapid-setting, non-shrinking resurfacing material capable of spray-transfer. Material shall have similar CLTE properties as concrete.
- E. Epoxy Cementitious Resurfacer:
1. Epoxy cementitious resurfacer shall be an epoxy-modified, aggregate reinforced material with for surfacing, patching and filling voids and

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bugholes in concrete. The material shall be suitable for the application down to 1/16 inch (1.6 mm) thickness and be capable of spray-transfer.

2. Epoxy cementitious resurfacer shall exhibiting high bond strength and high mechanical strengths. Initial set time occurs early (4 hours @ 77F) to allow for Structural Epoxy coating. The Epoxy cementitious resurfacer shall not require for any further preparation or conditioning within 36 hours (at 77F) to accept epoxy top coats.

#### F. Structural Epoxy Lining:

1. Structural Epoxy shall be available in both trowel-version and spray-version to assist with various application needs or applications in limited access areas or perform any touch-ups.
2. Structural Epoxy shall be 100% solids, highly thixotropic microfiber-reinforced, applied epoxy polycyclic polymer protective barrier material specifically designed to protect concrete and masonry surfaces in severe wastewater environments, including H<sub>2</sub>S attack, while sealing inflow and infiltration (I&I).
3. Structural Epoxy is to provide protection from H<sub>2</sub>S corrosion and seal from I&I with applied and bonded high build Structural Epoxy; Structural Epoxy film thickness specified herein is designed and intended for applied and bonded coating, delivering barrier protection lining with high mechanical strength and a reinforced film to bridge and seal against moisture vapor transmission (MVT), hydrostatic head pressure, fine root intrusion, and seal inflow and infiltration (I&I).
4. Structural Epoxy lining must be a verified technology of US Environmental Protection Agency's, Environmental Technology Verification Program for Infrastructure Rehabilitation Technologies (EPA ETV).
5. Structural Epoxy lining shall be capable of achieving up to 375 mil. (3/8 inch) sag resistance, vertical and overhead.
6. Structural Epoxy lining must have a long open recoat window without the need for abrasive or mechanical preparation for simple repair requirements.
7. Structural Epoxy lining must be self-priming, able to be applied direct-to-concrete (DTC), requiring no primer.
8. Structural Epoxy lining must be able to bond to saturated-surface-dry (SSD) concrete, with moisture and relative humidity tolerances up 85% and capable to fully cure underwater.

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#### **Part 3 - EXECUTION**

##### 3.01 GENERAL

- (a) All work shall be in strict accordance with the specifications and recommendations including mixing, handling, storage, and application of all products as required and in accordance with manufacturer's published technical instructions, safety data sheets, including manufacturer's published PDS, design guidelines, and/or other written specifications.
- (b) Contractor shall provide, erect, and maintain all required hoists, scaffolding, staging and planking, and perform all access related hoisting work required to complete the Work of this Section as specified.
- (c) Contractor shall cover or otherwise protect finish work or other surfaces not being coated within the scope of this Section. Contractor shall erect and maintain protective tarps, enclosures and/or masking to contain debris, including dust or other airborne particles from surface preparation or application activities. This may include the use of dust or debris collection apparatus as required at no additional cost to Owner.

##### 3.02 EXAMINATION

- (d) Contractor shall examine the areas and conditions under which the Structural Epoxy coating Work is to be performed in accordance with SSPC-SP13/NACE No. 6, and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work.
- (e) Commencement of the Work of this Section shall indicate that the substrate and other conditions of installation are acceptable to the Contractor and his Applicator and will produce a finished product meeting the requirements of the Specifications. All defects resulting from accepted conditions shall be corrected by Contractor at his own expense.
- (f) Stopping Active Leaks: After surface cleaning, any visible leaks or other water ingress shall be reported to the Engineer. Any water infiltration through minor leaks must be stopped using specified hydraulic water stop; should flows be aggressive, a chemical grout method shall be used.. Surface and grouting material may require additional surface preparation prior to application of Structural Epoxy lining.
- (g) Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures do exist, coating installation should be scheduled when the temperatures are falling versus rising.

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#### 3.03 PREPARATION

- (a) Concrete surfaces to receive Structural Epoxy coating shall be cast with a Smooth Form Finish in accordance with ACI 301. Surfaces shall not be rubbed, sacked, troweled or otherwise finished in any manner that will obscure or cover the parent concrete surface with materials other than materials as specified in this Section.
- (b) Allow cast-in-place concrete to cure for a minimum of 28 days at 75°F (24°C) and with adequate air movement before installing the corrosion protection lining system.
- (c) All surface washing, abrasive blasting, waterjetting, grinding, patching, filling and preparation shall be completed by the Applicator in accordance with the Structural Epoxy lining Manufacturer's recommendations.
- (d) Substrate: Concrete surfaces to be coated shall be free of curing compounds and form release agents, laitance and foreign particles that may inhibit bonding. Prior to start of Structural Epoxy coating systems application, pre-clean as required, and inspect the substrate in accordance with SSPC-SP13/NACE No. 6, Severe Service. Surface preparation procedures shall be in accordance with NACE No. 6/SSPC-SP13 and ICRI Guideline No. 310.2. Surface preparation shall expose aggregate and obtain a uniform surface texture resembling the minimum recommended concrete surface ICRI-CSP profile.
- (e) Level or grind concrete substrates to produce a uniform and smooth surface, including removal of all sharp edges, ridges, form fins, and other concrete protrusions.
- (f) Surface preparation of the substrate must be achieved immediately prior to utilizing any repair material and/or coating/lining material that will require bond to the substrate, re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.
- (g) Surface preparation will be required on existing and new concrete.
- (h) The objective of surface preparation is to produce a surface that is suitable for application and adhesion of the specified repair materials and coating/lining material. Surfaces therefore are to be free of contaminants and loosely adhering or unsound concrete, and should provide a dry, sound, uniform substrate suitable for the application of repair and coating/lining material.
- (i) Structures to receive Structural Epoxy lining system must be capable of withstanding imposed loads. All oil, grease, waste and chemical

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contaminants must be removed from the surface of the concrete prior to preparation in accordance with NACE No. 6/SSPC-SP13. Concrete surfaces must be sound and capable of supporting the Structural Epoxy Lining system as determined by the engineer. Surface preparation requirement is to expose a sound, uniform surface texture confirming to the minimum recommended ICRI-CSP amplitude. The appropriate cementitious repair mortar or epoxy cementitious resurfacer material shall be applied to the entire, prepared surface to level surface suitable for coating.

- (j) Metal Application: Remove all visible contaminants per SSPC-SP1. Prepare the surfaces in accordance with SSPC/NACE surface preparation standards per the Manufacturer's instructions.

#### 3.04 APPLICATION

- (a) Structural Epoxy lining systems shall be installed when ambient air and surface temperature is above 45°F. The substrate temperature shall be at least 5°F (3°C) above the dew point. Condition the material between 70-80°F (21-27°C) for 24 hours prior to use. Application when temperatures outside of this range will require written instruction from the Manufacturer and approval of the Engineer.
- (b) Application in direct sunlight and/or with rising surface temperatures is not advised, as this may result in blistering of the materials due to expansion of entrapped air or moisture in the concrete (induced outgassing). In such cases, it will be necessary to postpone the application until later in the day when the temperature of the substrate is falling or take precautionary steps as recommended by the Manufacturer. Concrete surfaces that have been in direct sunlight should be shaded for at least 24 hours prior to application. Consult the Manufacturer for application schedule guidelines specific to temperature conditions and possible sealer application recommendations to reduce outgassing.
- (c) Hydraulic Water Plug: Epoxytec Mortartec Hydrxx-1 or Hydrxx-3 hydraulic cement water plug shall be used for low pressure active leak stopping.
  - (1) Cure – Press firmly pre-mixed paste or dry material into place, maintaining pressure until the material begins to harden and the leak is stopped. Continue until all active leaks cease.

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- (d) Cementitious Repair Mortar: Epoxytec Mortartec Silicate or Tnemec Series 217 MortarCrete cementitious repair mortar shall be used for structural repairs or surface repairs exceeding a depth 1/2 inch (12.7 mm) in accordance with Manufacturer's written instructions as outlined in the product data sheet and application guide.
  - (1) Thickness – Minimum 1/2 inch as required to re-establish original plane.
  - (2) Cure – Ensure that the mortar while curing will remain moist, covered from direct sunlight, and if needed, covered by damp coverings to avoid mortar dry-out and to optimize curing.
  - (3) Re-blast – Clean and profile the surface to remove the laitance layer and to uniformly profile the surface to produce a minimum ICRI CSP 6 surface profile amplitude.
  
- (e) Epoxy Cementitious Resurfacer: Epoxytec Mortartec Ceramico epoxy cementitious resurfacer shall be used for filling voids, bugholes, static cracks and joints, and for general concrete patching, and to provide a uniform, void free surface for Epoxy Lining application.
  - (1) Thickness – Epoxy lining shall be applied to a minimum thickness of 1/16 inch (1.6 mm) to the entire surface.
  
  - (2) Cure - Ensure that the mortar while curing will remain moist, covered from direct sunlight, and if needed, covered by damp coverings to avoid mortar dry-out and to optimize curing.
  
- (f) Structural Epoxy Lining: Epoxytec CPP Sprayliner or Epoxytec CPP Trowel-Liner epoxy lining. Structural Epoxy coating shall be applied and in accordance with Manufacturer's written instructions as outlined in the product data sheet and application guide.
  - (1) Thickness – Epoxy lining shall be applied to a minimum thickness of 150.0 mils dry film thickness.

### 3.06 FIELD QUALITY CONTROL, INSPECTION AND TESTING

- (a) Contractor to perform the quality control procedures listed below in conjunction with the requirements of this Section.

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### REHABILITATION AND LINING FOR CONCRETE WASTEWATER STRUCTURES WITH ULTRA-HIGH BUILD STRUCTURAL EPOXY

- (b) Inspect all materials upon receipt to ensure that all are supplied by the approved Manufacturer.
- (c) Surface pH Testing: The pH of cement particles collected from the concrete substrate will be measured using pH indicating paper or pH meter. The pH testing is to be performed once every 500 square feet (5 square meters) for the first 500 square feet (46 square meters) and once every 1000 square feet (93 square meters) thereafter. Acceptable pH values shall be a minimum 9.0 as measured using color indicating pH paper with readable color calibrations and a scale at whole numbers or pH meter.
  - (1) Collect 0.5 grams of cement paste from the surface and mix 1.0 mL of distilled or purified water into a vial; close lid and shake for 30 seconds and let mixture stand for 2 minutes.
  - (2) Insert the pH paper into mixture and determine pH by comparing to the scale and record or insert the pH meter into the mixture and record the stabilized pH.
- (d) Surface Profile: Inspect and record substrate profile (anchor pattern) at least once every 50 square feet (5 square meters). If applying Structural Epoxy direct-to-concrete (DTC), surfaces shall be profiled equal to the CSP 5 amplitude as recommended by the coating manufacturer in accordance with ICRI Guideline 310.2 and SSPC-SP13/NACE No. 6; for Cementitious Repair Mortar work, surfaces shall be profiled equal to the CSP 6.
  - (1) Replication of the concrete surface profile can also be performed at least once every 500 square feet (46 square meters) using replica putty in accordance with ASTM D7682.
- (e) Measure and record ambient air temperature once every two hours of each work shift using a thermometer and measure and record substrate temperature once every two hours using an infrared or other surface thermometer.
- (f) Measure and record relative humidity and dew point temperature every two hours of each work shift using a sling psychrometer in accordance with ASTM E 337.
- (g) Provide verification of correct mixing of coating materials in accordance with the Manufacturer's instructions.
- (h) Inspect and record that the "pot life" of coating materials is not exceeded during installation.

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- (i) Verify curing of the coating materials in accordance with the Manufacturer's instructions.
- (j) Dry-Film Thickness:
  - (1) Wet-Film Thickness shall be taken every 100 square feet (9 square meters) in accordance with ASTM D 4414 and recorded.
  - (2) The Dry-Film Thickness can be determined using a surface area calculation for material consumption.
- (k) High-Voltage Holiday (Spark) Testing: Upon full cure, the installed lining system shall be checked by high voltage spark detection in accordance with NACE SP0188 and the Manufacturer's printed application guide to verify a pinhole-free surface. Areas which do not pass the spark detection test shall be corrected at no cost to the Owner.
- (l) Contractor is responsible for keeping the Engineer informed of all progress so that Engineer may provide additional quality control at his discretion.
- (m) Inspection by the Engineer or others does not absolve the Contractor from his responsibilities for quality control inspection and testing as specified herein or as required by the Manufacturer's instructions.

#### 3.07 ACCEPTANCE CRITERIA

- (a) All surfaces shall be prepared, applied, and tested in accordance with the specification and referenced standards herein.

#### 3.08 ADJUSTMENTS AND CLEANING

- (a) At the completion of the Work, Contractor shall remove all materials and debris associated with the Work of this Section.
- (b) Clean all surfaces not designated to receive Structural Epoxy coating. Restore all other work in a manner acceptable to Engineer.
- (c) All finished Structural Epoxy coating shall be protected from damage until Final Acceptance of the Work. Structural Epoxy coating damaged in any manner shall be repaired or replaced at the discretion of Engineer, at no additional cost to Owner

- END OF SECTION -

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**DIVISION 15**  
**MECHANICAL**

## SECTION 15000

### PIPING GENERAL

#### **Part 1 - GENERAL**

##### 1.01 THE REQUIREMENT

- A. The CONTRACTOR shall furnish and install to the required line and grade, all piping together with all fittings and appurtenances, required for a complete installation. All piping located outside the face of structures or building foundations and all piping embedded in concrete within a structure or foundation shall be considered exterior piping.
- B. The CONTRACTOR shall furnish and install fittings, couplings, connections, sleeves, adapters, harness rods and closure pieces as required to connect pipelines of dissimilar materials and/or sizes herein included under this Section and other concurrent contracts for a complete installation.
- C. The CONTRACTOR shall furnish all labor, materials, equipment, tools, and services required for the furnishing, installation and testing of all piping as shown on the Drawings, specified in this Section and required for the Work. Piping shall be furnished and installed of the material, sizes, classes, and at the locations shown on the Drawings and/or designated in this Section. Piping shall include all fittings, adapter pieces, couplings, closure pieces, joint restraints, harnessing rods, hardware, bolts, gaskets, wall sleeves, wall pipes, hangers, supports, and other associated appurtenances for required connections to equipment, valves, or structures for a complete installation.
- D. The CONTRACTOR shall provide taps on piping where required or shown on the Drawings. Where pipe or fitting wall thicknesses are insufficient to provide the required number of threads, a boss or pipe saddle shall be installed.
- E. The work shall include, but not be limited to, the following:
  - 1. Connections to existing pipelines.
  - 2. Test excavations necessary to locate or verify existing pipe and appurtenances.
  - 3. Installation of all new pipe and materials required for a complete installation.
  - 4. Cleaning, testing and disinfecting as required.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1, General Requirements
- B. Division 2, Sitework

##### 1.03 SUBMITTALS

## SECTION 15000

### PIPING GENERAL

- A. The CONTRACTOR shall submit complete shop drawings and certificates, test reports, affidavits of compliance, of all piping systems, in accordance with the requirements in Section 01300 – Submittals and as specified in the individual piping sections.
- B. Each shop drawing submittal shall be complete in all aspects incorporating all information and data listed herein and all additional information required to evaluate the proposed piping material's compliance with the Contract Documents. Partial or incomplete submissions will be returned to the CONTRACTOR without review.
- C. Data to be submitted shall include, but not be limited to:
  - 1. Catalog Data consisting of specifications, illustrations, and a parts schedule that identifies the materials to be used for the various piping components and accessories. The illustrations shall be in sufficient detail to serve as a guide for assembly and disassembly.
  - 2. Complete layout and installation drawings with clearly marked dimensions and elevations. Piece numbers which are coordinated with the tabulated pipe layout schedule shall be clearly marked. Piping layout drawings shall provide information on the following; pipe supports, location, support type, hanger rod size, insert type and the load on the hanger in pounds.
  - 3. Weight of all component parts.
  - 4. Design calculations specified above.
  - 5. Tabulated pipe layout schedule which shall include the following information for all pipe and fittings, service, pipe size, working pressure, wall thickness and piece number.
- D. Certifications: Prior to installation, the CONTRACTOR shall furnish an Affidavit of Compliance certified by the pipe manufacturer that the pipe, fittings and specials furnished under this Contract comply with all applicable provisions of AWWA and these specifications.

No pipe or fittings will be accepted for use in the Work on this project until the affidavits have been submitted and accepted in accordance with Section 01300 – Submittals.
- E. All expenses incurred in making samples for certification of tests shall be borne by the CONTRACTOR.

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### PIPING GENERAL

#### 1.04 QUALITY ASSURANCE

- A. Tests: Except where otherwise specified, all materials used in the manufacture of the pipe shall be tested in accordance with the applicable Specifications and Standards.
- B. In accordance with the "Reduction of Lead in Drinking Water Act" (Act) enacted by the USEPA on January 4, 2011, effective January 4, 2014 all piping, fittings, fixtures, valves, and other appurtenances used in potable water supply and distribution systems shall be "lead free" as defined in Section 1417(d) of the Safe Drinking Water Act (SDWA). All requirements of the Act as it relates to the work under this Contract shall be strictly adhered to.

#### 1.05 MANUFACTURER'S SERVICE REPRESENTATIVE

- A. Where the assistance of a manufacturer's service representative is advisable, in order to obtain correct pipe joints, supports, or special connections, the CONTRACTOR shall furnish such assistance at no additional cost to the CITY.

#### 1.06 MATERIAL DELIVERY, STORAGE, AND PROTECTION

- A. All piping materials, fittings, valves, and accessories shall be delivered in a clean and undamaged condition and stored off the ground, to provide protection against oxidation caused by ground contact. Any materials susceptible to UV degradation shall be protected to eliminate exposure to sunlight. All defective or damaged materials shall be replaced with new materials. Storage shall conform with Section entitled "Site Access and Storage".

#### 1.07 CLEANUP

- A. After completion of the work, all remaining pipe cuttings, joining and wrapping materials, and other scattered debris, shall be removed from the site. The entire piping system shall be handed over in a clean and functional condition.

### **Part 2 - PRODUCTS**

#### 2.01 GENERAL

- A. All specials and every length of pipe shall be marked with the manufacturer's name or trademark, size, class, and the date of manufacture. Special care in handling shall be exercised during delivery, distribution, and storage of pipe to avoid damage and unnecessary stresses. Damaged pipe will be rejected and

## SECTION 15000

### PIPING GENERAL

shall be replaced at the CONTRACTOR's expense. Pipe and specials stored prior to use shall be stored in such a manner as to keep the interior free from dirt and foreign matter.

- B. Testing of pipe before installation shall be as described in the corresponding ASTM or AWWA Specifications and in the applicable standard specifications listed in the following sections.
- C. Unless otherwise specified or shown on the drawings, all buried exterior piping shall have restrained joints for thrust protection, and all exposed exterior piping shall have flanged joints.
- D. The Drawings indicate work affecting existing piping and appurtenances. The CONTRACTOR shall excavate test pits as required of all connections and crossings which may affect the CONTRACTOR's work prior to ordering pipe and fittings to determine sufficient information for ordering materials. The CONTRACTOR shall take whatever measurements that are required to complete the work as shown or specified.
- E. Any ferrous metal pipes are required to be polywrapped, minimum 8 mil, with polywrap and secured with polutape. Polywrap and polytape to be approved by the City.

2.02 WALL PIPES (Not Used)

2.03 SLEEVES (Not Used)

2.04 SOLID SLEEVE COUPLINGS

- A. Solid sleeve couplings shall be used to connect buried service piping where shown on the Drawings. Solid sleeves shall be ductile iron, long body and shall conform to the requirements of ANSI A21.10 (AWWA C110). Unless otherwise shown or specified, solid sleeve couplings shall be Style A11760 as manufactured by American Cast Iron Pipe Co., or equal.

2.05 SLEEVE TYPE COUPLINGS (SEWER ONLY) (Not Used)

2.06 MECHANICAL COUPLINGS

- A. Construction: Mechanical couplings shall be provided where shown on the Drawing, and shall be of similar material as the pipe, without pipe stop, and shall be of sizes to fit the pipe and fittings shown. The middle ring shall be not less than 1/4-inch in thickness and shall be either 5 or 7-inches long for standard steel couplings, and 16-inches long for long-sleeve couplings. The followers shall be single-piece contoured mill section welded and cold-expanded as required for the middle rings. They shall be of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket

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### PIPING GENERAL

pressures without excessive rolling. The shape of the follower shall be of such design as to provide positive confinement of the gasket.

#### B. Gaskets

1. Gaskets for mechanical couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. Gaskets for wastewater and sewerage applications shall be Buna "N", Grade 60, or equivalent suitable elastomer. The rubber in the gasket shall meet the following specifications:
  - (a) Color - Jet Black.
  - (b) Surface - Nonblooming.
  - (c) Durometer Hardness - 74 + 5.
  - (d) Tensile Strength - 1000 psi Minimum.
  - (e) Elongation - 175 percent Minimum.
2. The gaskets shall be immune to attack by the material which is being transported.
3. Where couplings are used in water containing chloramines or other fluids which attack rubber materials, gasket material shall be compatible with the piping service and fluid utilized.
4. Gasket materials used for potable water containing chloramines shall be EPDM.

C. Bolts, nuts and washers shall be ASTM A193, Grade B7 for above-ground applications. Buried applications shall use 316 stainless steel hardware.

D. Coatings: Couplings shall be shop primed with a primer compatible with the painting system specified in the Section 09940 – Painting.

E. Harnessing: Where harnesses are required for mechanical couplings, they shall be in accordance with the requirements shown on the Drawings.

F. Manufacturer shall be the following, or equal:

1. Rockwell (Smith-Blair), Style 411
2. Dresser, Style 38
3. Total Piping Solution, Inc. (TPS) -Hymax
4. Ford Meter Box Co., Inc., Style FC1 or FC3.

#### 2.08 FLANGED ADAPTERS

A. Flanged adapters shall be furnished as required and as shown on the Drawings.

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### PIPING GENERAL

- B. All flanged adapters, 12 inches in diameter and smaller, except as shown on the Drawings or directed by the ENGINEER, shall be locking type flanged adapters.
- C. Pressure and service shall be the same as connected piping.
- D. Materials shall be cast iron for pipes up to 12-inch diameter and high strength steel for pipes larger than 12 inch diameter.
- E. Flanged adapters shall be shop primed with a premium quality primer compatible with the paint system specified in Section 09940 - Painting.
- F. Bolts and nuts shall be alloy steel, corrosion-resistant and prime coated.
- G. Flanged coupling adapters shall be harnessed by tying the adapter to the nearest pipe joint flange using threaded rods and rod tabs. The threaded rods and rod tabs shall be as shown on the Drawings.
- H. Flanged adapters shall be as manufactured by Dresser Industries, Style 127 or 128, Smith Blair Corporation, or equal.

#### 2.09 UNIONS

- A. For ductile iron and PVC piping, see Section 15060, "Piping and Fittings".
- B. For copper piping, unions shall have ground joints and conform to ANSI B16.18.

#### 2.10 TAPPING SLEEVES AND TAPPING SADDLES

- A. Refer to Section 15102 - Tapping Sleeves and Tapping Valves.

### **Part 3 - EXECUTION**

#### 3.01 INSTALLATION

- A. All piping shall be installed by skilled workmen and in accordance with the best standard practice for piping installation as shown on the Drawings, specified or recommended by the pipe manufacturer. Proper tools and appliances for the safe and convenient handling and installing of the pipe and fittings shall be used. Great care shall be taken to prevent any pipe coating from being damaged on the inside or outside of the pipe and fittings. All pieces shall be carefully examined for defects, and no piece shall be installed which is known to be cracked, damaged, or otherwise defective. If any defective pieces should be discovered after having been installed, it shall be removed and replaced with a sound one in a satisfactory manner by the CONTRACTOR and at his own expense. Pipe and fittings shall be thoroughly cleaned before they are installed and shall be kept clean until they are accepted in the complete work.

## SECTION 15000

### PIPING GENERAL

All piping connections to equipment shall be provided with unions or coupling flanges located so that piping may be readily dismantled from the equipment. At certain applications, Dresser, Victaulic, or equal, couplings may also be used. All piping shall be installed in such a manner that it will be free to expand and contract without injury to itself or to structures and equipment to which it is connected. All piping shall be erected to accurate lines and grades with no abrupt changes in line or grade and shall be supported and braced against movement, temporary, or permanent. All exposed piping shall be installed with vertical and horizontal angles properly related to adjoining surfaces or pipes to give the appearance of good workmanship.

- B. All excavation shall be made in such a manner and to such widths as will provide ample room for properly installing the pipe and permit thorough compaction of backfill around the pipe. The minimum trench widths shall be in strict accordance with the "Trench Width Excavation Limits" as shown on the Drawings. All excavation and trenching shall be done in strict accordance with these specifications and all applicable parts of the OSHA Regulations, 29CFR 1926, Subpart P.
- C. Enlargements of the trench shall be made as needed to give ample space for operations at pipe joints. The width of the trench shall be limited to the maximum dimensions shown on the Drawings, except where a wider trench is needed for the installation of and work within sheeting and bracing. Except where otherwise specified, excavation slopes shall be flat enough to avoid slides which will cause disturbance of the subgrade, damage to adjacent areas, or endanger the lives or safety of persons in the vicinity.
- D. Hand excavation shall be employed wherever, in the opinion of the ENGINEER, it is necessary for the protection of existing utilities, poles, trees, pavements, or obstructions.
- E. No greater length of trench in any location shall be left open, in advance of pipe laying, than shall be authorized or directed by the ENGINEER and, in general, such length shall be limited to approximately one hundred (100) feet. The CONTRACTOR shall excavate the trenches to the full depth, width and grade indicated on the Drawings including the relevant requirements for bedding. The trench bottoms shall then be examined by the ENGINEER as to the condition and bearing value before any pipe is laid or bedding is placed.
- F. No pipe trench shall be backfilled until required pressure testing has been performed. All testing shall be in accordance with Section 15995 – Pipeline Testing and Disinfection.
- G. Following proper preparation of the trench subgrade, pipe and fittings shall be carefully lowered into the trench so as to prevent dirt and other foreign substances from gaining entrance into the pipe and fittings. Proper facilities

## SECTION 15000

### PIPING GENERAL

shall be provided for lowering sections of pipe into trenches. Under no circumstances shall any of the materials be dropped or dumped into the trench.

- H. Water shall be kept out of the trench until jointing and backfilling are completed. When work is not in progress, open ends of pipe, fittings, and valves shall be securely closed so that no water, earth, or other substance will enter the pipes, fitting, or valves. Pipe ends left for future connections shall be valved, plugged, or capped, and anchored as required.
- I. Pipes crossing within a vertical distance of less than or equal to one (1) foot shall be encased and supported with concrete at the point of crossing to prevent damage to the adjacent pipes as indicated by the CITY and ENGINEER at no additional cost to the CITY.
- J. The full length of each section of pipe shall rest solidly upon the bed of the trench, with recesses excavated to accommodate bells, couplings, joints, and fittings. Before joints are made, each pipe shall be well bedded on a solid foundation; and no pipe shall be brought into position until the preceding length has been thoroughly bedded and secured in place. Pipe that has the grade or joint disturbed after laying shall be taken up and relaid by the CONTRACTOR at his own expense. Pipe shall not be laid in water or when trench conditions are unsuitable for work.
- K. Proper and suitable tools and appliances for the safe convenient handling and laying of pipe shall be used and shall in general agree with manufacturer's recommendations.
- L. At the close of each work day the end of the pipeline shall be tightly sealed with a cap or plug so that no water, dirt, or other foreign substance may enter the pipeline, and this plug shall be kept in place until pipe laying is resumed.
- M. During the laying of pipe, each pipe manufacturer shall provide his own supervisor to instruct the CONTRACTOR's pipe laying personnel in the correct procedure to be followed.
- N. All piping shall have bedding – refer to the Drawings and other Specification Sections.

#### 3.02 JOINTS IN PIPING

- A. Restrained joints: shall be provided on all pipe joints as specified herein and shown on the Drawings. Restrained joints shall be made up similar to that for push-on joints.
- B. Push-on joints: include a single rubber gasket which fits into the bell end of the pipe. The gasket shall be wiped clean, flexed and then placed in the socket. Any bulges in the gasket which might interfere with the entry of the plain end of

## SECTION 15000

### PIPING GENERAL

the pipe shall be removed. A thin film of lubricant shall be applied to the gasket surface which will come into contact with the spigot end of the pipe. The lubricant shall be furnished by the pipe manufacturer. The plain end of the pipe, which is tapered for ease of assembly, shall be wiped clean and a thick film of lubricant applied to the outside. The pipe shall be aligned and carefully entered into the socket until it just makes contact with the gasket. The joint assembly shall be completed by entering the pipe past the gasket until it makes contact with the bottom of the socket. The pipe shall be pulled "home" with an approved jack assembly as recommended by the pipe manufacturer. If assembly is not accomplished by reasonable force, the plain end shall be removed and the condition corrected.

- C. Mechanical joints: shall be made up with gaskets, glands and bolts. When a joint is to be made up, the bell or socket and plain end shall be cleaned and washed with a solution or mild soap in water; the gland and gasket shall be slid onto the plain end and the end then entered into the socket until it is fully "home" on the centering ring. The gasket shall then be painted with soapy water and slid into position, followed by the gland. All bolts shall be inserted and made up hand tight and then tightened alternately to bring the gland into position evenly. Excessive tightening of the bolts shall be avoided. All nuts shall be pulled up using a torque wrench which will not permit unequal stresses in the bolts. Torque shall not exceed the recommendations of the manufacturer of the pipe and bolts for the various sizes. Care shall be taken to assure that the pipe remains fully "home" while the joint is being made. Joints shall conform to the applicable AWWA Specifications.
- D. Threaded and/or screwed joints: shall have long tapered full depth threads to be made with the appropriate paste or jointing compound, depending on the type of fluid to be processed through the pipe. All pipe up to, and including 1-1/2-inches, shall be reamed to remove burrs and stood on end and well pounded to remove scale and dirt. Wrenches on valves and fittings shall be applied directly over the joint being tightened. Not more than three pipe threads shall be exposed at each connection. Pipe, in all lines subject to temperature changes shall be cut short and cold sprung into place to compensate for expansion when hot. Joints in all piping used for chlorine gas lines shall be made up with a glycerine and litharge cement. Joints in plastic piping (PVC/CPVC) shall be laid and joints made with compounds recommended by the manufacturer.
- Installation shall conform to the requirements of ASTM D2774 and ASTM D2855. Unions required adjacent to valves and equipment.
- E. Solvent or adhesive welded joints: in plastic piping shall be accomplished in strict accordance with the pipe manufacturer's recommendations, including

## SECTION 15000

### PIPING GENERAL

necessary field cuttings, sanding of pipe ends, joint support during setting period, etc. Care shall be taken that no droppings or deposits of adhesive or material remain inside the assembled piping. Solvent or adhesive material shall be compatible with the pipe itself, being a product approved by the pipe manufacturer. Unions are required adjacent to valves and equipment. Sleeve-type expansion joints shall be supplied in exposed piping to permit 1-inch minimum of expansion per 100 feet of pipe length.

- F. Dielectric unions: shall be installed wherever dissimilar metals are connected except for bronze or brass valves in ferrous piping. Unions shall be provided downstream of each valve with screwed connections. The CONTRACTOR shall provide screwed or flanged unions at each piece of equipment, where shown, and where necessary to install or dismantle piping.
- G. Eccentric reducers: shall be installed where air or water pockets would otherwise occur in mains because of a reduction in pipe size.

3.03 TESTING (NOT USED)

3.04 PAINTING (NOT USED)

- END OF SECTION -

## SECTION 15204 - WEIR GATES

### PART 1 -- GENERAL

#### 1.01 THE REQUIREMENT

- A. Furnish and install all weir gates and accessory equipment as specified herein and as shown on the Drawings.
- B. The gate equipment shall be provided complete with all accessories, special tools, spare parts, mountings, anchor bolts and other appurtenances as specified and as may be required for a complete and operating installation.
- C. All weir gates and accessory equipment specified herein shall be the product of and be furnished by a single manufacturer.
- D. Reference Section 15000, Basic Mechanical Requirements.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01300 - Submittals
- B. Division 5 - Metals
- C. Section 09900 - Painting
- D. Section 15200 - Gate Operators

#### 1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Commercial Standards
  - 1. ASTM - American Society for Testing Materials
  - 2. AISC - American Institute of Steel Construction
  - 3. AWS - American Welding Society
  - 4. AFBMA - Anti-Friction Bearings Manufacturer's Association
  - 5. NEMA - National Electrical Manufacturer's Association

#### 1.04 SUBMITTALS

- A. Each submittal shall be complete in all aspects incorporating all information and data listed herein and all additional information required to evaluate the proposed equipment's compliance with the Contract Documents. Partial or incomplete submissions will be returned to the Contractor disapproved without review.
- B. In accordance with the procedures and requirements set forth in Section 01300 - Submittals, submit the following:

1. Equipment specifications and data covering materials used, parts, devices, and other accessories forming part of the equipment.
2. Complete assembly, layout, and installation drawings with clearly marked dimensions. This information shall be in sufficient detail to serve as a guide for assembly and disassembly and for ordering parts.
3. Weight of all component parts and an assembled weight.
4. Design calculations.
5. Listing of all lubricants required for the equipment with a minimum of four equivalent and compatible natural and/or synthetic lubricants produced by different manufacturers. The listing shall include the estimated quantity of lubricant required for one year of operation.
6. Complete motor data, electrical nameplate data and wiring descriptions.
7. A list of manufacturer's recommended special tools and spare parts recommended to be supplied.
8. Operation and maintenance manuals.
9. Sample data sheet of equipment nameplate(s) including information contained thereon.
10. The Contractor shall obtain from the manufacturer and submit to the Engineer copies of the results of all certified shop tests.
11. The manufacturer shall submit a certified statement all gates comply with the requirements of the AWWA C501 except as modified or supplemented herein.

#### 1.05 TOOLS, SUPPLIES AND SPARE PARTS

- A. The Contractor shall obtain from the equipment manufacturer and submit to the Engineer the following lists in accordance with the procedures and requirements set forth in Section 013000 – Submittals.
1. A complete list of parts and supplies with current unit prices and source of supply. (This list shall be submitted with the Operation and Maintenance Manual.)
  2. A list of parts and supplies that are either normally furnished at no extra cost with the purchase of the equipment or specified herein to be furnished as part of the Contract. (This list shall be submitted as part of the shop drawing submission.)
  3. **The CONTRACTOR shall furnish at least but not limited to the following spare parts:**
    - **One (1) set of Craftsman 254 Piece Mechanics Tools**

- **One (1) set of DeWalt DW988KM-2 18 volt Drill and Metal Cutting Circular Saw Kit**
- **Two (2) additional DW9096XR+TM PACK Extended Run-Time Battery Packs<sup>1</sup>**

B. Parts shall be completely identified with a numerical system to facilitate parts inventory control and stocking. Each part shall be properly identified by a separate number. Those parts, which are identical for more than one size, shall have the same parts number.

#### 1.06 COORDINATION

A. The Contractor shall coordinate all details, locations, clearances, and other conditions with the various equipment suppliers, so that the gate operators function as part of a complete system.

B. The Contractor shall provide the services of a qualified manufacturer's technical representative who shall adequately supervise the installation and testing of all equipment furnished under this Contract and instruct the Owner's operating personnel in its maintenance and operation as outlined in Division 1. The services of the manufacturer's representative shall be provided for a period of not less than two (2) days as follows:

1. At least one trip of one (1) day to check and supervise the equipment installation and field tests.
2. One trip of one (1) day after acceptance of the equipment to supervise initial start-up and operation and instruct the Owner's personnel in proper operation and maintenance of the equipment.

C. Any additional time required to achieve successful installation and operation shall be at the expense of the Contractor. The manufacturer's representative shall sign in and out at the office of the Engineer's Resident Project Representative on each day he is at the project.

D. A written report covering the representative's findings and installation approval shall be mailed directly to the Engineer covering all inspection and outlining in detail any deficiencies noted.

E. The times specified are exclusive of travel time to and from the facility and shall not be construed as to relieve the manufacturer of any additional visits to provide sufficient service to place the equipment in satisfactory operation.

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<sup>1</sup> Addendum No. 1, October 11, 2002

## 1.07 GATE SCHEDULE

- A. Locations, dimensions, design criteria, number required, etc. for weir gates are indicated in the Gate Schedule included with this Section.

## PART 2 -- PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. All weir gates shall be furnished by a single manufacturer. The equipment covered by these specifications is intended to be standard equipment of proven performance as manufactured by reputable concerns. Equipment shall be designed, constructed and installed in accordance with the best practices of the trade, and shall operate satisfactorily when installed as shown on the Contract Drawings. The gates shall be manufactured by one of the following:

1. Rodney Hunt Company
2. Waterman
3. Hydro Gate
4. B.N.W. Valve Manufacturing Limited
5. Craft Machine Works
6. **Whipps, Inc.<sup>2</sup>**
- 6-7. Or equal

### 2.02 GENERAL

- A. Liberal safety factors shall be used in the design of all of the equipment. Working stresses shall not exceed the lower value of: One-third of the yield strength, or one-fifth of the ultimate strength of the material. The gates and appurtenances shall be designed for installation in the structures shown on the Drawings.
- B. All work shall be performed in accordance with the best modern practice for the manufacture of high-grade machinery
1. All parts shall have accurately machined mounting and bearing surfaces so that they can be assembled without fitting, chipping, or re-machining.
  2. All parts shall conform accurately to the design dimensions and shall be free of all defects in workmanship or material that will impair their service.

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<sup>2</sup> Addendum No. 1, October 11, 2002

2. Logic circuits shall be protected against spurious voltage spikes, using opto-isolators in circuits connected to any remote input or output signals.
- D. Enclosure: The starter for 460 volt motor operators and all local devices shall be mounted in a common NEMA 4 cast aluminum enclosure. The enclosure shall be permanently affixed to the valve operator housing. Provide one incoming line main circuit breaker inside the panel.
- E. Valve (or gate) Stops: Valve stops for the operators shall be positive in action. Closing shall be complete, and opening full. Stops shall be filed adjustable to the required settings. The torque switches shall prevent any excessive mechanical stress or electrical overload in any direction of travel.
- F. Limit switches and gearing shall be an integral part of the motorized valve operator. Where required for a 460 volt motor driven operator, the limit switch gearing shall be of the intermittent type, totally enclosed in its own gear case, grease lubricated to prevent dirt and foreign matter from entering the gear train and shall be made of bronze or stainless steel. Limit switches shall be of the adjustable type capable of being adjusted to trip at any point between the normal position (full open, or full closed) and 75 percent of the travel to the opposite position.
- G. Local (Motor) Devices: Local devices shall include, but not be limited to the following:
1. Torque switches, responsive to high torque encountered in either direction of travel shall be provided. A torque switch that has tripped due to mechanical load shall not reset when the operator motor has come to a halt.
  2. LOCAL/OFF/REMOTE selector switch and monitor relay shall be provided with dry contacts for indication that the unit is the LOCAL or OFF or REMOTE position. Contacts shall be dry type rated 10A at 120VAC.
  4. OPEN/STOP/CLOSE switch that operates when in LOCAL mode to allow manual setting of gate position at the operator with full OPEN, full CLOSED, OVERLOAD and POWER status lights. All lights shall be high intensity lights.
  5. The motorized operators for modulating service shall be furnished with an integral position indicator/transmitter/controller. The unit shall be internally powered, factory calibrated and furnished with adjustable zero, span, gain and deadband controls. The position indicator/transmitter shall provide a linear, isolated, 4-20mA, 24 VDC output to remote instrumentation and controls proportional to 0-100 percent travel span. An external DC power source shall not be required. The position controller shall accept a linear 4-20mA, 24 VDC input signal proportional to 0-100 percent travel span and shall generate appropriate outputs to the reversing starter to open/close the valve until the desired position has been reached as determined by the position feedback signal to the position controller. Input signal isolation shall be provided.
  6. Position indicator calibrated to 0-100 percent travel span.
- H. Operating Unit Gearing: The actuator shall be double reaction unit with the capability of quickly changing the output speed with a gear change. Gear combination shall be selected

5. All threaded and keyed couplings of the same size shall be interchangeable.
6. Stems shall not be less than 2 inches in diameter unless otherwise indicated.
7. For self-contained gates, the manufacturer shall provide a stem with the diameter required to provide a slenderness ratio,  $L/r$  (length / radius of gyration) which does not exceed 200.

B. Stop-collar:

1. All weir gates shall be provided with an adjustable 316 stainless steel stop-collar on the stem above the floor stand lift nut.

C. Stem Guides:

1. Stem guides shall be split collar, adjustable in two directions to provide full adjustment for proper alignment with the stem.
2. Stem guides shall be Teflon or silicon bronze bushed.
3. Stem guides shall be provided in sufficient quantity that the slenderness ratio,  $L/r$  (length / radius of gyration) of the stem does not exceed 200.
4. Stem guides shall be located closer, if necessary, to prevent buckling of the stem.

D. Stop-nuts:

1. Stop-nuts with set-screws shall be provided to prevent over-travel in closing and in opening the gate.

## 2.05 WEIR GATE GUIDES

A. General:

1. The weir gate disc guides shall consist of guides extending down both sides of the gate as shown on the Contract Drawings.
2. The guides shall be suitable for mounting on the concrete face as shown on the Drawings.

B. Seals:

1. A neoprene or Buna-N "J" seal shall be attached to the lower edge and along both sides of the frame.
2. Details for the "J" seal installation on all weir gates are shown on the drawings.

C. Guide Size:

1. The guides shall extend from a point six inches below the operating floor to a point six inches below the weir disc when in its lowest position.

D. Back Plate:

1. A back plate shall be provided below the operating sill to seal against the J-seals.

2.06 WEIR GATE DISC

- A. The weir gate disc or sliding member shall be a flat plate suitably reinforced to withstand the required head conditions indicated in the weir gate schedule.

2.07 GATE OPERATORS

- A. Gate operators shall be as specified in Section 15200 – Gate Operators.

2.08 STOP-LOGS

- A. Provide stainless steel guides and aluminum stop-logs as described below:

1. Dimensions: Stop-log installations will be located in wall upstream of the slide weir gates and in the wall upstream of the sluice gates. Physical dimensions for the stop-logs are scheduled in paragraph 3.05 of this section.
2. Construction: The stop-logs shall be manufactured of aluminum plates reinforced with aluminum extrusions. The bottom and sides of each stop-log shall be fitted with a resilient seal to ensure a tight (low leakage) seal between the sections. The stop-logs shall be channel width plus the additional length required to fit into the guides. The stop-logs shall be stiffened and designed to handle a differential water level indicated in paragraph 3.05 of this section.
3. Materials: 316 stainless steel guides shall be provided for each installation from the sill to the operating floor. A 316 stainless steel angle shall be furnished for each set of guides to be installed in the sill and at the bottom stop-log.
4. Lifting Device: One (1) stop-log lifting device (beam) for each size shall be furnished for the removal of the stop-logs. The lifter shall fit in and ride in the guides. A latching device shall be provided to engage and disengage the individual stop-logs.

PART 3 -- EXECUTION

3.01 INSTALLATION

- A. The weir gates shall be set carefully in the locations shown on the Drawings in accordance with the installation manual furnished by the gate manufacturer.
- B. The stems shall be provided with wall-mounted guides where required.
- C. Floor stands and wall brackets shall be secured in place with adequately sized anchor bolts.
- D. Gates shall be mounted absolutely plumb in both vertical planes and absolutely level in the horizontal plane.

- E. The manufacturer's trained representative shall review installation and adjustment procedures with the CONTRACTOR's personnel.
- F. The manufacturer's trained representative shall check the completed installation after field adjustment just prior to testing.
- G. The CONTRACTOR shall carefully inspect all gate parts, bolts, nuts, and fasteners prior to assembly and installation. Items that have been damaged shall not be installed.
- H. The CONTRACTOR shall install the stop logs to demonstrate acceptability to the ENGINEER in the field. Once accepted, the CONTRACTOR shall remove the shop logs and deliver them to a storage location as defined by the City.

### 3.02 Testing

- A. Tests shall be performed in accordance with the specifications standards contained herein including leakage testing.
- B. After all adjustments have been made and the mechanisms properly lubricated, each slide gate shall be operated through one complete cycle to ensure proper installation.
- C. For weir gates, the leakage rate shall not exceed 0.2 gpm per foot of seating perimeter.
- D. All gates shall be certified that at the operating head conditions indicated on the Gate Schedule, leakage shall not exceed that specified in AWWA C501-87, Section 6.8-Field Leakage Test.

### 3.03 PAINTING

- A. All ferrous parts, except stainless steel, of the weir gates, and stem guides shall be painted with coal tar epoxy in accordance with the manufacturer's instructions and in accordance with Section 09900 - Painting.
- B. Surfaces shall be blast-cleaned in accordance with the Steel Structure Painting Council Specification SP #10 before painting.
- C. A shop prime coat shall be applied to the castings after cleaning and prior to machining.
- D. The finish coat shall be applied after assembly in the field.
- E. All machined iron surfaces, including drilled and tapped holes, shall be coated with a protective grease.

3.04 WEIR GATE SCHEDULE

**WEIR GATE SCHEDULE**

<u>Location</u>	<u>Function</u>	<u>Quantity</u>	<u>Gate Width</u>	<u>Gate Height</u>	<u>Seal Type</u>	<u>Seating/Unseating Head (ft)</u>	<u>Operator Type</u>	<u>Stem</u>
Clarifiers No. 1 and 2 Splitter Box	Mixed Liquor Distribution to Clarifiers No. 1-4	2	10'-0"	4'-0"	"J" Mounted on Slide Plate	5/5	Crank Operated Bench Stand	Double
Clarifiers No. 3 and 4 Splitter Box	Mixed Liquor Distribution to Clarifiers No. 1-4	2	10'-0"	4'-0"	"J" Mounted on Slide Plate	5/5	Crank Operated Bench Stand	Double
Existing Oxygenation System Flow Distribution Box	Influent to Train No. 5	1	4'-0"	4'-0"	"J" Mounted on Slide Plate	5/5	Crank Operated Bench Stand	Single
Existing Oxygenation System Flow Distribution Box	Influent to Train No. 3 and No. 4 <b>(Replace Manual Operator with Electric Operator only)<sup>(2)</sup></b>	2	4'-0"	4'-0"	"J" Mounted on Slide Plate	5/5	Motor Operated Bench Stand	Single
Existing Oxygenation System Flow Distribution Box	Influent to Train No. 1 and No. 2 <b>(Replace Manual Operator with Electric Operator only)<sup>(2)</sup></b>	2	8'-0"	4'-0"	"J" Mounted on Slide Plate	5/5	Motor Operated Bench Stand	Single

Note: 1. One (1) Portable Gate Operator as specified in Section 15200 shall be provided for each crank operated gate.

2. Provide stem, stop collar, operator base, stem cover and other accessories necessary for electric operator replacement requirements.

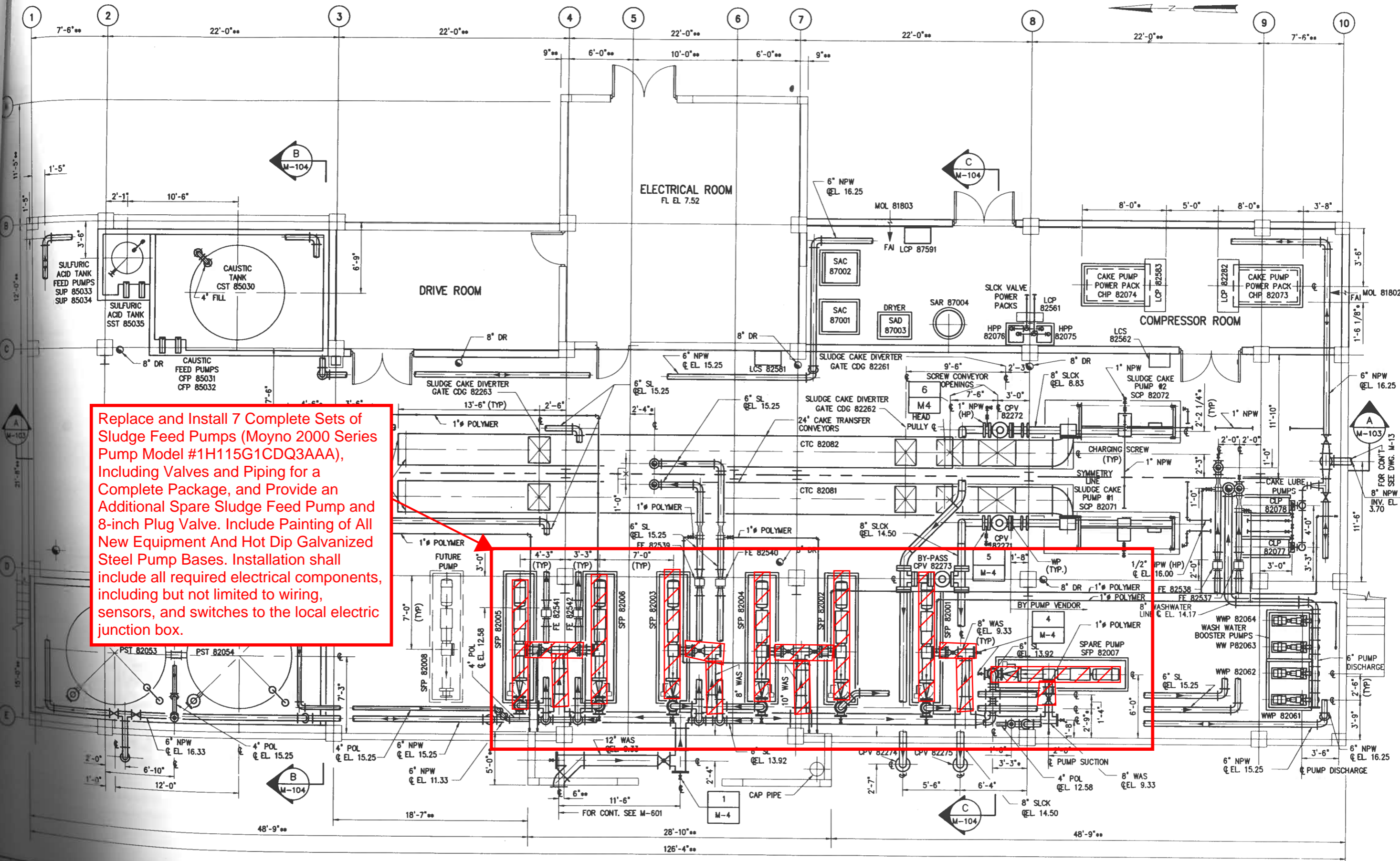
### 3.05 STOP-LOG DIMENSION SCHEDULE

<u>Parameter</u>	<u>Splitter Box No. 1 and No. 2</u>		<u>Existing Oxygenation Train Flow Distribution Box</u>		
	<u>Weir Gates</u>	<u>Interconnect</u>	<u>Interconnect</u>	<u>Weir Gates</u>	
	4	2	2	3	2
Number of Installations	4	2	2	3	2
Bottom of Sill Elevation	17.5	5.25 feet	24.5 feet	24.5 feet	24.5 feet
Operating Floor Elevation	23.67 feet	23.67 feet	31.0 feet	31.0 feet	31.0 feet
Channel Width (wall-to-wall)	10 feet	42"	6 feet	4 feet	8 feet
Channel Height for Guide Frame	6.0 feet	18.25 feet	2.1 feet	6.5 feet	6.5 feet
No. of Individual Stop-logs to be Furnished, if each is:					
• 12 inches high	20	10	-	-	-
• 18 inches high	12	6	14	4	4
Differential Head Design Criteria	7'	20'	5'	5'	5'

- END OF SECTION -

**PACKAGE 1 – IMPROVEMENTS IN DEWATERING BUILDING**





Replace and Install 7 Complete Sets of Sludge Feed Pumps (Moyno 2000 Series Pump Model #1H115G1CDQ3AAA), Including Valves and Piping for a Complete Package, and Provide an Additional Spare Sludge Feed Pump and 8-inch Plug Valve. Include Painting of All New Equipment And Hot Dip Galvanized Steel Pump Bases. Installation shall include all required electrical components, including but not limited to wiring, sensors, and switches to the local electric junction box.

GROUND FLOOR PLAN AT EL. 7.00

1/4" = 1'-0"

RECORD DRAWING

DESIGNED:	A.G.G./R.B.B.
DRAWN:	J.S.Z.
CHECKED:	A.G.G.
PROJ. ENGR. BY:	R.B.B.

PAUL J. VINCI  
No. 41787

**HAZENAND SAWYER**  
Environmental Engineers & Scientists

SCALE  
1/4" = 1'-0"

CONTRACT:	12
CLIENTS PROJECT:	29911
ENGINEERS PROJECT:	4892
CAD REFERENCE:	\4892\M101



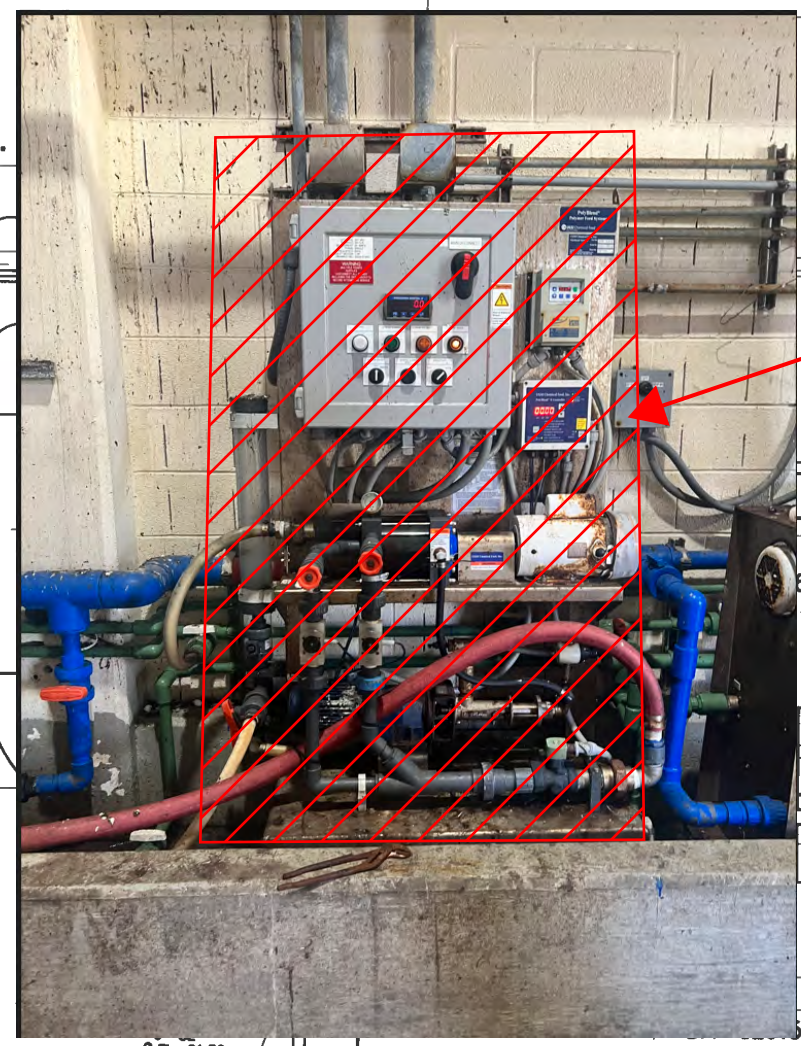
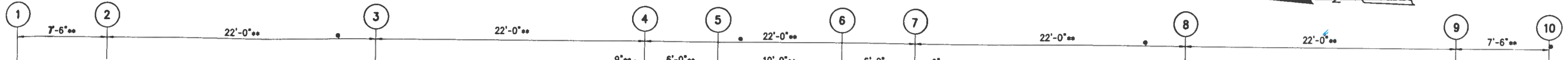
CITY OF HOLLYWOOD

SOUTHERN REGIONAL WASTEWATER TREATMENT PLANT	
POST LIME SLUDGE STABILIZATION	
DEWATERING BUILDING MODIFICATIONS	
GROUND FLOOR PLAN	

DATE:	AUGUST 1994
SHEET:	42 OF 149
DRAWING:	M-101

MIAMI - HOLLYWOOD - BOCA RATON - JUPITER - FT. PIERCE - RALEIGH - NEW YORK

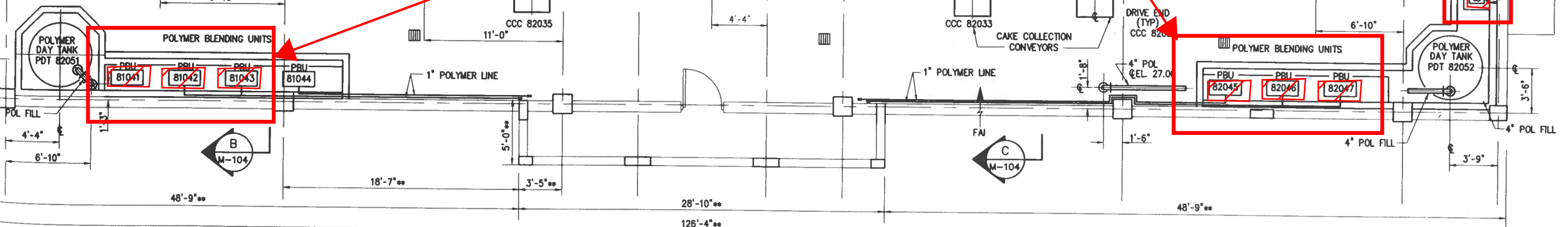
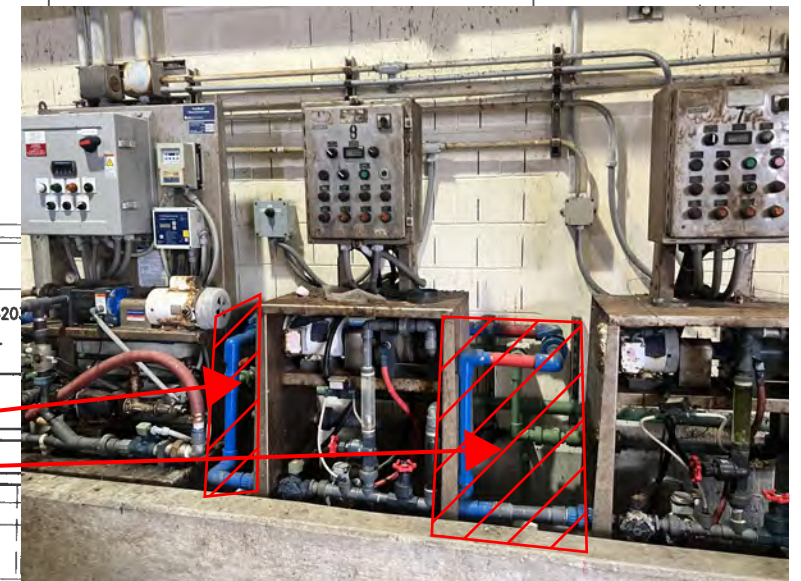




Demolish, Remove, and Dispose of Existing Units and Connecting Piping as Needed to Furnish Fully Functional New Units Including Control Center

Include Adjustment, Removal and Replacement of All Existing Interconnecting Pipe, Concrete Pipe Supports as Needed

Replace 9 Polymer Blending Units - UGSI Chemical Feed PolyBlend Systems Model No. M2400-P20AB



SEE DWG. M-102A FOR POLYMER DAY TANK PIPING SCHEMATIC REF. SKETCH M102-1 (ADDENDUM No.4)



DESIGNED	A.G.G.
DRAWN	J.Z.
CHECKED	A.K.
PROJ. ENGR.	R.B.B.

PAUL J. VINCIGLIONE  
No. 41787 P.E.

**HAZENAND SAWYER**  
Environmental Engineers & Scientists

MIAMI - HOLLYWOOD - BOCA RATON - JUPITER - FT. PIERCE - RALEIGH - NEW YORK

SCALE  
1/4" = 1'-0"

CONTRACT:	12
CLIENTS PROJECT:	29911
ENGINEERS PROJECT:	4892
CAD REFERENCE:	M102



CITY OF HOLLYWOOD

SOUTHERN REGIONAL WASTEWATER TREATMENT PLANT  
POST LIME SLUDGE STABILIZATION  
DEWATERING BUILDING MODIFICATIONS  
SECOND FLOOR PLAN

**RECORD DRAWING**

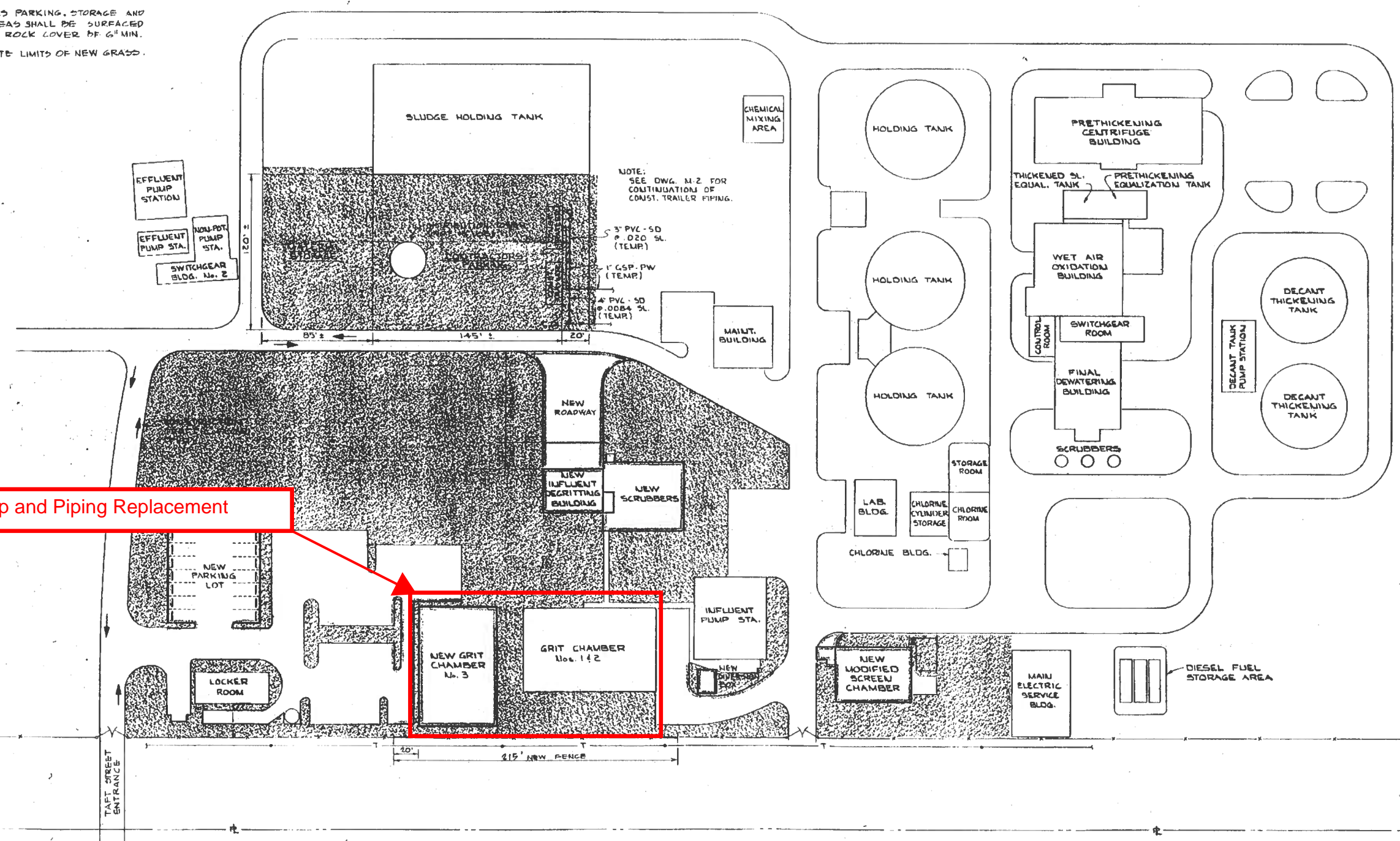
DATE:	AUGUST 1994
SHEET:	43 OF 149
DRAWING:	M-102

**PACKAGE 2 – GRIT PIPING AND PUMP REPLACEMENT**



NOTE:  
 CONTRACTORS PARKING, STORAGE AND TRAILER AREAS SHALL BE SURFACED WITH A LIME ROCK COVER OF 6" MIN.  
 [Hatched pattern] INDICATE LIMITS OF NEW GRASS.

Grit Pump and Piping Replacement



"AS-BUILT"  
 RECORD DRAWING

NO	DATE	ISSUED FOR	BY
7	6/16/86	"AS-BUILT" RECORD	P.E.R.
6	1/27/86	BIDDING	P.E.R.
5	1/14/86	REVISION UPDATE	P.E.R.
4	12/6/85	CITY OF HOLLYWOOD REVISIONS	P.E.R.
3	4/19/85	DER REVISIONS	P.E.R.
2	1/14/85	DER REVIEW	P.E.R.
1	11/26/84	60% SUBMITTAL	P.E.R.

DESIGNED	DRAWN	CHECKED	PROJ. ENGR.
L.C.B.	R.D.A.	G.N.C.	P.E.R.

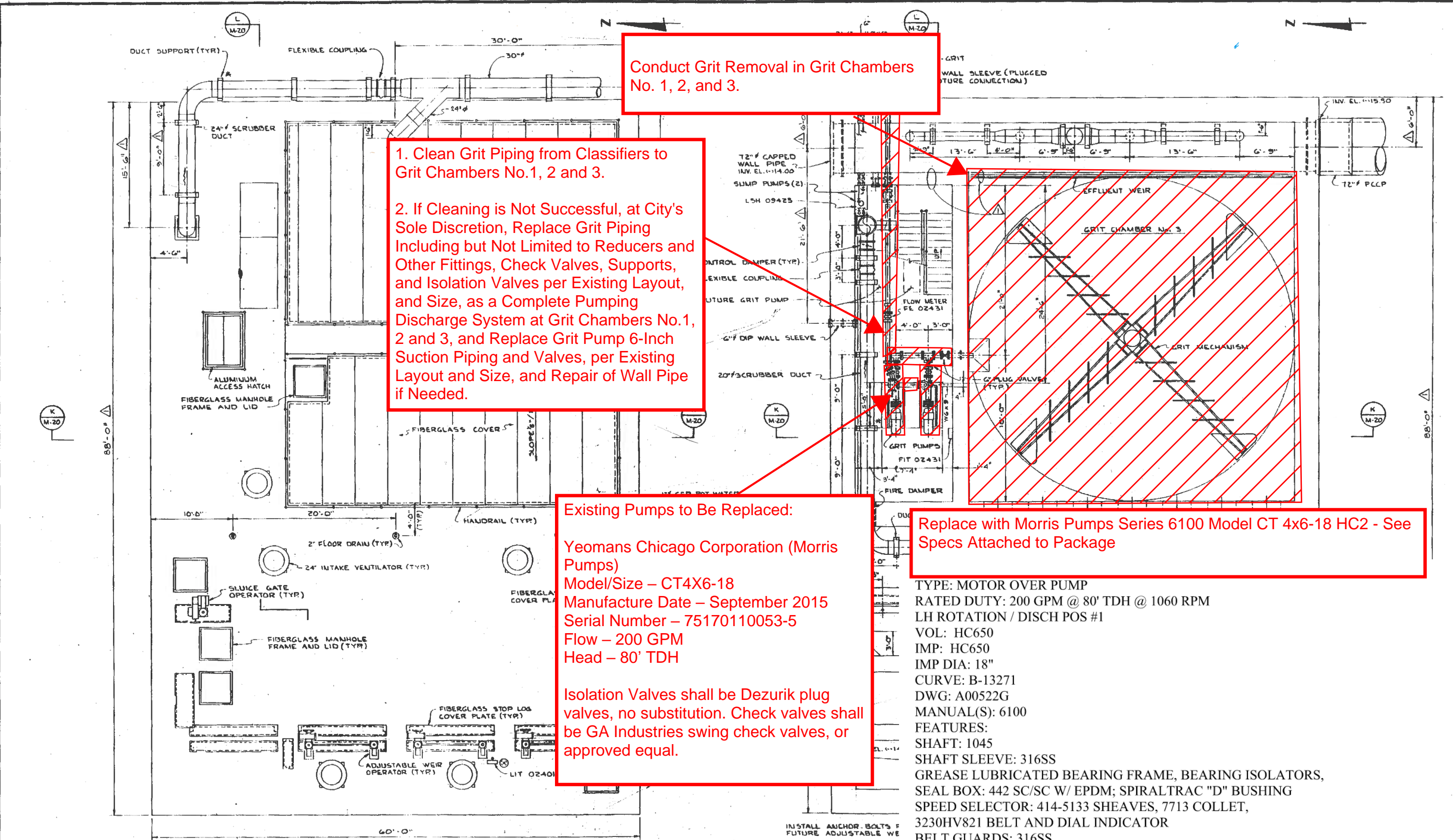
PETER E. ROBINSON P.E.  
 M.A. 10277

HAZEN AND SAWYER, P.C.  
 ENGINEERS  
 MIAMI · HOLLYWOOD · WALEIGH · NEW YORK · MOUNT KISCO

CLIENTS PROJECT:	D.E.R. PROJECT:	ENGINEERS PROJECT:
29200	594080	4200

CITY OF HOLLYWOOD, FLORIDA  
 1985 IMPROVEMENTS  
 SITE PLAN  
 NEW FACILITIES

DATE:	SHEET:	DRAWING:
JAN. 14, 1985	2 OF 68	C-1



Conduct Grit Removal in Grit Chambers No. 1, 2, and 3.

1. Clean Grit Piping from Classifiers to Grit Chambers No.1, 2 and 3.  
 2. If Cleaning is Not Successful, at City's Sole Discretion, Replace Grit Piping Including but Not Limited to Reducers and Other Fittings, Check Valves, Supports, and Isolation Valves per Existing Layout, and Size, as a Complete Pumping Discharge System at Grit Chambers No.1, 2 and 3, and Replace Grit Pump 6-Inch Suction Piping and Valves, per Existing Layout and Size, and Repair of Wall Pipe if Needed.

Existing Pumps to Be Replaced:  
 Yeomans Chicago Corporation (Morris Pumps)  
 Model/Size – CT4X6-18  
 Manufacture Date – September 2015  
 Serial Number – 75170110053-5  
 Flow – 200 GPM  
 Head – 80' TDH  
 Isolation Valves shall be Dezurik plug valves, no substitution. Check valves shall be GA Industries swing check valves, or approved equal.

Replace with Morris Pumps Series 6100 Model CT 4x6-18 HC2 - See Specs Attached to Package

TYPE: MOTOR OVER PUMP  
 RATED DUTY: 200 GPM @ 80' TDH @ 1060 RPM  
 LH ROTATION / DISCH POS #1  
 VOL: HC650  
 IMP: HC650  
 IMP DIA: 18"  
 CURVE: B-13271  
 DWG: A00522G  
 MANUAL(S): 6100  
 FEATURES:  
 SHAFT: 1045  
 SHAFT SLEEVE: 316SS  
 GREASE LUBRICATED BEARING FRAME, BEARING ISOLATORS,  
 SEAL BOX: 442 SC/SC W/ EPDM; SPIRALTRAC "D" BUSHING  
 SPEED SELECTOR: 414-5133 SHEAVES, 7713 COLLET,  
 3230HV821 BELT AND DIAL INDICATOR  
 BELT GUARDS: 316SS  
 FASTENERS: 316SS  
 PAINT: TNEC N69 HI-BUILD EPOXOLINE 2  
 SURFACE PREPARATION PER MANUFACTURERS' SPECIFICATION  
 FOR NON-IMMERSION SERVICE  
 Color 33GR (GREY)  
 DRY FILM THICKNESS: 3-4 MILS  
 MOTOR: 20HP, 1200 RPM, TEFC, 460V, 286T, PREMIUM EFFICIENCY  
 INVERTER DUTY. CLASS F INSULATION, SPACE HEATERS, CORO-EPOXY PAINT  
 TESTING: HYDRO AT 52 PSI FOR RECORD

5	6/16/08	46-BUILT RECORD	PER	DESIGNED	L.C.B., G.N.C.
4	9/12/86	CHANGE ORDER	PER	DRAWN	R.D.A.
3	1/27/86	BIDDING	PER	CHECKED	G.N.C.
2	4/19/85	DER REVISIONS	PER	PROJ ENGR	PER
1	1/14/85	DER REVIEW	PER		
NO.	DATE	ISSUED FOR	BY		

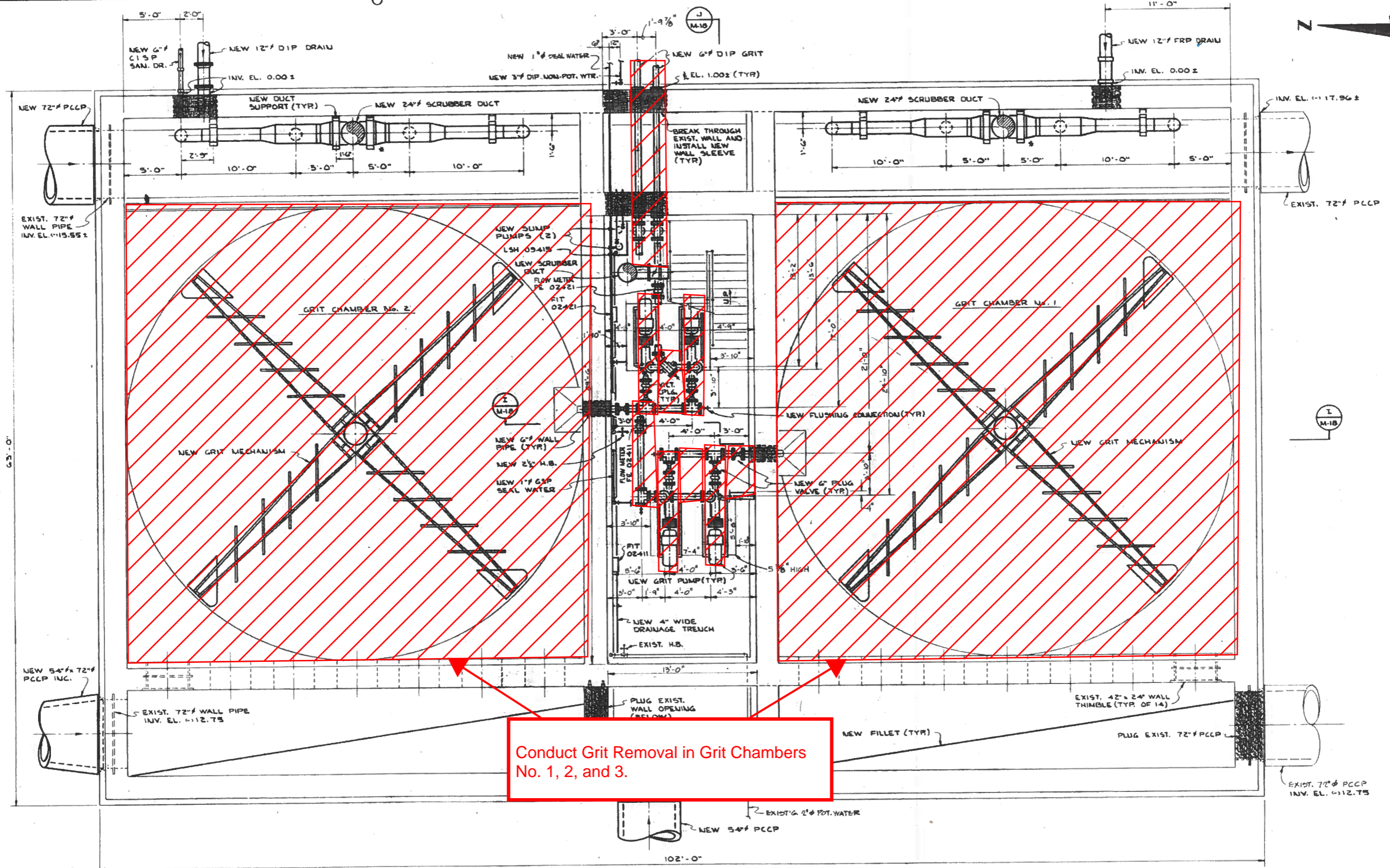
UPPER PLAN  
 3/16" = 1'-0"

PETER E. ROBINSON - P.E.  
 No. 19277

HAZEN AND SAWYER, P.C.  
 ENGINEERS  
 MIAMI - HOLLYWOOD - RALEIGH - NEW YORK - MOUNT KISCO

SCALE  
 3/16" = 1'-0"

CLIENTS PROJECT  
 DER PROJECT:  
 ENGINEERS PROJ



NOTE: \* DENOTES RIGID DUCT SUPPORT

**"AS-BUILT"  
RECORD DRAWING**

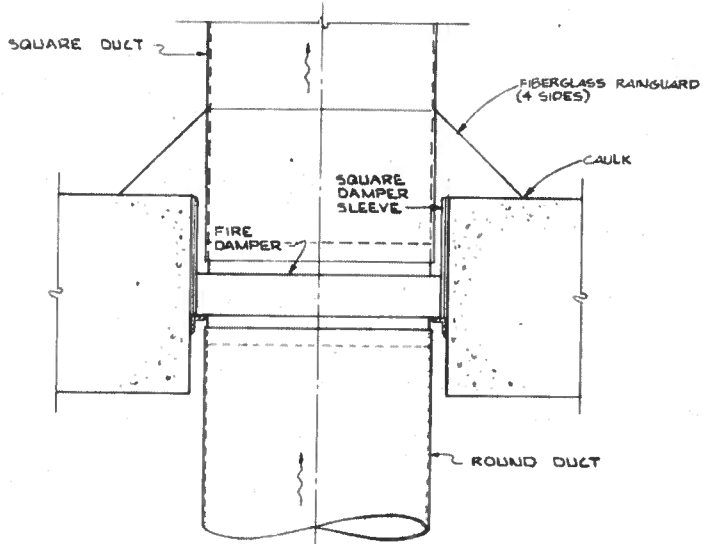
CITY OF HOLLYWOOD, FLORIDA  
1985 IMPROVEMENTS

DATE: JAN. 14,  
SHEET: 21 OF

5	4/16/88	"AS-BUILT" RECORD	P.B.E.	DESIGNED: L.C.B., G.N.C.
4	1/27/88	BIDDING	P.E.R.	R.D.A.

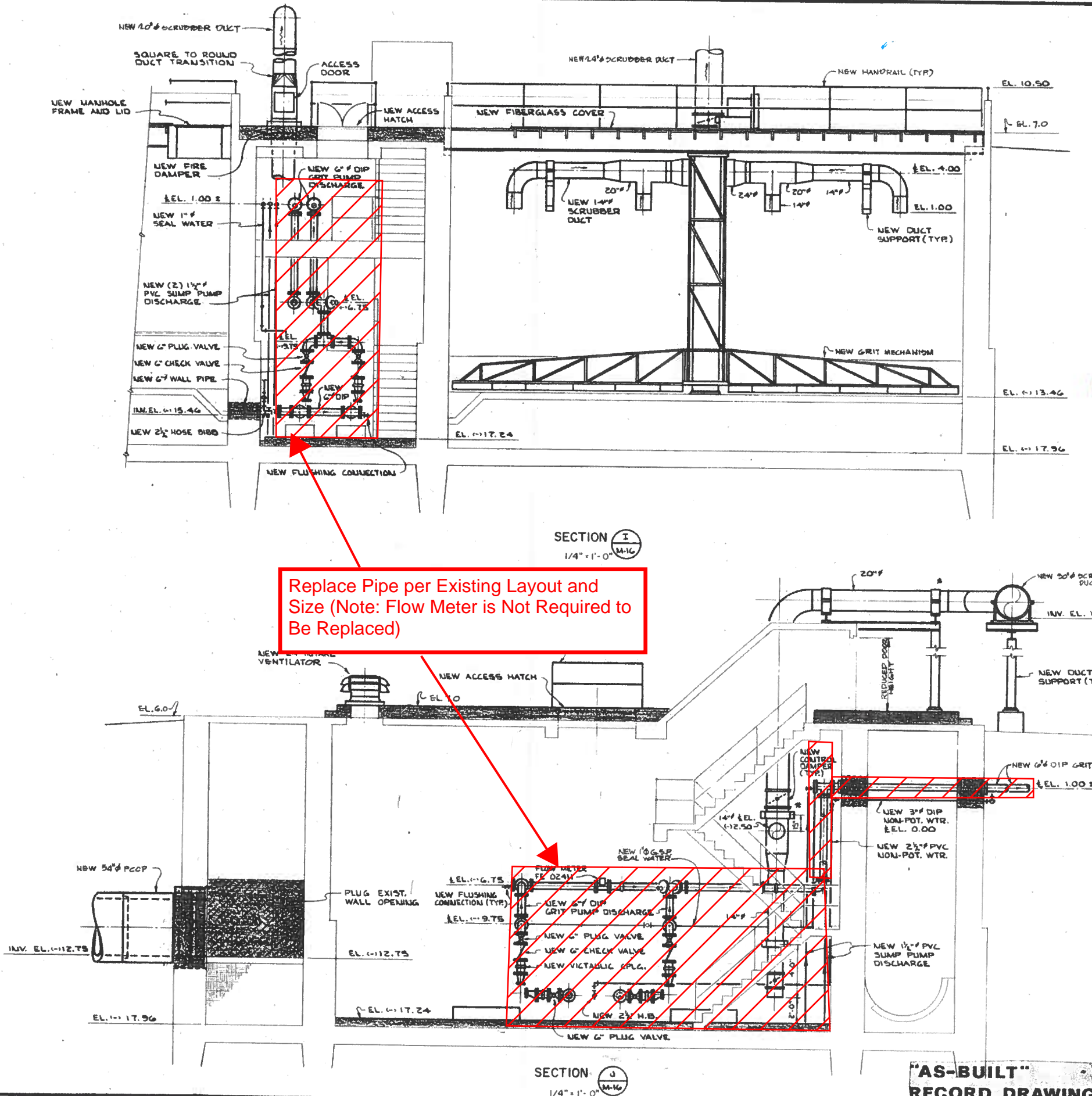
HAZEN AND SAWYER, P.C.

SCALE  
CLIENTS PROJECT: 29200



UPPER SLAB PENETRATION FOR  
SCRUBBER DUCT FIRE DAMPER  
N.T.S.

NOTE:  
\* DENOTES RIGID DUCT SUPPORT



Replace Pipe per Existing Layout and  
Size (Note: Flow Meter is Not Required to  
Be Replaced)

SECTION I  
1/4" = 1'-0"

SECTION J  
1/4" = 1'-0"

"AS-BUILT"  
RECORD DRAWING

DESIGNED	LCB, GNC.
1	6/16/88 "AS-BUILT" RECORD
2	1/27/88 BIDDING
3	4/19/85 DER REVISIONS
PER	R.D.A.
PER	GNC.

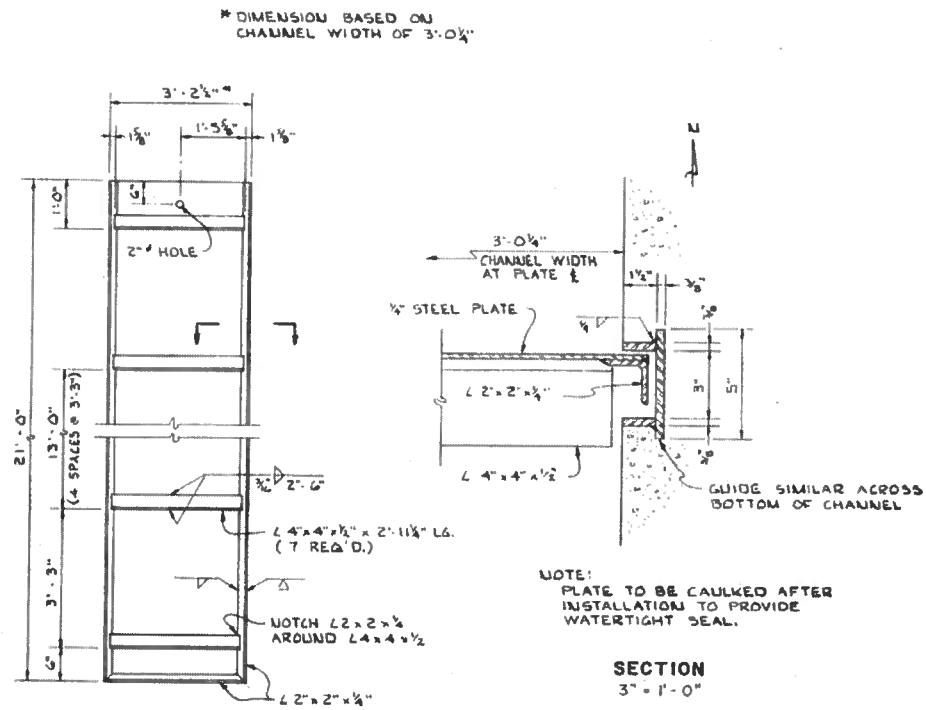
HAZEN AND SAWYER, P.C.  
ENGINEERS

SCALE  
AS NOTED

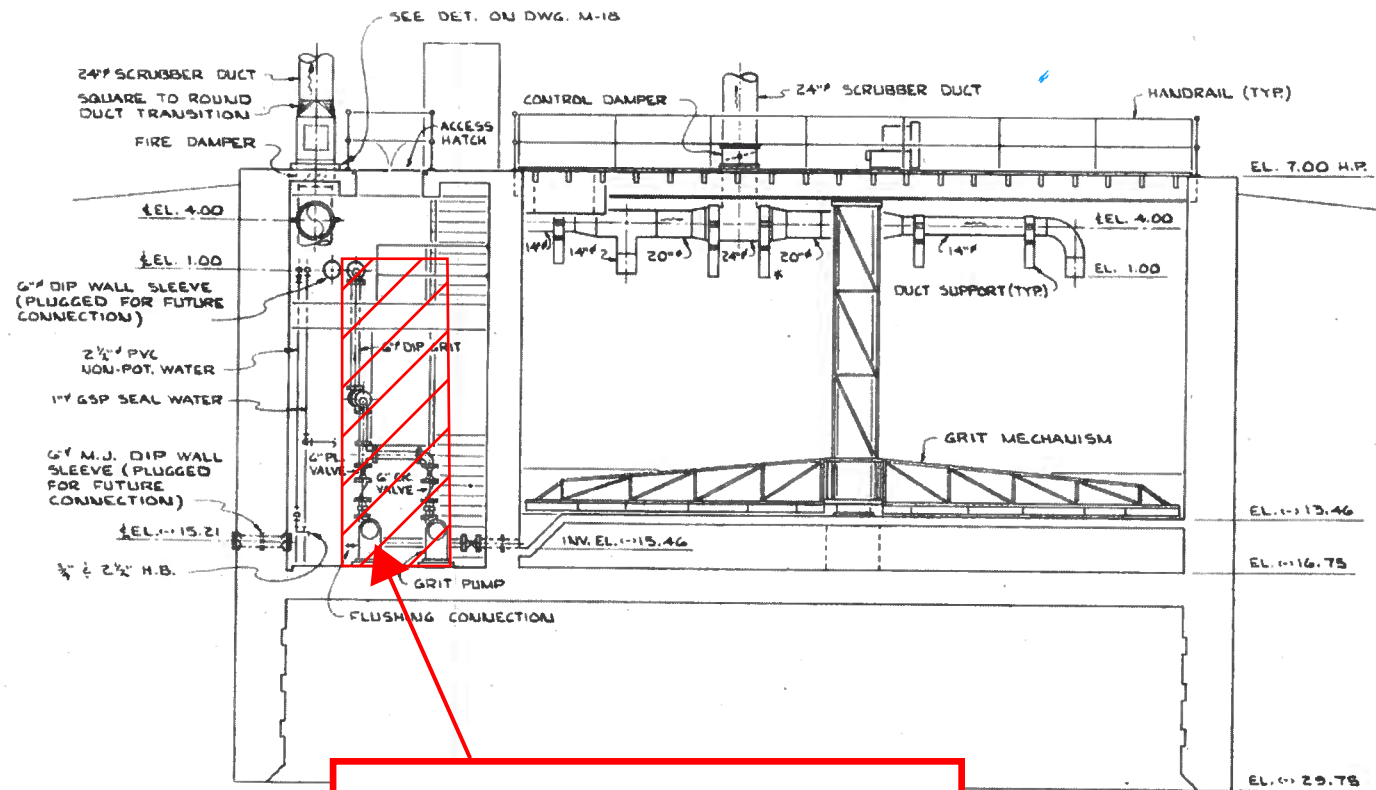
CLIENTS PROJECT: 29200

CITY OF HOLLYWOOD, FLORIDA  
1985 IMPROVEMENTS

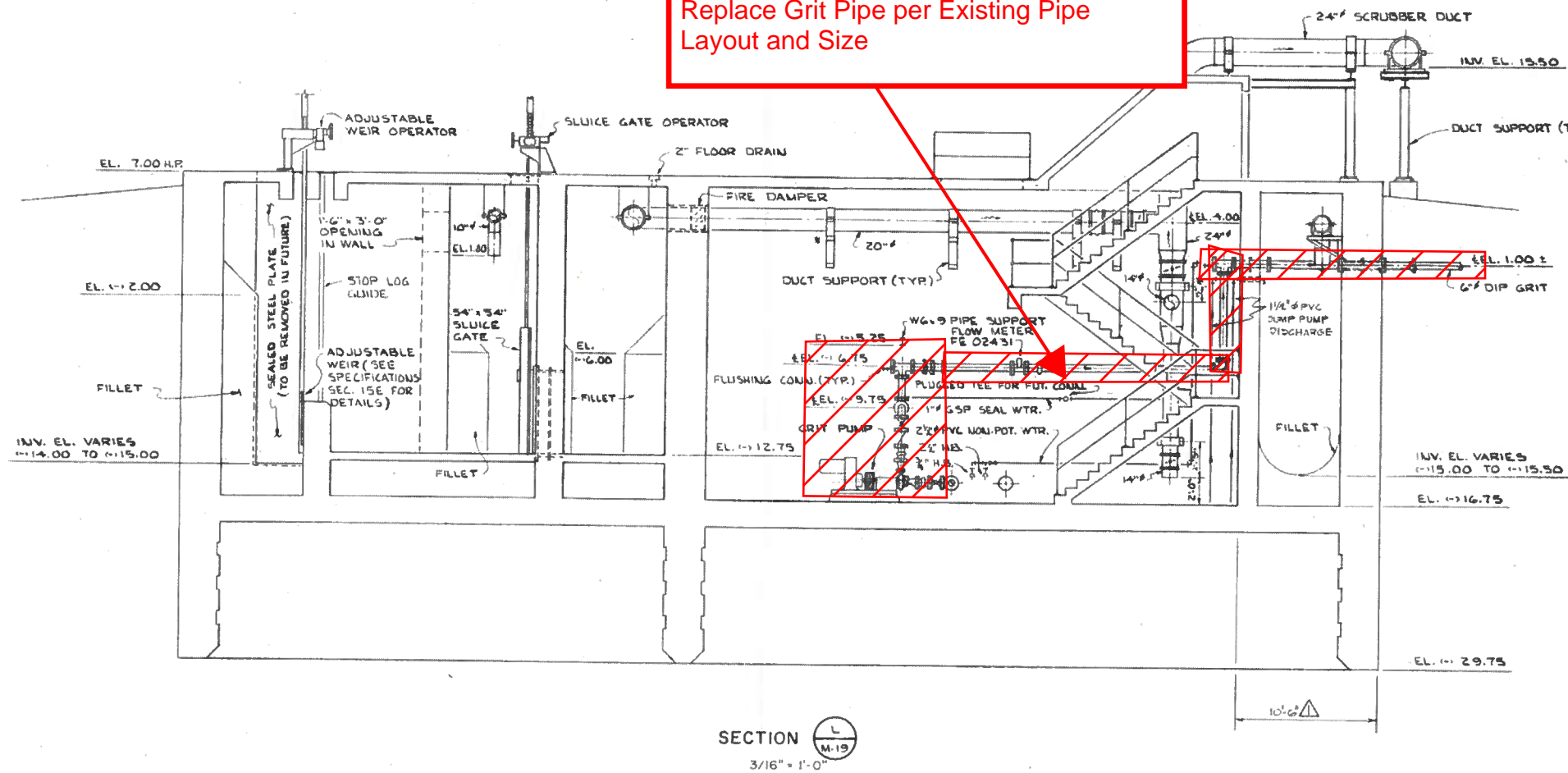
DATE: JAN. 14, 1988  
SHEET: 22 OF 22



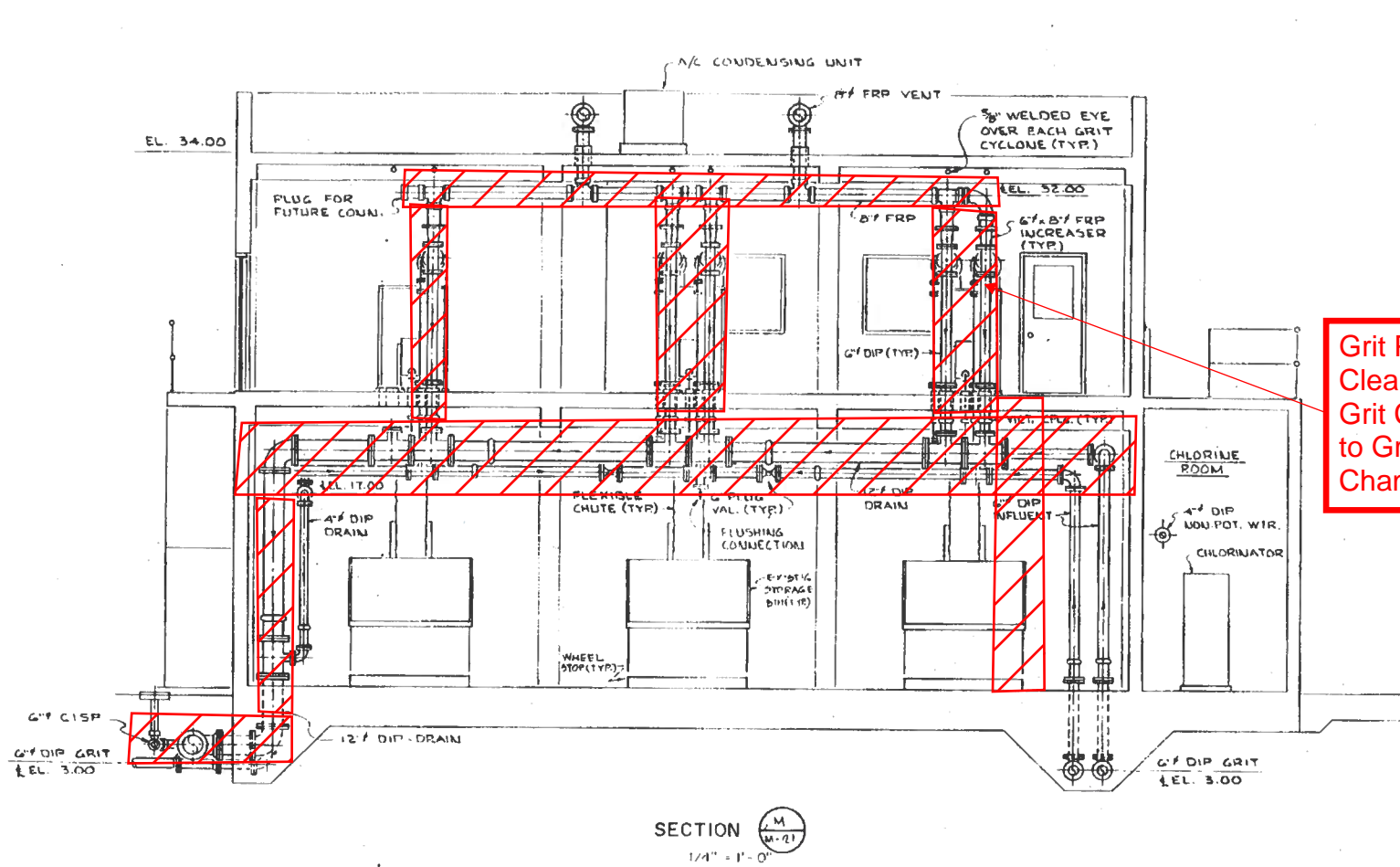
SEALED STEEL PLATE DETAIL



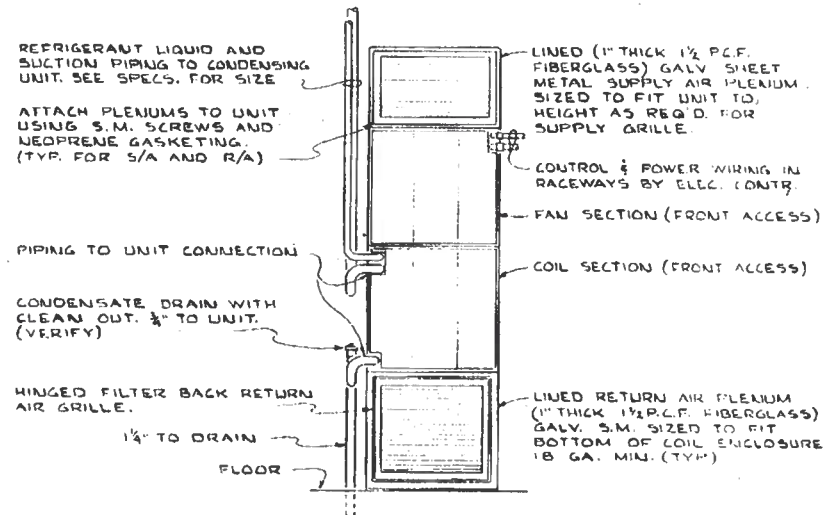
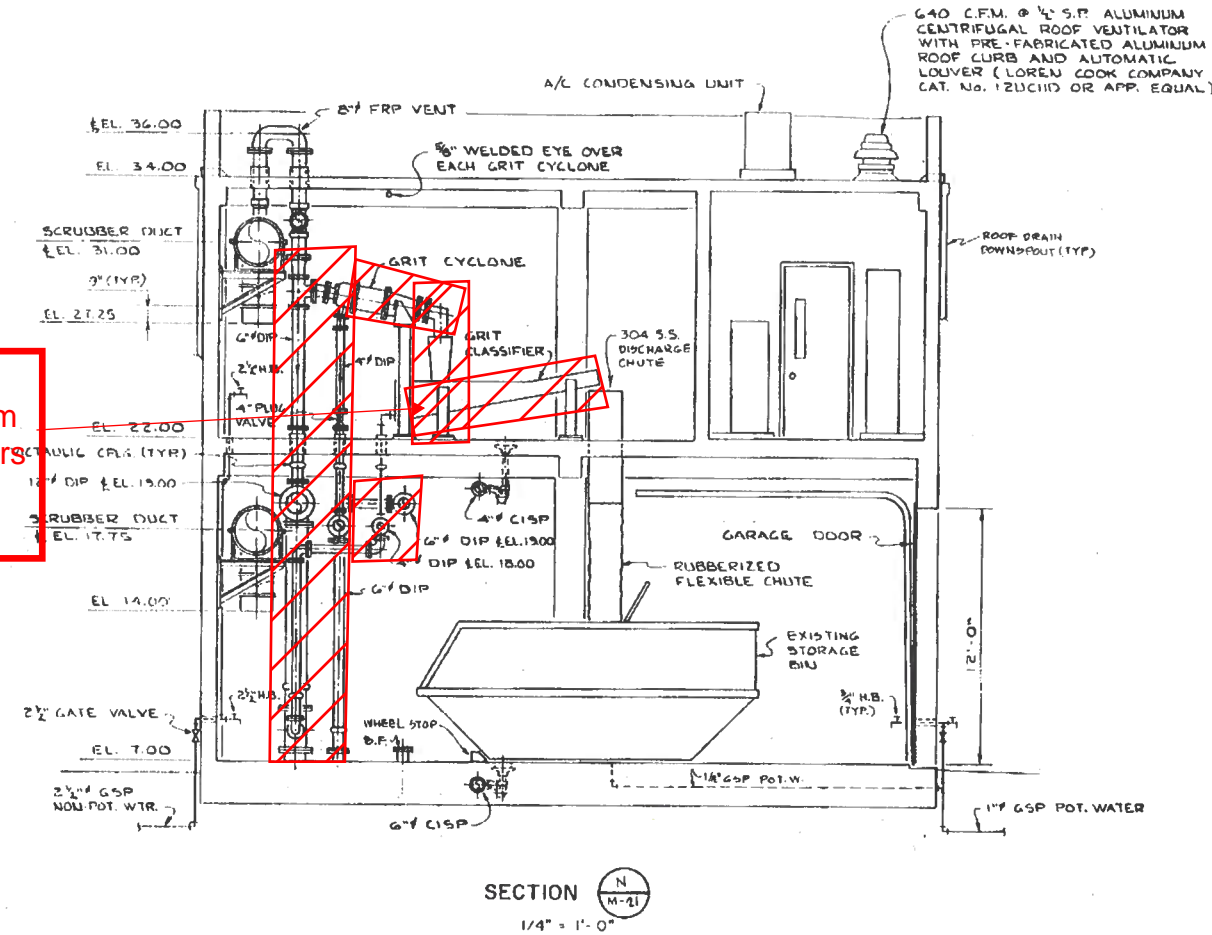
Replace Grit Pipe per Existing Pipe  
Layout and Size



"AS-BUILT"  
RECORD DRAWING

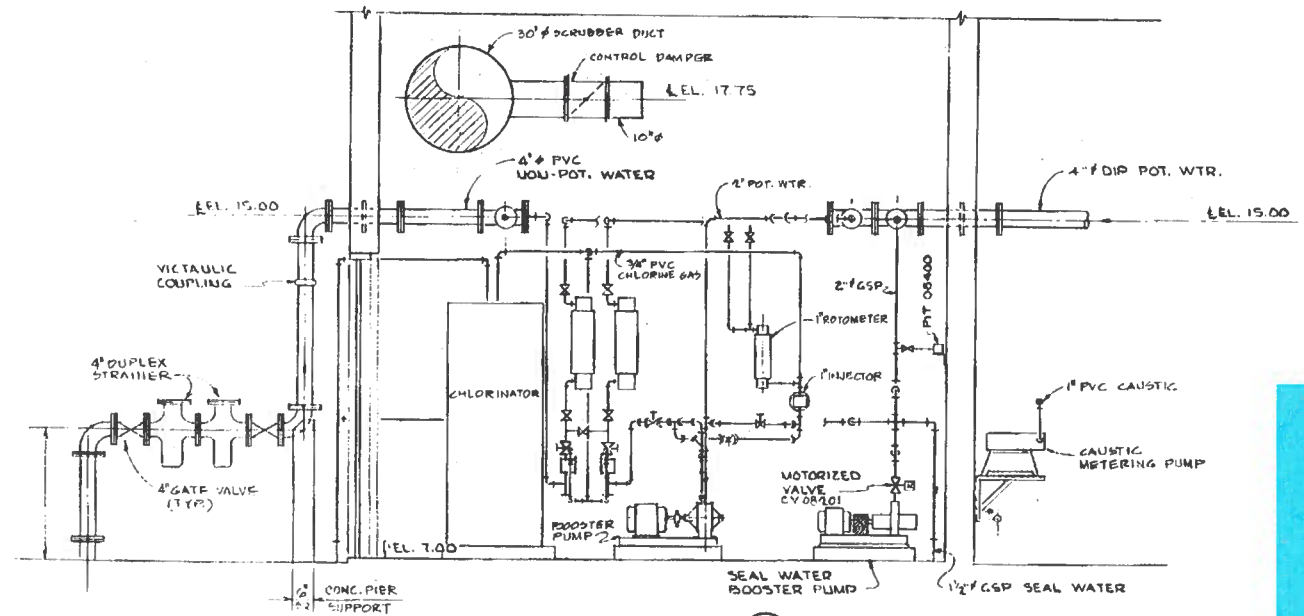
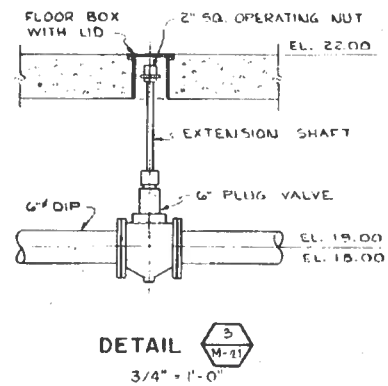


Grit Piping  
Cleaning from  
Grit Classifiers  
to Grit  
Chambers



EXPOSED FANCOIL UNIT (FOR MOTOR CONTROL CENTER)

N.T.S.



SECTION O-21  
1/2" = 1'-0"

"AS-BUILT"  
RECORD DRAWING

5	12/17/86	AS-BUILT RECORD	PER	DESIGNED L.C.B.
4	1/27/86	BIDDING	PER	DRAWN R.D.A.
3	4/19/85	DER REVISIONS	PER	CHECKED G.N.C.
2	1/14/85	DER REVIEW	PER	PROJ ENGR. P.E.R.
1	11/26/84	60% SUBMITTAL	PER	
NO	DATE	ISSUED FOR	BY	

PETER F. ROBINSON P.E.

HAZEN AND SAWYER, P.C.  
ENGINEERS

MIAMI - HOLLYWOOD - RALEIGH - NEW YORK - MOUNT KISCO

SCALE  
AS NOTED

CLIENTS PROJECT: 29200  
DER PROJECT: 594080  
ENGINEERS PROJECT: 4200

CITY OF HOLLYWOOD, FLORIDA

1985 IMPROVEMENTS

INFLUENT DEGRITTING BUILDING  
SECTIONS AND DETAILS

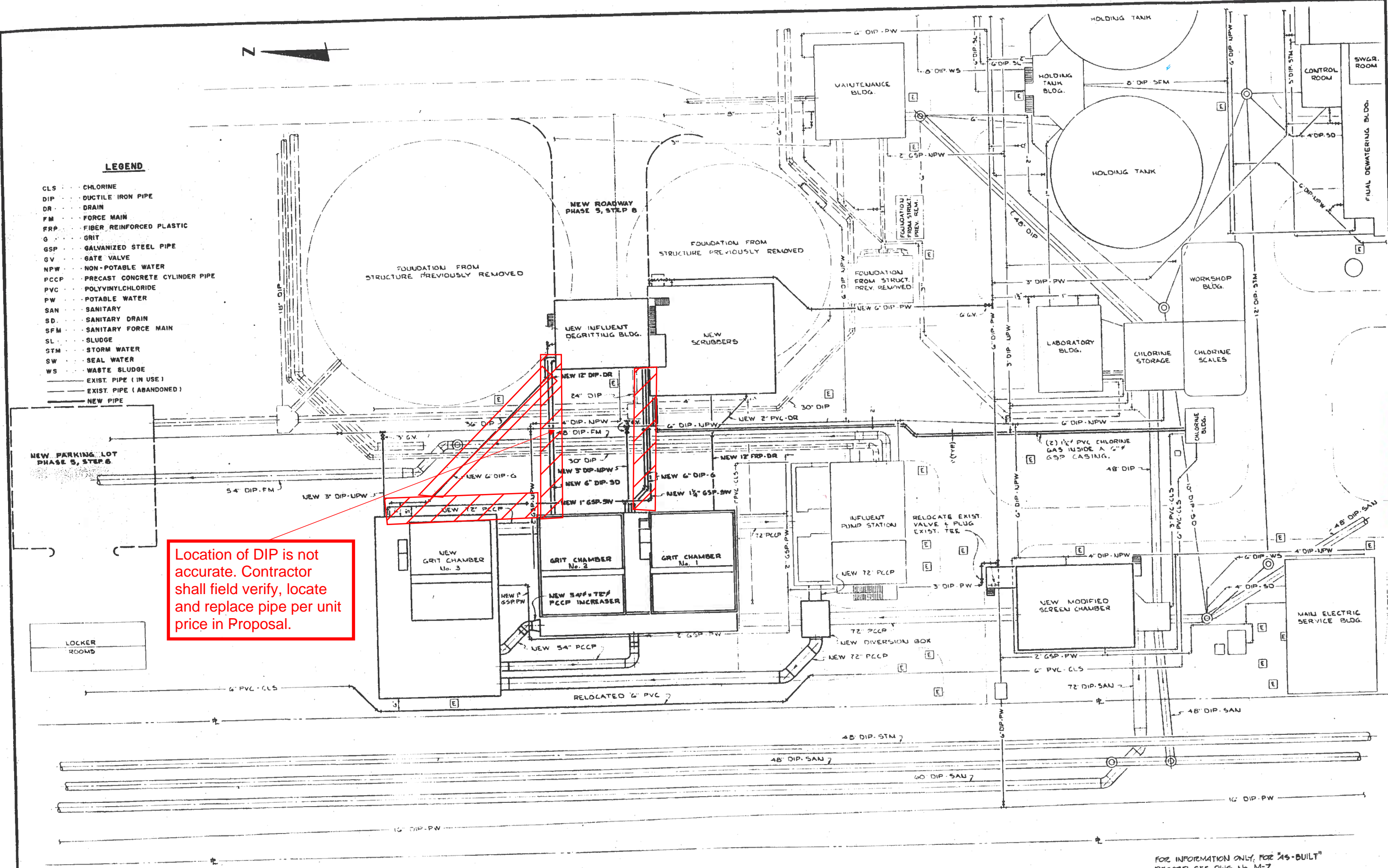
DATE: JAN. 14, 1986  
SHEET: 26 OF 68  
DRAWING: M-22



**LEGEND**

- CLS . . . CHLORINE
- DIP . . . DUCTILE IRON PIPE
- DR . . . DRAIN
- FM . . . FORCE MAIN
- FRP . . . FIBER REINFORCED PLASTIC
- G . . . GRIT
- GSP . . . GALVANIZED STEEL PIPE
- GV . . . GATE VALVE
- NPW . . . NON-POTABLE WATER
- PCCP . . . PRECAST CONCRETE CYLINDER PIPE
- PVC . . . POLYVINYLCHLORIDE
- PW . . . POTABLE WATER
- SAN . . . SANITARY
- SD . . . SANITARY DRAIN
- SFM . . . SANITARY FORCE MAIN
- SL . . . SLUDGE
- STM . . . STORM WATER
- SW . . . SEAL WATER
- WS . . . WASTE SLUDGE
- . . . EXIST. PIPE (IN USE)
- - - . . . EXIST. PIPE (ABANDONED)
- . . . NEW PIPE

Location of DIP is not accurate. Contractor shall field verify, locate and replace pipe per unit price in Proposal.



FOR INFORMATION ONLY, FOR "AS-BUILT"  
RECORD SEE DWG. No. M-7

		DESIGNED: GNC	<b>HAZEN AND SAWYER, P.C.</b> ENGINEERS <small>MIAMI · HOLLYWOOD · RALEIGH · NEW YORK · MOUNT KISCO</small>	SCALE	CITY OF HOLLYWOOD, FLORIDA	DATE: JAN. 14, 1985
		DRAWN: RDA		1" = 20'	1985 IMPROVEMENTS	SHEET: 10 OF 68
		CHECKED: GNC		CLIENTS PROJECT: 29200	SEQUENCE OF CONSTRUCTION	DRAWINGS: M-6
		PROJ. ENGR. PER.		D.E.R. PROJECT: 594080	PHASE 3, STEP 6 AND PHASE 5, STEP 8	
		BY		ENGINEERS PROJECT: 4200		



Yeomans Chicago Corporation  
3905 Enterprise Court  
Aurora, IL 60504  
(630) 236-5500

## MORRIS SUBMITTAL DATA

PROJECT

**City of Hollywood Grit Pumps**

**Hollywood, FL**

EQUIPMENT

**Six(6) Morris 6100CT 4x6-18 (HC2) Grit Pumps**

SALES ORDER NUMBER

**7517011053**

PURCHASE ORDER NUMBER

**12418**

YEOMANS PUMP AUTHORIZED REPRESENTATIVE

**FJ Nugent & Assoc. Inc.  
269 Hunt Park Cove  
Longwood, FL 32750  
Jason Alberga - 305-469-2075**



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## **TAB1 - Cover Page**

**City of Hollywood Grit Pumps  
Hollywood, FL**

# **TAB 1**

---

## **General Information**

# ABS Quality Evaluations

## Certificate Of Conformance

This is to certify that the Quality Management System of:

**Yeomans Chicago Corp.**

**3905 Enterprise Court**

**Aurora, IL 60504**

**U.S.A.**

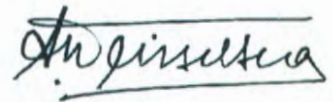
has been assessed by ABS Quality Evaluations, Inc. and found to be in conformance with the requirements set forth by:

**ISO 9001:2008**

The Quality Management System is applicable to:

**DESIGN AND MANUFACTURE OF NON-CLOG CENTRIFUGAL PUMPS, GRINDERS, SUBMERSIBLE MOTORS, AND RELATED WASTEWATER EQUIPMENT**

Certificate No:	33849
Original Certification Date:	22 December 1998
Effective Date:	08 December 2013
Expiration Date:	13 December 2016
Revision Date:	08 December 2013



Alex Weisselberg, President



Validity of this certificate is based on the periodic audits of the management system defined by the above scope and is contingent upon prompt, written notification to ABS Quality Evaluations, Inc. of significant changes to the management system or components thereof.

ABS Quality Evaluations, Inc. 16855 Northchase Drive, Houston, TX 77060, U.S.A.

Validity of this certificate may be confirmed at [www.abs-qe.com/cert\\_validation](http://www.abs-qe.com/cert_validation).

## GRUNDFOS USA - GENERAL TERMS AND CONDITIONS

1. **ACCEPTANCE.** Grundfos Pumps Corporation (Grundfos) and any of its affiliates or subsidiaries in the United States— including, but not limited to, Grundfos CBS Inc. (PACO), Yeomans Chicago Corporation, and Sterling Fluid Systems (USA) LLC DBA Peerless Pump Company (hereinafter called “Seller”), hereby acknowledges Purchaser’s order. The order will be filled only after credit approval and acceptance of the order at Seller’s administrative offices. Any acceptance of the order is subject to the most recent terms and conditions set forth herein, as modified from time to time, and which supersede any inconsistent or additional terms and conditions contained in Purchaser’s order form. There are no agreements or representations, oral or otherwise, outside of the acknowledgment. Submittal of technical information does not constitute acceptance of Purchaser’s Terms and Conditions. No agent, distributor, business partner, or manufacturer’s representative has the authority to change or modify the terms of this agreement. No change or modification shall be valid unless its agreed to in writing by Seller.
2. **DEFINITIONS.** (a) As used herein “Service” refers to all labor, equipment, materials, accessories and/or parts which Seller proposes in Seller’s quotation to provide for repair and/or Service. (b) As used herein “Equipment” refers to all pumps, equipment, materials, accessories and/or parts which Seller proposes to sell hereunder.
3. **SHIPPING DATE.** Seller will give its best efforts to the prompt delivery of Equipment and Service. Though Seller recognizes the desirability of delivering Equipment and Service promptly, the dates specified herein for shipping of Equipment or for Service are approximate only. Seller will ship Equipment as soon as manufacturing is completed and Equipment meets design and performance specifications. SELLER SHALL NOT BE RESPONSIBLE FOR ANY LOSS OR DAMAGE OF ANY KIND; INCLUDING LIQUIDATED DAMAGES, RESULTING FROM ANY DELAY IN DELIVERY OR FAILURE TO DELIVER THE EQUIPMENT OR SERVICE, UNLESS AGREED TO IN ADVANCE AND IN WRITING PRIOR TO ACCEPTANCE OF THE ORDER.
4. **FORCE MAJEURE.** Seller shall not be responsible for any loss or damage, including liquidated damages resulting from any delay in delivery or failure to deliver the Equipment or Service where such delay or failure is caused by fire, flood, natural causes, labor troubles (including strikes, slowdowns and lockouts), war, government regulations, riots, civil disorders, interruption of or delay in transportation, power failure, acts of vandalism, force of nature, inability to obtain materials and supplies, accidents, acts of God or any other cause beyond Seller’s control.
5. **SHIPMENTS.** All prices are EXW (Ex-works) Seller’s designated location, packed for domestic shipment (Incoterms 2010), unless otherwise agreed. The origin point of shipment, method of transportation, and routing are at the Seller’s discretion. Unless otherwise noted, orders will be shipped prepaid with the charges added to the invoice. If Purchaser specifies “freight collect,” it is clearly understood that there will be no freight allowance and an additional fee of 2% of the order or minimum of \$200 will be charged to the purchaser as a handling fee for collect freight. Purchaser may request shipment via a transportation mode other than truck. In such case, all additional expenses incurred will be billed to the Purchaser. If shipment is accepted by Purchaser at one destination and re-forwarded by Purchaser, the re-forwarding is at the Purchaser’s expense and risk. The risk shall pass to Customer when the Equipment made available for delivery in accordance with this paragraph. If a copy of a freight bill is required, we will provide a freight invoice issued by a Grundfos company as we have confidential contracts with our carriers and neither we nor the carrier can supply a copy of the carrier’s freight bill. Where shipment is requested by Purchaser beyond the normal shipment schedule, or in the event that shipment is deferred at the request of the Purchaser by failure of Purchaser to fulfill its obligations to facilitate shipment as agreed, by any other act or failure to act on the part of the Purchaser resulting in a delay of timely shipment without fault on the part of Seller, including but not limited to providing necessary shipment information to Seller or failure to schedule carrier in a timely manner if so required or by reason of Government action, Purchaser agrees to pay a delayed delivery storage fee at the rate of three percent (3%) of the Equipment price per month beyond the normal shipping date. Buyer may designate for order to be picked up and/or will call at Sellers designated location. If Buyer does not pickup equipment within 5 days of the date they are notified the goods are available, order will be cancelled and subject to cancellation charges as outlined in item paragraph 14 CANCELLATION below.
6. **PRICES.** Unless otherwise specified by Seller in writing, prices set forth herein are firm as provided in written quote. Prices on quotations are valid for thirty (30) days from the date of the quotation unless otherwise specified. Services shall be billed at the hourly/daily rate provided in the written quote. Buyers delay or failure to provide to Seller all necessary credit information, and Seller approves Purchaser’s credit and accepts the order may result in a modification to the quoted price. Prices as set in the price list are subject to change without notice. Every effort will be made to notify Buyers in advance of price changes. All other costs, including packing for storage, freight, insurance, taxes, customs duties and import/export fees, or any other item specified in the quotation shall be paid by Buyer unless separately stated in the written quotation. Any sales, use, or other taxes and duties imposed on the transaction or the equipment supplied shall be paid or reimbursed by Buyer. Seller reserves the right to correct errors at any time. The Seller’s Acknowledgment forms a binding contract Further, if Purchaser fails to furnish Seller with all necessary drawings duly approved by the Purchaser within thirty (30) days after submission of drawings to Purchaser by Seller, Seller’s prices are subject to change at Seller’s sole discretion after notice to Purchaser.
7. **CHANGES.** If at any time the Buyer causes changes or modifications to the order, it will be subject to a minimum change fee of 12% of the order value or a \$250 charge; whichever is greater plus the cost of the actual equipment change. Buyer may request, in writing, changes in the design, drawings, specifications, according to Buyer’s specifications. As promptly as practicable after receipt of such request, Seller will advise Buyer what amendments to the contract; if any, may be necessitated by such requested changes, including but not limited to amendment of the purchase price, specifications, shipment schedule, or date of delivery. Any changes agreed upon by the parties shall be evidenced by a Change Order signed by both parties.
8. **TECHNICAL DOCUMENTS.** Technical documents furnished by Seller to Buyer, such as quotations, drawings, descriptions, designs and the like, shall be deemed provided to Buyer on a confidential basis, shall remain Seller’s exclusive property, shall not be provided in any way to third parties, and shall only be used by Buyer for purposes of installation, operation, and maintenance.
9. **EXPEDITED MANUFACTURING FEE.** On all orders requesting ship dates less than lead time, the Buyer shall be charged 12% of the order or \$200 whichever is greater as an express order fee. This charge does not guarantee that Seller will ship equipment by the requested date. If an order is not fulfilled within the requested ship date, the express fee will not apply. Orders without a requested ship date will be subject to standard lead times/quoted lead times.
10. **MINIMUM ORDER CHARGE.** Extranet or EDI order value must be a minimum of \$25 net. Faxed, emailed, or verbal orders must be a minimum value of \$300 net. Order values less than the minimum value stated, will automatically be adjusted to the minimum order values listed above.
11. **RETURN OF EQUIPMENT.** Equipment may only be returned when authorized by the Seller with a Return Material Authorization (RMA) issued by Seller. All returned equipment shall be shipped to Seller’s designated location freight prepaid by the Buyer and FOB destination. Any equipment returned will be subject to an inspection, and the credit will be issued for the purchase price less a minimum 30% restocking fee for equipment received in good condition. Any equipment returned without prior authorization will be rejected and returned.
12. **TAXES.** Prices specified herein do not include any federal, state or municipal sales, use, excise or other taxes. Where registered and required by law, Seller will invoice all taxes to Purchaser at the applicable rates at the time of shipment. Therefore, in addition to the prices specified herein, the amount of any such sales, use, excise or other taxes applicable to the sale of the Equipment shall be paid by Purchaser, or in lieu thereof, Purchaser shall furnish Seller with required documentation acceptable to said taxing authorities. Taxes payable outside the United States are the responsibility of the Purchaser, unless otherwise agreed in writing.

13. **PAYMENTS.** Terms of payment are Net 30 Days. Payment for the Equipment is due upon shipment or when Seller notifies Purchaser that Equipment is packed for shipment EXW (Ex-works) Seller's designated location, whichever occurs first, unless otherwise specified herein. Payment for Service is due upon completion unless otherwise expressly specified herein. Additional terms and/or progress payments may be required for jobs over \$300K after credit review.
14. **CANCELLATION.** Orders that have been acknowledged by Seller are firm commitments and are not subject to cancellation without consent of Seller. If cancellation is approved by Seller, a minimum of 30% and up to the full price for the equipment and/or service may be charged to cover accrued material and fabrication costs, special engineering costs and testing, handling, and accounting costs
15. **LIMITED WARRANTY.** NEW EQUIPMENT MANUFACTURED BY SELLER OR SERVICE SUPPLIED BY SELLER IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR A MINIMUM OF TWELVE (12) MONTHS FROM DATE OF INSTALLATION, UNLESS OTHERWISE STATED IN PRODUCT WARRANTY GUIDE (AVAILABLE UPON REQUEST). IN THE CASE OF SPARE OR REPLACEMENT PARTS MANUFACTURED BY SELLER, THE WARRANTY PERIOD SHALL BE FOR A PERIOD OF TWELVE MONTHS FROM SHIPMENT. SELLER'S OBLIGATION UNDER THIS WARRANTY IS LIMITED TO REPAIRING OR REPLACING, AT ITS OPTION, ANY PART FOUND TO ITS SATISFACTION TO BE SO DEFECTIVE, PROVIDED THAT SUCH PART IS, UPON REQUEST, RETURNED TO SELLER'S FACTORY FROM WHICH IT WAS SHIPPED, TRANSPORTATION PREPAID. PARTS REPLACED UNDER WARRANTY SHALL BE WARRANTED FOR TWELVE MONTHS FROM THE DATE OF THE REPAIR, NOT TO EXCEED THE ORIGINAL WARRANTY PERIOD. THIS WARRANTY DOES NOT COVER PARTS DAMAGED BY DECOMPOSITION FROM CHEMICAL ACTION OR WEAR CAUSED BY ABRASIVE MATERIALS, NOR DOES IT COVER DAMAGE RESULTING FROM MISUSE, ACCIDENT, NEGLIGENCE, OR FROM IMPROPER OPERATION, MAINTENANCE, INSTALLATION, MODIFICATION OR ADJUSTMENT. THIS WARRANTY DOES NOT COVER PARTS REPAIRED OUTSIDE SELLER'S FACTORY WITHOUT PRIOR WRITTEN APPROVAL. SELLER MAKES NO WARRANTY AS TO STARTING EQUIPMENT, ELECTRICAL APPARATUS OR OTHER MATERIAL NOT OF ITS MANUFACTURE. IF PURCHASER OR OTHERS REPAIR, REPLACE, OR ADJUST EQUIPMENT OR PARTS WITHOUT SELLER'S PRIOR WRITTEN APPROVAL, SELLER IS RELIEVED OF ANY FURTHER OBLIGATION TO PURCHASER UNDER THIS SECTION WITH RESPECT TO SUCH EQUIPMENT OR PARTS, UNLESS SUCH REPAIR, REPLACEMENT, OR ADJUSTMENT WAS MADE AFTER SELLER FAILED TO SATISFY WITHIN A REASONABLE TIME SELLER'S OBLIGATIONS UNDER THIS PARAGRAPH. SELLER'S LIABILITY FOR BREACH OF THESE WARRANTIES (OR FOR BREACH OF ANY OTHER WARRANTIES FOUND BY A COURT OF COMPETENT JURISDICTION TO HAVE BEEN GIVEN BY SELLER) SHALL BE LIMITED TO: (A) ACCEPTING RETURN OF SUCH EQUIPMENT EXW PLANT OF MANUFACTURE, AND (B) REFUNDING ANY AMOUNT PAID THEREON BY PURCHASER (LESS DEPRECIATION AT THE RATE OF 15% PER YEAR IF PURCHASER HAS USED EQUIPMENT FOR MORE THAN THIRTY [30] DAYS), AND CANCELING ANY BALANCE STILL OWING ON THE EQUIPMENT, or (C) IN THE CASE OF SERVICE, AT SELLER'S OPTION, REDOING THE SERVICE, OR REFUNDING THE PURCHASE ORDER AMOUNT OF THE SERVICE OR PORTION THEREOF UPON WHICH SUCH LIABILITY IS BASED. THESE WARRANTIES ARE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, AND SELLER SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND IN LIEU OF ANY OTHER OBLIGATION OR LIABILITY ON THE PART OF THE SELLER WHETHER A CLAIM IS BASED UPON NEGLIGENCE, BREACH OF WARRANTY, OR ANY OTHER THEORY OR CAUSE OF ACTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND. FOR PURPOSES OF THIS SECTION, THE EQUIPMENT WARRANTED SHALL NOT INCLUDE EQUIPMENT, PARTS, AND WORK NOT MANUFACTURED OR PERFORMED BY SELLER. WITH RESPECT TO SUCH EQUIPMENT, PARTS, OR WORK, SELLER'S ONLY OBLIGATION SHALL BE TO ASSIGN TO PURCHASER THE WARRANTIES PROVIDED TO SELLER BY THE MANUFACTURER OR SUPPLIER PROVIDING SUCH EQUIPMENT, PARTS OR WORK. NO EQUIPMENT FURNISHED BY SELLER SHALL BE DEEMED TO BE DEFECTIVE BY REASON OF NORMAL WEAR AND TEAR, FAILURE TO RESIST EROSION OR CORROSIVE ACTION OF ANY FLUID OR GAS, PURCHASER'S FAILURE TO PROPERLY STORE, INSTALL, OPERATE, OR MAINTAIN THE EQUIPMENT IN ACCORDANCE WITH GOOD INDUSTRY PRACTICES OR SPECIFIC RECOMMENDATIONS OF SELLER, INCLUDING, BUT NOT LIMITED TO SELLER'S INSTALLATION AND OPERATION MANUALS, OR PURCHASER'S FAILURE TO PROVIDE COMPLETE AND ACCURATE INFORMATION TO SELLER CONCERNING THE OPERATIONAL APPLICATION OF THE EQUIPMENT.
16. **COMPLIANCE WITH LAWS.** Purchaser shall be solely responsible for securing any necessary permits under and for compliance with all safety, health and sanitation laws, ordinances and regulations in connection with the installation, service, repair and operation of the Equipment. Purchaser agrees to provide Seller, upon request, with evidence of the securing of any such permits and of compliance with any such laws, ordinances and regulations. Seller shall be responsible for requesting any U. S. Export License Permits which may be required, and Purchaser agrees to provide all necessary information to enable Seller to apply for the permit. Purchaser agrees to comply with applicable United States international trade laws and regulations in its business dealings with Seller and will deliver to Seller at the time of execution of this agreement a completed International Order Header form or End User Statement signed by an authorized officer or owner of Purchaser. Purchaser agrees to disclose the name and address and business of the user of the goods supplied upon Seller's request. Purchaser shall automatically disclose this information if the goods are to be exported outside of the United States, Notwithstanding Purchaser's sole responsibility to ensure compliance with all relevant laws, Seller reserves the right to cancel order without compensation to Purchaser if Seller considers or suspects that goods may breach any laws of the United States.
17. **INDEMNIFICATION.** It is understood that Seller has relied upon data furnished by and on behalf of Purchaser with respect to the safety aspects of the Equipment, and that it is Purchaser's responsibility to assure that the Equipment will, when installed and put in use, be in compliance with safety requirements fixed by law and otherwise legally adequate to safeguard against injuries or damage to persons or property. Purchaser hereby agrees to defend, indemnify and hold harmless Seller, its agents and employees against any and all losses, costs, damages, claims, liabilities or expenses, including but not limited to reasonable attorneys' fees, arising out of or resulting from any injury or damage to any person or property caused by the inadequacy of safety features, devices or characteristics in the Equipment or arising out of the installation, Service, repair, or use or operation of the same, except where the injury or damage is solely caused by Seller's negligence and except for claims for repair or replacement of defective parts in accordance with Paragraph 15 hereof. Purchaser indemnifies Seller for any loss to Seller, including reasonable attorneys' fees, caused by Seller's manufacturing, installing or building to specifications provided by the Purchaser. Buyer shall indemnify Seller and hold it harmless from any claims or liability for patent or trademark infringement on the account of the sale of such goods.
18. **RISK OF LOSS.** Full risk of loss (including transportation delays and losses) shall pass to Buyer upon delivery, regardless of whether title has passed to Buyer, transport is arranged or supervised by Seller, or start-up is carried out under the direction or supervision of Seller. Loss or destruction of the equipment or injury or damage to the equipment that occurs while the risk of loss or damage is borne by the Buyer does not relieve Buyer of its obligations to pay Seller for the equipment.

19. **LIMITATION OF DAMAGES AND DISCLAIMER OF CONSEQUENTIAL DAMAGES OR PENALTIES.** TO THE EXTENT PERMITTED BY LAW, SELLER SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES, ARISING OUT OF THE CONTRACT, OR OUT OF ANY BREACH OF ANY OF SELLER'S OBLIGATIONS HEREUNDER, OR OUT OF ANY DEFECT IN, OR FAILURE OF, OR MALFUNCTION OF THE EQUIPMENT, WHETHER OR NOT CAUSED BY SELLER'S NEGLIGENCE. CONSEQUENTIAL DAMAGES, FOR THE PURPOSE OF THIS AGREEMENT, SHALL INCLUDE BUT NOT BE LIMITED TO, PERSONAL INJURY, LOSS OF USE, LOST INCOME OR PROFITS, LOST INTEREST, LOST GOODWILL, WORK STOPPAGE, IMPAIRMENT OF OTHER EQUIPMENT, ENVIRONMENTAL DAMAGE, INCREASED EXPENSES OF OPERATION, COST OF PURCHASE OF REPLACEMENT POWER OR CLAIMS OF PURCHASER OR CUSTOMERS OF PURCHASER FOR SERVICE INTERRUPTION, DAMAGE TO PROPERTY (INCLUDING, BUT NOT LIMITED TO, PRODUCTS MANUFACTURED, PROCESSED OR TRANSPORTED BY THE USE OF THE EQUIPMENT), OR ANY OTHER LOSS OCCASIONED BY OR ARISING OUT OF THE OPERATION, USE, INSTALLATION, REPAIR OR REPLACEMENT OF THE EQUIPMENT OR OTHERWISE, WHETHER OR NOT SUCH LOSS IS BASED UPON CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHERWISE. SELLER'S DAMAGES ARE LIMITED TO DAMAGES SET FORTH IN PARAGRAPH 15, WARRANTY. SELLER SHALL NOT BE LIABLE FOR ANY DAMAGES, PENALTIES OR LIQUIDATED DAMAGES BASED UPON OR RELATING TO SELLER'S FAILURE OR INABILITY TO SHIP WITHIN A SPECIFIED TIME. THE FOREGOING NOTWITHSTANDING, SELLER'S MAXIMUM AGGREGATE LIABILITY RELATED TO THE PERFORMANCE OF THIS CONTRACT SHALL NOT EXCEED THE PURCHASE ORDER AMOUNT OF THE EQUIPMENT OR SERVICE PORTION THEREOF UPON WHICH SUCH LIABILITY IS BASED. ALL SUCH LIABILITY SHALL TERMINATE FOUR YEARS FROM THE DATE OF THE PURCHASE ORDER IF NOT SOONER TERMINATED.

20. **CHOICE OF LAW.** (a) Any Purchaser document which contains terms in addition to or inconsistent with the terms of the acknowledgment or a rejection of any term of the acknowledgment shall be deemed to be a counter offer to Seller and shall not be binding upon Seller unless specifically accepted in writing by a duly authorized representative of Seller. This clause shall constitute a continuing objection to any such items not specifically so accepted by Seller. (b) All questions relating to the formation of or performance under the contract based hereon shall be determined in accordance with the laws of the State of Delaware. The parties stipulate that the state and federal courts of Delaware or any other court in which Purchaser initiates proceedings, have exclusive jurisdiction over all matters arising out of this agreement, and that service of process in any such proceeding will be effective if served by Certified mail to Seller at 2001 Butterfield Road, Downers Grove, IL 60515-1050. For international sales (sales of Equipment by Grundfos ["Seller"] to a Purchaser outside of the United States or a Purchaser organized or with a principal place of business or substantial assets outside of the United States ["International Agreement"]), all disputes arising in connection with the agreement shall be finally settled by arbitration in accordance with the rules set forth by the United Nations Commission for International Trade Law (UNCITRAL) Arbitration Rules, under the auspices of the American Arbitration Association (Arbitration).

In the event of any dispute or difference arising out of or relating to an International Agreement or the breach thereof, the parties hereto first shall use their best endeavors to settle such disputes or differences. To this effect, the parties shall consult and negotiate with each other, in good faith and understanding of their mutual interest, to reach a just and equitable solution satisfactory to both parties, If the parties do not reach such solution within a period of ninety (90) calendar days from the commencement of consultations and negotiations, before arbitration may be invoked, one of the parties must, by written notice to the other party, have the dispute referred to their respective Chief Executive Officer (or the equivalent), or to their designated representatives who have the final authority to resolve the dispute, with the request that they attempt in good faith to resolve the dispute within ninety (90) calendar days after valid notice is served pursuant to this Agreement. No party may invoke arbitration without first complying with the provisions of this section.

In the event that the foregoing designated representatives of the parties are not able, for whatever reason, to resolve such dispute in good faith within the ninety (90) calendar day period, the parties agree that the disputes or differences shall be settled by arbitration in accordance with the rules set forth by the United Nations Commission for International Trade Law (UNCITRAL) Arbitration Rules, under the auspices of the American Arbitration Association (Arbitration).

The arbitration shall take place in the State of Delaware, USA, or another location, at the sole discretion of Seller. The arbitration shall be conducted in and the award rendered in English and payable in US Dollars, and such award shall be final and binding on the parties, not subject to any appeal, and shall deal with the question of costs of arbitration and all matters related thereto.

The parties agree that any judgment, decision, or award of the arbitrators shall be made enforceable in any court of competent jurisdiction, including courts in the country of Purchaser. Judgment upon the award rendered may be entered into any court having jurisdiction, or application may be made to such court for a judicial recognition of the award or an order of enforcement thereof, as the case may be.

The terms of this paragraph shall survive any termination or expiration of this Agreement. This agreement shall be governed by and construed in accordance with the laws of the State of Delaware, USA, excluding the application of its conflicts of law provisions. The United Nations Convention on contracts for the International Sales of Goods shall have no application to this Agreement or to any proceeding brought pursuant hereto (c) if any part hereof is contrary to, prohibited by, or deemed invalid under applicable laws or regulations, such provision shall be inapplicable and deemed omitted to the extent so contrary, prohibited or invalid, but remainder hereof shall not be invalidated and shall be given effect so far as possible. (d) no waiver of any term or condition or the breach of any term or condition of this agreement shall be deemed to constitute a waiver of any subsequent breach of such term or condition nor justify or authorize a nonobservance upon any occasion of such term or condition or any other term or condition.; nor shall the acceptance of payment by Seller at any time when Purchaser is in default of any term or condition be construed as a waiver of such default or waiver of Seller's right to terminate this agreement on account of such default (e) the Purchaser warrants and represents that only persons with authority to execute the documents related to this agreement will sign on behalf of the Purchaser and that electronic orders will be placed only by persons so authorized by the Purchaser and shall be binding on the Purchaser upon acceptance by the Seller with or without hand written signature of Purchaser.

**SERIES 6100  
TYPE CT**



**SEVERE DUTY  
CUP TYPE RECESSED  
IMPELLER PUMPS**



**BUILT FOR SUPERIOR PERFORMANCE**

# 6100 SERIES / CUP TYPE

## SEVERE DUTY RECESSED IMPELLER PUMPS DESIGNED TO HANDLE LARGE, ABRASIVE SOLIDS



### LONGEST LIFE, BEST PERFORMANCE

Sewage treatment plants use it, pulp and paper plants use it, mine operators use the Morris 6100 CT Series. They use this cup type recessed impeller pump to move grit, sludge, slurry and dredgings.

Anyone pumping wastewater that contains large abrasive solids would be advised to do the same. The Morris pump is now widely recognized as a top of the range option for severe duty pumping of this kind.

In addition to the long life, the Morris 6100 CT is superior in terms of cost-saving efficiency and reliability. The cup type impeller is more efficient than other recessed impellers; the power savings can therefore often pay for the pump. Machined joints offer numerous advantages, such as more accurate alignment and stronger construction. This is unique to Morris in the category of severe duty recessed impeller pumps.

Read more about the Morris 6100 CT here or contact us to discuss your application needs.

### APPLICATIONS

The toughness and superior efficiency of the Morris 6100 CT make it a popular choice for pumping abrasive wastes that contain large solids.

#### Industry

- Pulp & Paper
- Food processing waste
- Industrial processing waste

#### Municipal sewage

- Grit
- Primary sludge
- Sludge transfer
- Sludge recirculation

#### Mining & Excavation

- Tailings
- Mineral concentrate
- Dredgings

# CUP TYPE IMPELLER FOR SUPERIOR EFFICIENCY

## UNIQUE CUP DESIGN

The Morris cup type impeller is fully recessed and located completely out of the flow path.

The impeller is more efficient than comparable recessed impellers. The larger diameter and the unique cup design of the Morris 6100 CT impeller enable the unit to run at lower operating speeds compared to other recessed impeller pumps. The lower energy consumption translates into significant dollar savings year after year.

The lower operating speed also equates to less wear and longer life than other pumps. The cup design maximizes vortex action while redirecting abrasives back into the flow path.

## UNIQUELY FLEXIBLE

The Morris 6100 CT offers an impeller capable of operating in either direction of rotation at maximum hydraulic performance, simply by reversing the casing. This symmetrical impeller and reversible casing design offer the most flexibility for installation and reduced parts inventory.

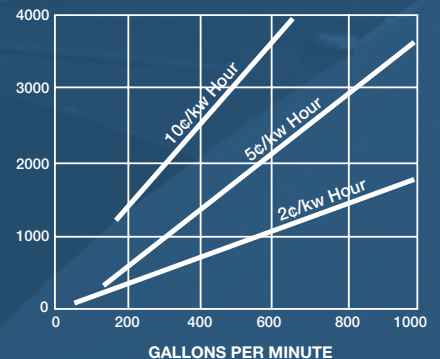
## HIGHER EFFICIENCY EQUALS LOWER OPERATING COST

Morris 6100 CT pumps are more efficient than comparable recessed impeller pump designs. Energy costs are significantly reduced because a given flow can be achieved at a lower motor speed. It is the properties of the impeller that make this possible.

Comparative trials have shown a 4 HP difference in motor power at a duty point of 600 GPM @ 60 feet. At 5¢/kWh this translates into a saving of \$2000 per year over the lifetime of the pump.



### \$ SAVINGS PER YEAR



## SUPERIOR WEAR RESISTANCE

# 6100 SERIES / CUP TYPE

## ENSURING A LONGER LIFE IN ABRASIVE SERVICE

### CAST-INTEGRATED SUPPORT LEGS

To minimize vibration and offer simple mounting

### HEAVY-DUTY SHAFT

Made of high carbon steel

### HOOK-TYPE SHAFT SLEEVE

420 stainless steel hardened to 450 to BHN to protect the pump shaft

### POSITIVE LIQUID SEALING AT IMPELLER

Fully confined O-ring between impeller and sleeve protects the shaft from pumpage.

### REPLACEABLE REAR LINER

Extra thick wear surface of high-chrome iron for extended wear life

### INSPECTION SIGHT GLASS & VENT

For oil lubricated units

### STANDARD FLANGE CONNECTIONS

Machined flat-faced & drilled flange connections for reliability

### OPTIONAL CASING VENT AND DRAIN TAPS

To enhance serviceability

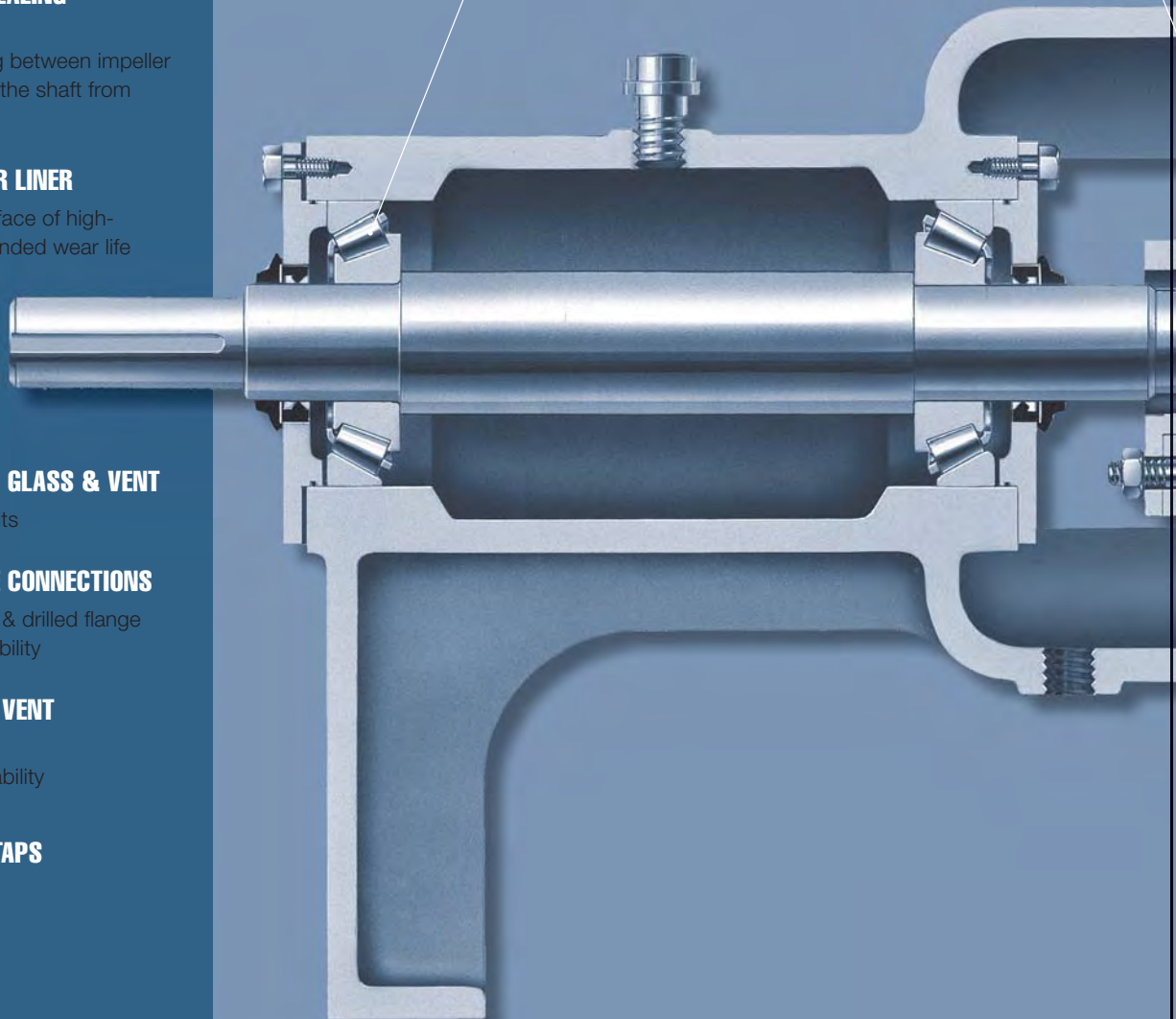
### OPTIONAL GAUGE TAPS

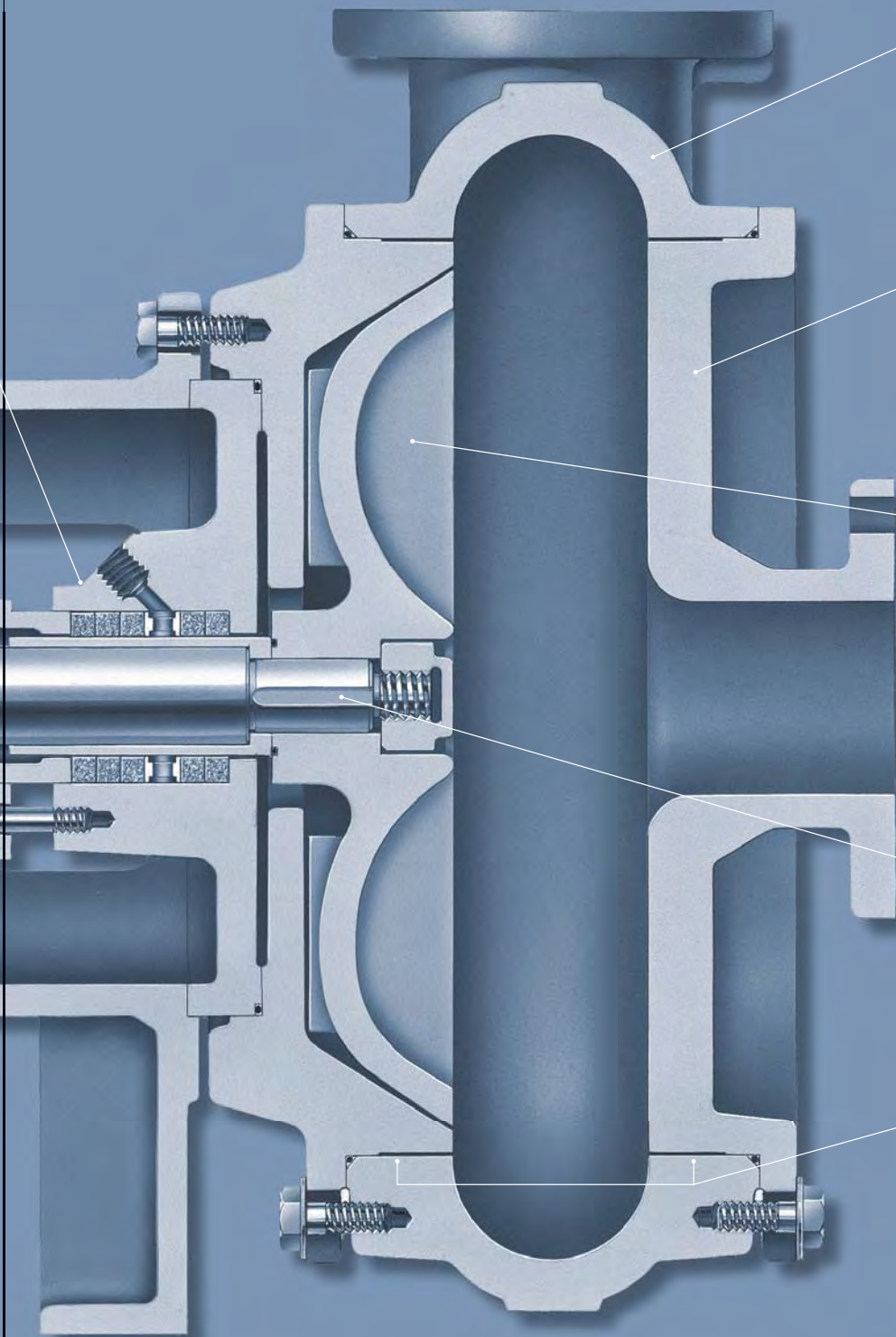
### TAPERED ROLLER BEARINGS

Minimum B-10 life of 100,000 hours

### STUFFING BOX

Suitable for either packing or a variety of mechanical seals. Machined register fits assure concentricity with shaft.





**EXTRA-HEAVY  
REVERSIBLE CASING**

Casing can be reversed for rotation in either direction. High-chrome iron construction and ample wall thickness for longer life.

**SUCTION COVER**

Extra heavy, high-chrome iron construction, removable suction cover allows easy maintenance access to pump internals.

**FULLY RECESSED CUP TYPE  
IMPELLER**

High-chrome iron construction for superior wear resistance and maximum solids handling. State-of-the-art design provides higher efficiencies than other recessed impeller pumps.

**POSITIVE DRIVE**

Machined fit, straight bore, key drive provides positive torque transmission that is unavailable with other hard metal pump designs.

**MACHINED FITS**

Fully machined wet-end registered fits with confined O-rings provide positive alignment and ease of maintenance. Close tolerance minimizes wear.

# MACHINABILITY MAKES ALL THE DIFFERENCE

Machined parts give more exacting tolerances and make the pump more reliable. The Morris 6100 CT combines the 'toughness factor' of hardened high-chrome iron (28HC650) with the many advantages of machined fits.

## MACHINED REGISTER FITS ON ALL PARTS

- Assures a proper fit & true alignment
- Reduces localized wear at internal contours & fits
- Dimensional control assures part interchangeability

## MACHINED SURFACES ALLOW CONFINED O-RING SEALING

- Improved sealing versus flat gaskets
- O-ring not exposed to high velocity wear areas

## DRILLED AND TAPPED HOLES ELIMINATE USE OF "SOFT METAL" INSERTS

- Greater reliability
- Won't pull out from torque or pipe strain

## STRAIGHT MACHINED FIT IMPELLER BORE

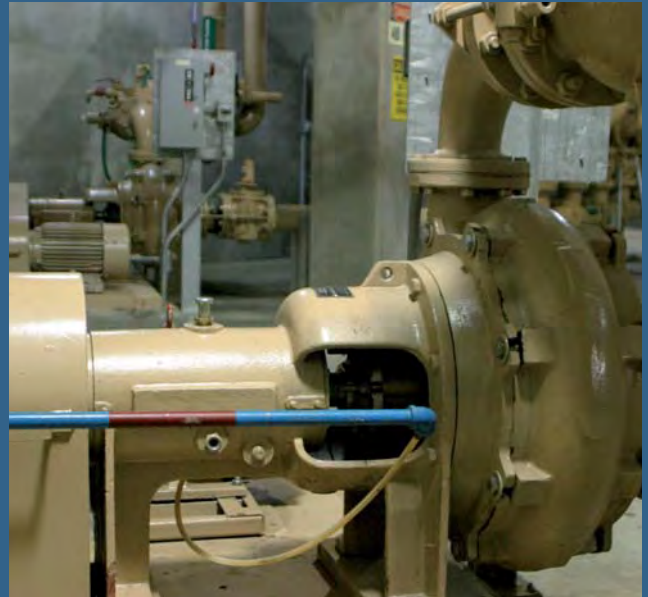
- Key driven to assure positive torque transfer
- No bore failure as a result of starting/stopping torque

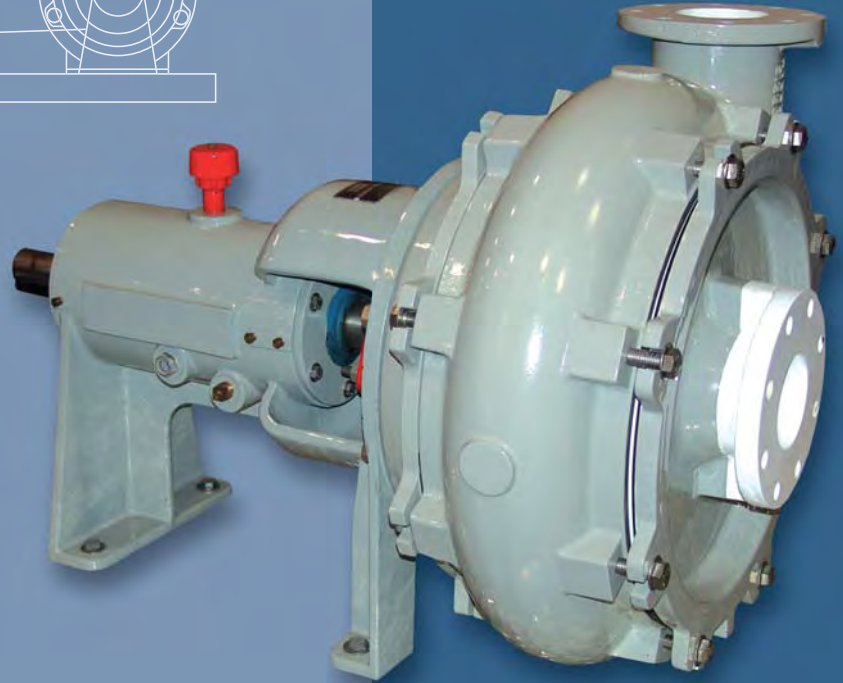
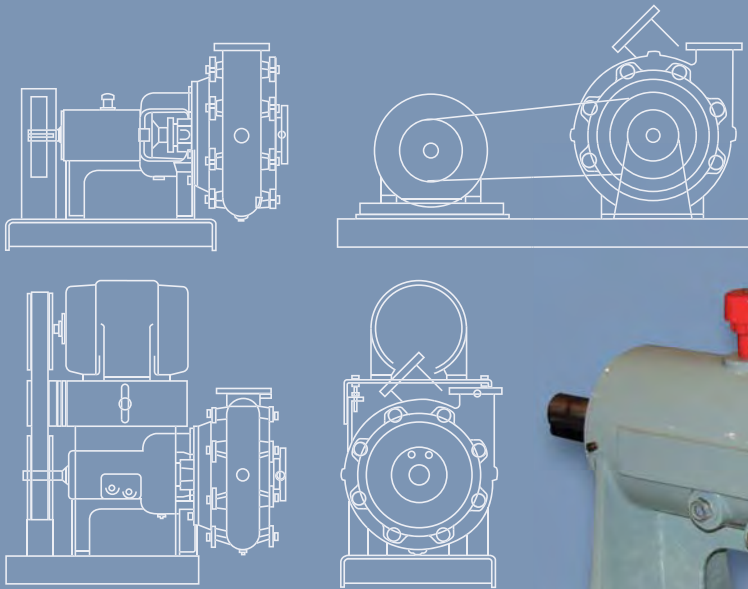
## THE TOUGHNESS FACTOR

Morris 6100 CT pump materials are tough enough and thick enough to truly extend the lifetime of the pump despite the hostile conditions. For a pump of this type nothing is more important than its ability to resist the severely abrasive properties of grit. This is where hardened high-chrome iron (28HC650) makes all the difference. High-chrome iron not only has the surface hardness that can be found in Ni-Hard and other alloys, it also exhibits superior corrosion resistance and has twice the tensile strength of Ni-Hard #1.

A controlled heat-treating process provides Morris 28HC650 with a final hardness of minimum 650 BHN. A variety of surface treatment options further adds to corrosion resistance in both indoor and outdoor locations.

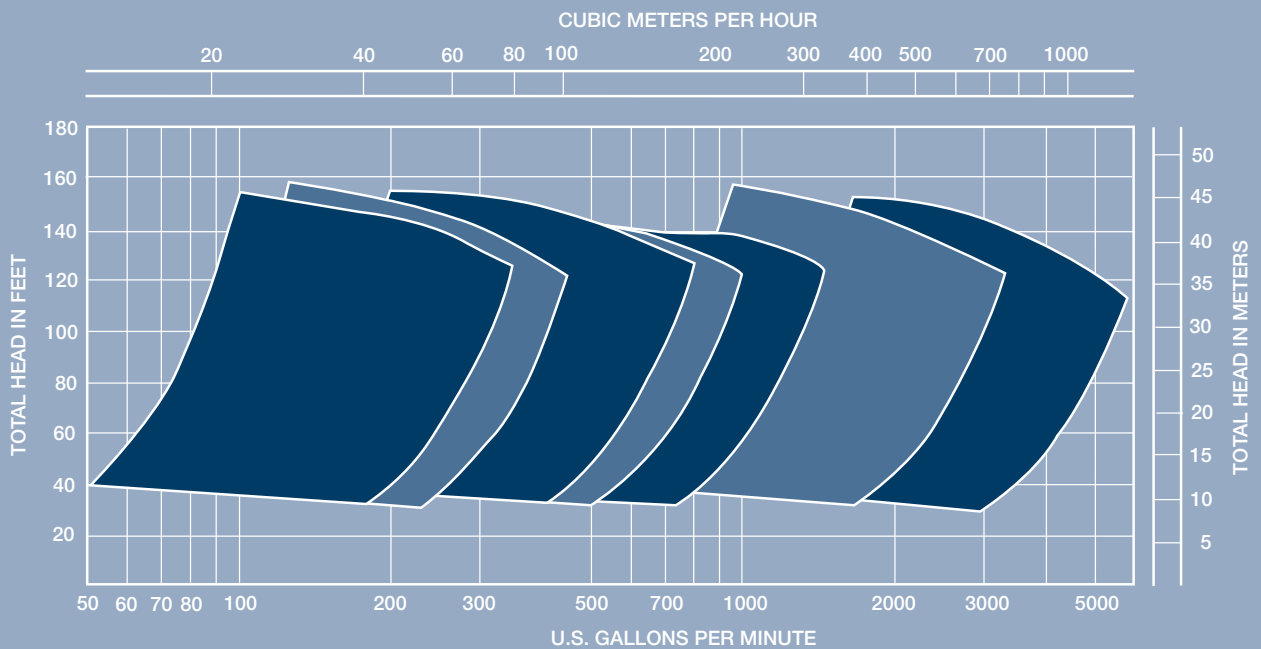
A range of shaft seals is available with increasing degrees of wearability, and the stuffing box is also suitable for packing. Discuss the options with Morris consultants to find the right solution for your installations





**SPECIFICATIONS**

- Capacities to 4600 GPM (1045 m<sup>3</sup>/h)
- Heads to 150 feet (45 m)
- Temperatures to 250° F (120° C)
- Pressures to 100 PSIG (690 kPa)
- Solids to 8 inches (200 mm)





## WHEN OTHER PUMPS CAN'T TAKE IT

The Morris 6100 CT pump is a severe duty recessed impeller pump designed to handle large abrasive solids.

For over 150 years, Morris pumps have been built using proven design and manufacturing methods. This rich history combines with an effective utilization of today's engineering methods and technologies to bring a pumping solution built for superior performance .

We work hand-in-hand with pumping system designers and consultants. We pride ourselves in bringing the end-user a reliable, trouble-free system that exceeds expectations.

Morris Pumps stands for tough, heavy-duty wastewater pumps manufactured by Yeomans Chicago Corporation.

**MORRIS 6100 CT – TRULY THE TOUGHEST SEVERE  
DUTY RECESSED IMPELLER PUMP**

### **MORRIS PUMPS**

3905 Enterprise Court  
P.O. Box 6620  
Aurora, IL 60598-0620  
Phone 630-236-6900  
Fax 630-236-6932

[www.morrispumps.com](http://www.morrispumps.com)

**CUP-TYPE RECESSED IMPELLER PUMPS****INTRODUCTION**

The Morris 6100 series was specifically designed to provide a severe-duty, abrasion resistant, solids-handling pump with the longest possible life. This goal has been accomplished by optimizing the hydraulic and mechanical features, and by selecting the best construction materials. Morris Series 6100 pumps are ideal for a wide range of municipal and industrial applications requiring large solids handling and high resistance to abrasion.

***Performance Overview:***

- Capacities to 4600 USGPM (1045 m<sup>3</sup>/h)
- Heads to 150 feet (45m)
- Temperatures to 250° F (120° C)
- Pressures to 100 PSIG (690 kPa)
- Solids to 8 inches (200mm)

***Applications / Services:*****Municipal**

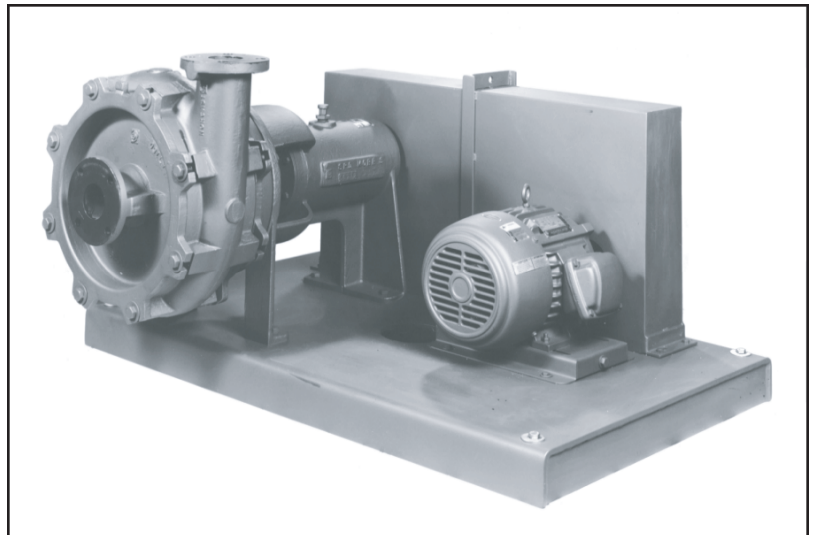
- Grit
- Primary Sludge
- Sludge Transfer
- Sludge Recirculation

**Industrial**

- Abrasive Wastes
- Large Solids
- Mining
- Dredging
- Pulp & Paper
- Industrial Processes
- Food Process Wastes

***Key Design Features:***

- Fully Recessed Impeller - Allows passage of any solid that can enter the pump.
- Cup-Type Impeller Design - Provides maximum wear life efficiencies of all wet end components
- Universal Stuffing Box - Accommodates packing or a variety of mechanical seals
- Hard Metal Construction - Wet end components are constructed of 650 BHN high chrome iron
- Suction Cover & Rear Liner -Extra heavy replaceable wear surfaces extend pump life
- Reversible Casing & Bidirectional Impeller - Allows rotation in either direction for layout flexibility; provides maximum parts interchangeability
- Better Efficiency - Higher efficiencies than other recessed impeller pumps; Power saving alone can often pay for the pumps!



**PLEASE REFER TO THE SALES BULLETIN FOR MORE DETAILED INFORMATION**

## TAB2 - Cover Page

City of Hollywood Grit Pumps  
Hollywood, FL

# TAB 2

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## Pump Information



## EQUIPMENT SUMMARY

City of Hollywood Grit Pumps  
Hollywood, FL

### (2) Morris Severe Duty Cup-Type Recessed Impeller 6100CT 4x6-18-(HC2) Grit Pumps

Quantity: **6**

Series/Model: **Morris Severe Duty Cup-Type Recessed Impeller  
6100CT 4x6-18-(HC2)**

Duty Point: **200 GPM @ 80ft TDH**

Discharge: **4"**                      Suction: **6"**                      Solids Passage: **4"**

Pump Limits: **200F Degrees, 100psig pressure**

Pump Construction:

**650 BHN chrome iron construction, Chesterton 442 Split Seal with SiC vs SiC faces, EPDM elastomer, along with Spiral Trac bushing; Grease lubrication/isolator fittings, Speed Selector V -belt drive system 414-5133 [3230HV821] with Dial Indicator; Guard 316 Stainless steel, Fabricated steel custom overhead design base assembly.**

Factory Finish: **Prep/Primer/Tnemec N69 High Build epoxy system**

Factory Testing: **N/a**

Nidec Motors:	HP: <b>20</b>	RPM: <b>1200</b>	Frame: <b>286T</b>	Enclosure: <b>TEFC</b>
	Configuration: <b>Horizontal</b>		Volts/Phase/Frequency: <b>460/3/60</b>	
	Service Factor: <b>1.15</b>		Ambient Temp: <b>40°C</b>	
	Mounting: <b>Foot mounted</b>		NEMA design: <b>B, Premium efficiency</b>	
	Insulation Class: <b>F</b>		Load connection: <b>Direct</b>	
	Hazardous location: <b>Non- Hazardous Location</b>			
	Motor Test: <b>Std.</b>		Space Heaters: <b>Yes</b>	
	Finish Paint: <b>Corro-Duty Epoxy</b>			

# MATERIALS OF CONSTRUCTION

**City of Hollywood Grit Pumps  
Hollywood, FL**

## **(2) Morris Severe Duty Cup-Type Recessed Impeller 6100CT 4x6-18-(HC2) Grit Pumps**

<b>ITEM:</b>	<b>CONSTRUCTION:</b>
Casing	HC600 (ASTM, A532, Class 3, Type A Hardened (650BHN Min.))
Impeller	HC600 (ASTM, A532, Class 3, Type A Hardened (650BHN Min.))
Impeller Wear Plate	HC600 (ASTM, A532, Class 3, Type A Hardened (650BHN Min.))
Impeller Nut	316SS Stainless Steel (ASTM A-743, CF-8M)
Seal	Mechanical Seal – Chesterton 442 with Spiral Trac w/EPDM elastomer/s.
Stuffing Box	Cast Iron, ASTM A48, Class 35
Suction Cover	HC600 (ASTM, A532, Class 3, Type A Hardened (650BHN Min.))
Bearing Frame (HC2)	Cast Iron, ASTM A48, Class 35
Pump Shaft	Alloy Steel, AISI 1045
Overhead Base Support	Fabricated Steel; Primed/Tnemec N69 epoxy coated, 3-4 mils DFT, exterior only.
V-Belt Guard	316 Stainless Steel Guard
Hardware Fasteners	304 Stainless Steel



Company: Grundfos (YCC)  
 Name:  
 Date: 2/27/2015

Customer:  
 Project:  
 Location: Hollywood  
 Quote #:  
 Item ID / Tag #:  
 Qty. of Pumps:

**Pump:**

Frame: 040618  
 Type: 6100CT  
 Synch speed: Adjustable  
 Curve ID No.: B-13271  
 Specific Speeds:  
 Dimensions:  
 Speed: 1060 rpm  
 Dia: 18 in  
 Impeller:  
 Ns: ---  
 Nss: ---  
 Suction: 4 in  
 Discharge: 4 in

**Search Criteria:**

Flow: 200 US gpm Head: 80 ft

**Fluid:**

Water  
 Density: 62.32 lb/ft³  
 Viscosity: 0.9946 cP  
 NPSHa: ---  
 Temperature: 68 °F  
 Vapor pressure: 0.3391 psi a  
 Atm pressure: 14.7 psi a

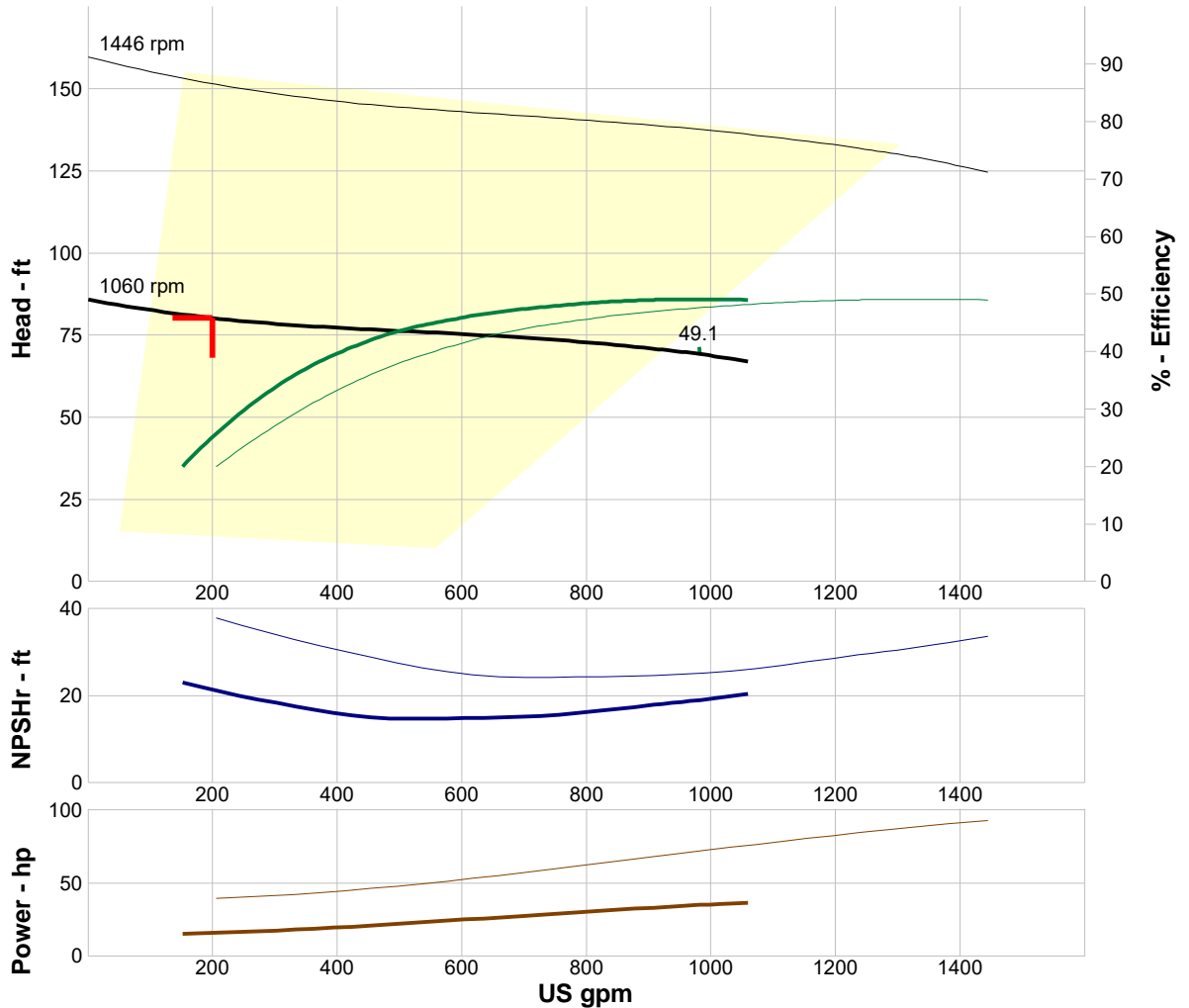
**Motor:**

Standard: ---  
 Enclosure: ---  
 Sizing criteria: Max Power on Design Curve  
 Speed: ---  
 Frame: ---

**Pump Limits:**

Temperature: 200 °F  
 Pressure: 100 psi g  
 Sphere size: 4 in  
 Power: ---  
 Eye area: ---

---- Data Point ----	
Flow:	200 US gpm
Head:	80.4 ft
Eff:	25%
Power:	16.2 hp
NPSHr:	21.5 ft
---- Design Curve ----	
Shutoff head:	85.8 ft
Shutoff dP:	37.1 psi
Min flow:	---
BEP:	49% @ 982 US gpm
NOL power:	36.5 hp @ 1059 US gpm



Efficiencies and data are typical. Please contact the factory for guaranteed values.

**Performance Evaluation:**

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
240	1060	79.6	28	16.7	20.3
200	1060	80.4	25	16.2	21.5
160	1060	81.1	21	15.6	22.8
120	1060	82.2	17	15	24
80	1060	83.4	14	14.4	25.3



# SERIES 6100

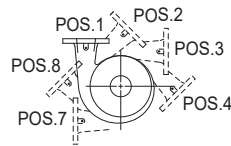
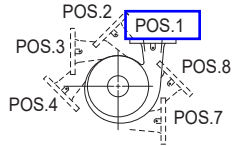
## OUTLINE DRAWING V-BELT DRIVE OVERHEAD

### CUP-TYPE RECESSED IMPELLER PUMPS

RELATIVE POSITION OF SUCTION AND DISCHARGE  
(AS VIEWED FROM THE DRIVEN END)

LEFT HAND ROTATION

RIGHT HAND ROTATION



Size: **3X3-16**  
**3X4-16**  
**4X6-18**

OUTLINE DWG # A00522G

S.O.

JOB:

ISSUE	REVISION	DATE

DISCHARGE IN POSITION NO.1 FURNISHED AS STANDARD.  
OTHER POSITIONS AVAILABLE FROM FACTORY WHEN SPECIFIED.

DIMENSIONS DETERMINED BY MOTOR					
✓	MOTOR FRAME	HM MAX.	CM MAX.	CM MIN.	UNIT WT. LB.
	182T	50.00	27.50	21.50	1325
	184T	50.00	27.50	21.50	1350
	213T	52.00	28.25	22.25	1400
	215T	52.00	28.25	22.25	1400
	254T	53.00	29.25	23.25	1600
	256T	53.00	29.25	23.25	1650
	284T	55.00	30.00	24.00	1750
	286T	55.00	30.00	24.00	1800
	324T	57.00	31.00	25.00	1900
	326T	57.00	31.00	25.00	2000

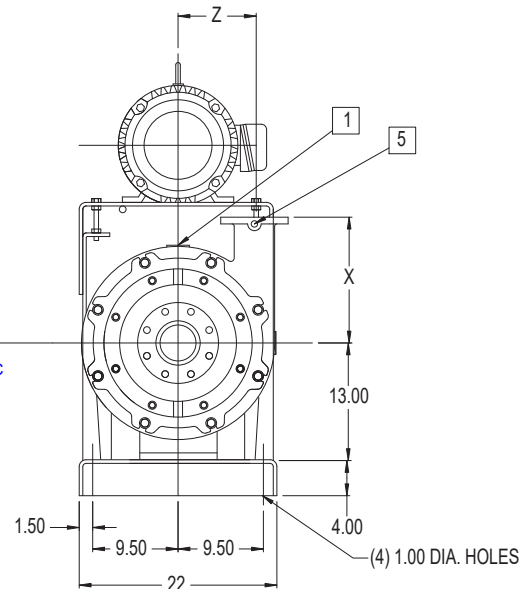
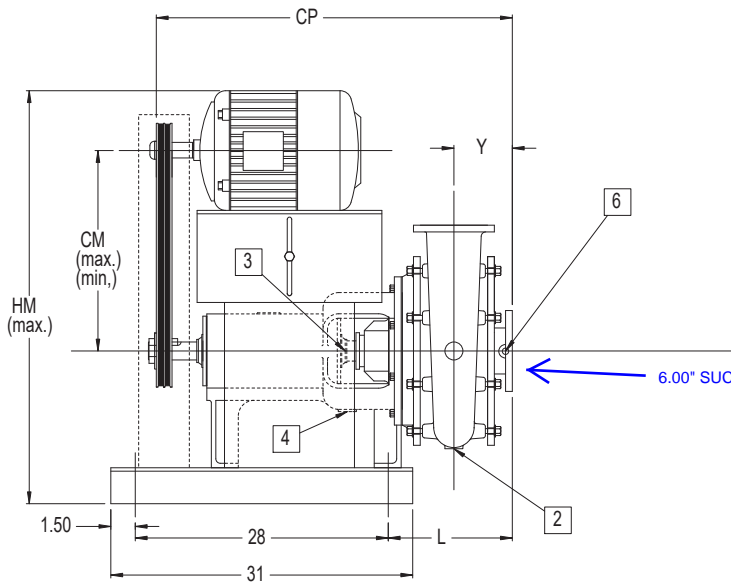
LIST OF EQUIPMENT FURNISHED:

\_\_\_ Model Morris 6100CT HC2 4x6-18 Pump  
 Rated for 200 GPM at 80 Ft.TDH.  
20 HP, 1200 RPM, 460 Volts  
3 Phase, 60 Hz Horizontal Motor in  
TEFC enclosure  
 complete with base, motor support, v-belt drive and guard.

\_\_\_ ROTATION LH (CCW) POSITION # POS1  
 \_\_\_ ROTATION \_\_\_\_\_ POSITION # \_\_\_\_\_

OPTIONAL FEATURES:

- LUBRICATION: OIL   
 GREASE   
 STUFF. BOX: PACKING   
 A. WEEP   
 B. FLUSH   
 MECH. SEAL  442 Split-seal



DIMENSIONS DETERMINED BY PUMP								
✓	PUMP SIZE	DIS	SUC	L	X	Y	Z	CP
	3X3-16	3	3	14.25	12.50	6.50	8.50	39.50
	3X4-16	3	4	14.25	12.50	6.50	8.50	39.50
	4X4-18	4	4	15.25	14.00	7.00	9.50	40.50

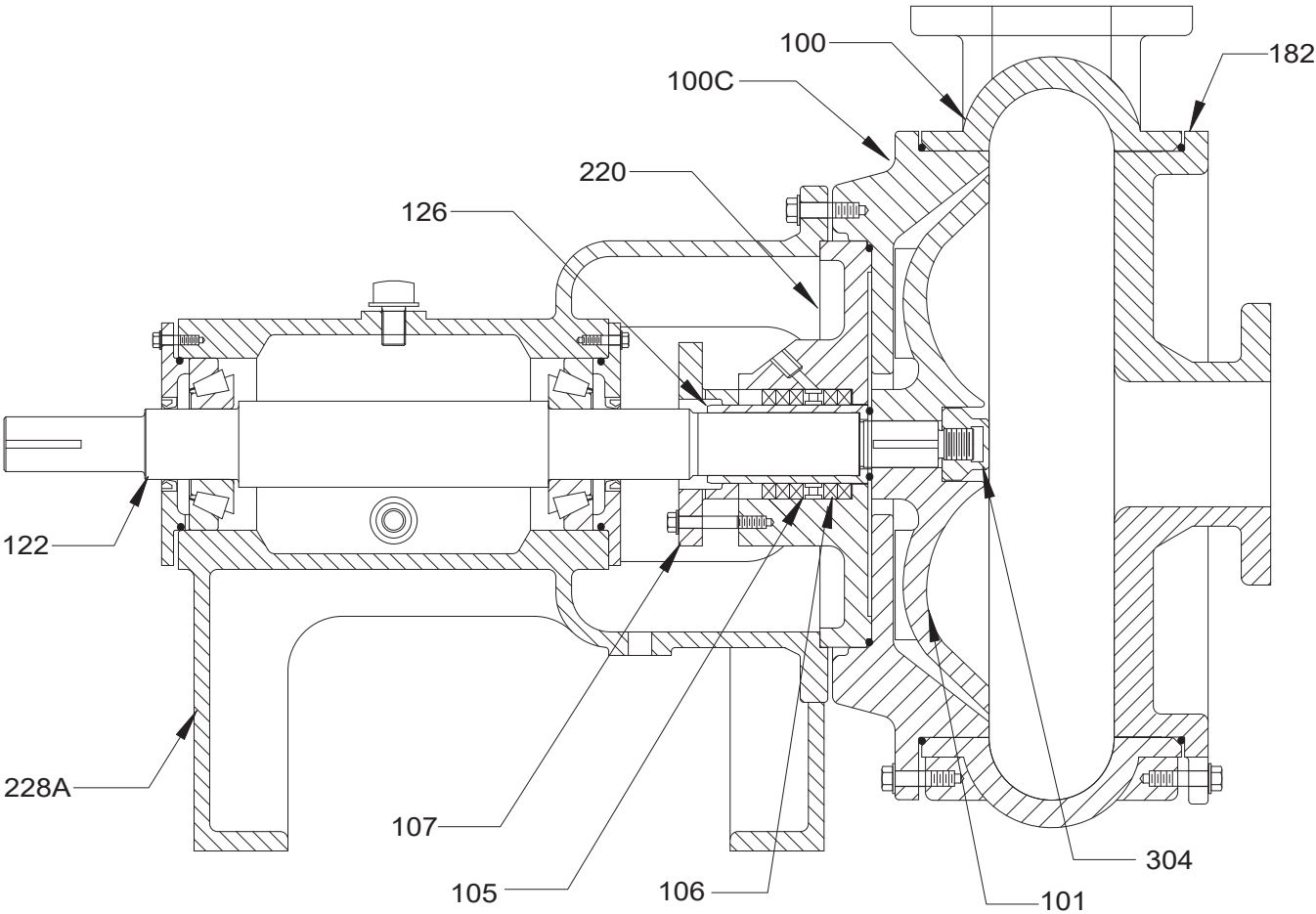
TAPPED OPENINGS				
ITEM	SIZE NPT	QTY	DESCRIPTION	FURNISHED YES NO
I	3/4	1	VENT, CASING	<input type="checkbox"/> <input type="checkbox"/>
II	3/4	1	DRAIN, CASING	<input type="checkbox"/> <input type="checkbox"/>
III	3/8	2	SEAL WATER	<input checked="" type="checkbox"/> <input type="checkbox"/>
IV	3/4	1	DRAIN, FRAME	<input checked="" type="checkbox"/> <input type="checkbox"/>
V	1/2	1	GAUGE, DISCH.	<input type="checkbox"/> <input type="checkbox"/>
VI	1/2	1	GAUGE, SUCT.	<input type="checkbox"/> <input type="checkbox"/>

- NOTES:  
 1. 125 LB. ANSI, B16-1 FLANGES DRILLING STRADDLES CENTERLINE  
 2. BASE INCLUDES 6" DIAMETER GROUT HOLE  
 3. ANCHOR BOLTS BY OTHERS.

NOT CERTIFIED FOR CONSTRUCTION PURPOSES  
 REFER TO FACTORY FOR CERTIFIED INSTALLATION DRAWINGS



**CUP-TYPE RECESSED IMPELLER PUMPS**



Part No.	Part Name	Material
100	Casing	HC600 (ASTM A532, Class 3, Type A Hardened (650 BHN Min.))
100C	Impeller Wearplate	HC600 (ASTM A532, Class 3, Type A Hardened (650 BHN Min.))
101	Impeller	HC600 (ASTM A532, Class 3, Type A Hardened (650 BHN Min.))
105	Lantern Ring	Teflon
106	Mechanical Seal	Flowserve PSIII
107	Gland	316 Stainless Steel (ASTM A743, CF-8M)
122	Shaft	Alloy Steel (AISI 1045)
126	Shaft Sleeve	420 Stainless Steel (ASTM A743, CA-40)
182	Suction Cover	HC600 (ASTM A532, Class 3, Type A Hardened (650 BHN Min.))
220	Stuffing Box	Cast Iron (ASTM A48, Class 35)
228A	Bearing Frame	Cast Iron (ASTM A48, Class 25)
304	Impeller Nut	316 Stainless Steel (ASTM A743, CF-8M)



**CUP-TYPE RECESSED IMPELLER PUMPS**

TECHNICAL DATA							
MODEL SIZE		2x2-13	3x3-16	4x6-18	6x6-22	8x8-25	
<b>GENERAL</b>	Pump Weight	lbs.	440	770	895	1670	2130
		(Kg)	(200)	(349)	(406)	(757)	(966)
	Min. Casing Thickness	in.	.75	.75	.88	1.00	1.12
		(mm)	(19)	(19)	(22)	(25)	(28)
	Casing, Impeller, Suction Cover & Rear Liner Weight	lbs.	250	450	570	1000	1450
		(Kg)	(115)	(205)	(260)	(455)	(660)
	Min. Suction Cover Thickness	in.	.88	1.00	1.25	1.25	1.5
		(mm)	(22)	(25)	(32)	(32)	(38)
	Min. Solid Size	in.	2.0	3.0	4.0	6.0	8.0
		(mm)	(51)	(76)	(102)	(152)	(203)
Max. Liquid Temp.	°F	200	200	200	200	200	
	(°C)	(93)	(93)	(93)	(93)	(93)	
Max. Working Pressure	psig	100	100	100	100	100	
	(KpA)	(690)	(690)	(690)	(690)	(690)	
Max. Test Pressure	psig	150	150	150	150	150	
	(KpA)	(1034)	(1034)	(1034)	(1034)	(1034)	
<b>SHAFT</b>	Dia.at Impeller	in.	1.00	1.50	2.25		
		(mm)	(25)	(38)	(57)		
	Dia. Under Sleeve	in.	1.38	2.00	2.75		
		(mm)	(35)	(51)	(70)		
	Dia. At Coupling	in.	1.50	1.75	2.50		
		(mm)	(38)	(44)	(64)		
	Dia. Between Bearings	in.	2.25	2.75	4.38		
		(mm)	(57)	(70)	(111)		
Shaft Overhang	in.	11.00	12.81	15.50			
	(mm)	(279)	(325)	(394)			
Bearing Span	in.	7.44	9.25	14.50			
	(mm)	(189)	(235)	(368)			
<b>BEARING</b>	Frame Size		A1	A2	A3		
	Bearing - Radial		Timken	Timken	Timken		
	Bearing - Radial		55817C/55437	78225C/78551	JHH221436/JHH221413		
	Bearing - Thrust (Cplg. End)		Timken	Timken	Timken		
Bearing - Thrust (Cplg. End)		55817C/55437	78225C/78551	J90354/J90748			
<b>STUFFING BOX</b>	Dia. Bore	in.	2.50	3.50	4.50		
		(mm)	(64)	(89)	(114)		
	Depth	in.	2.88	3.62	4.62		
		(mm)	(73)	(92)	(117)		
	Sleeve OD	in.	1.75	2.50	3.25		
		(mm)	(44)	(64)	(83)		
	No. of Rings		5	5	5		
	Packing Size		3/8 Sq.	1/2 Sq.	5/8 Sq.		
Width of Lantern Ring	in.	0.75	0.75	1.00			
	(mm)	(19)	(19)	(25)			



**CUP-TYPE RECESSED IMPELLER PUMPS**

**SPECIFIC GRAVITY LIMIT**

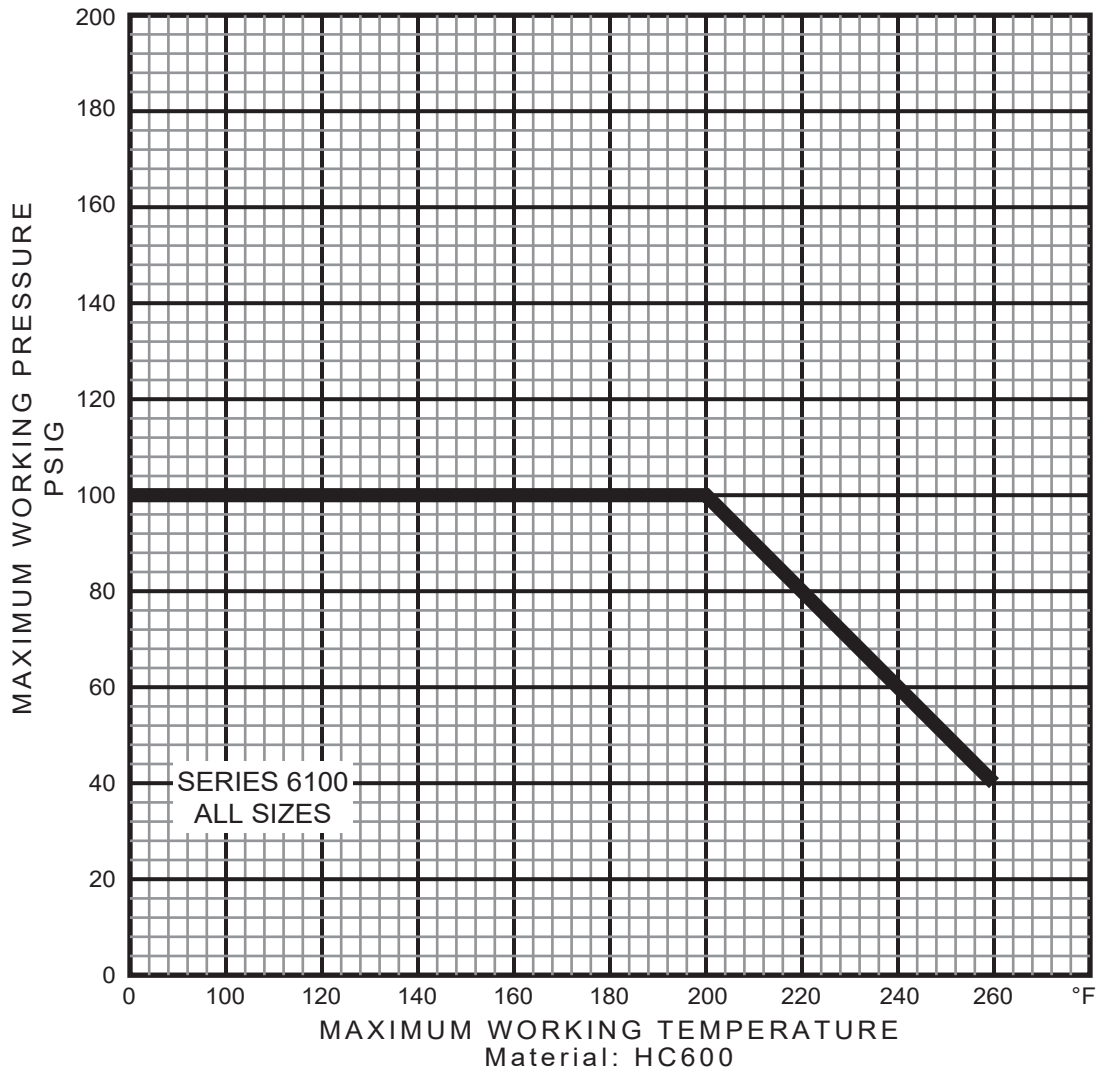
Belt or direct driven Series 6100 pumps with full diameter can be operated at any speed shown on the published catalog curves, as long as the specific gravity of the pumped liquid mixture does not exceed the following limits.

Pump Size	Bearing Frame	Maximum S.G.
2x2-13	A1	1.1
2x3-13	A1	1.1
3x3-16	A2	1.1
3x4-16	A2	1.1
4x6-18	A2	1.1
6x6-22	A3	1.1
8x8-25	A3	1.1

Reduced impeller diameters and/or lower than maximum curve speeds will allow fluids with higher specific gravities to be pumped without exceeding pump bearing or shaft limits

Consult factory before exceeding any of these specific gravity limits.

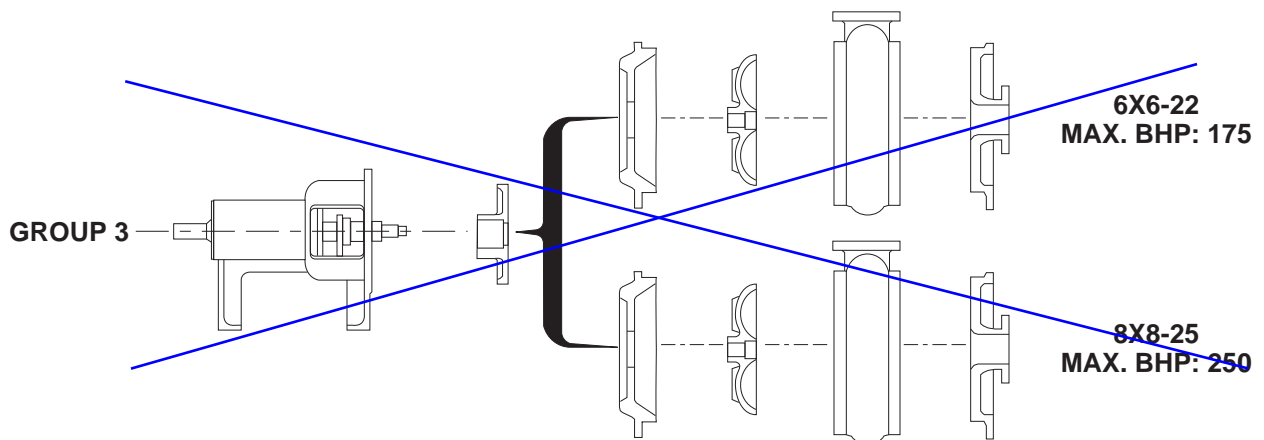
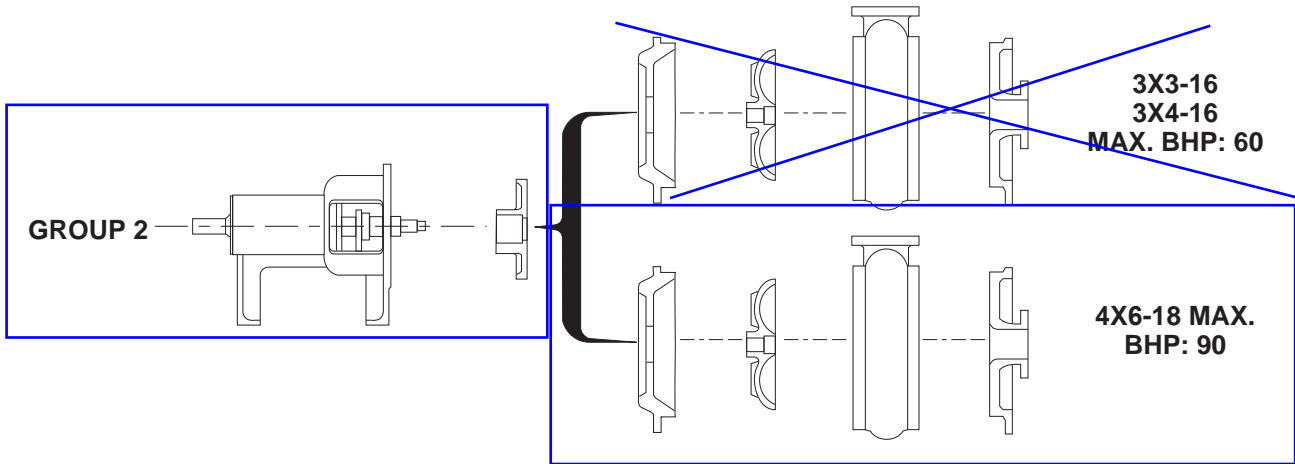
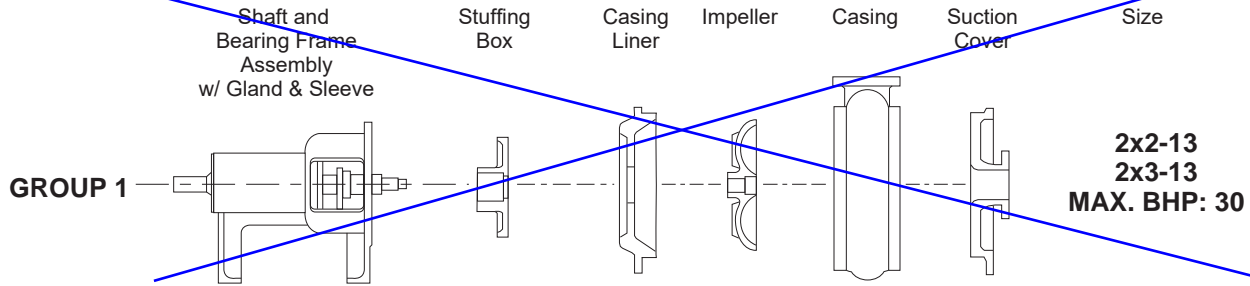
**TEMPERATURE-PRESSURE LIMIT**





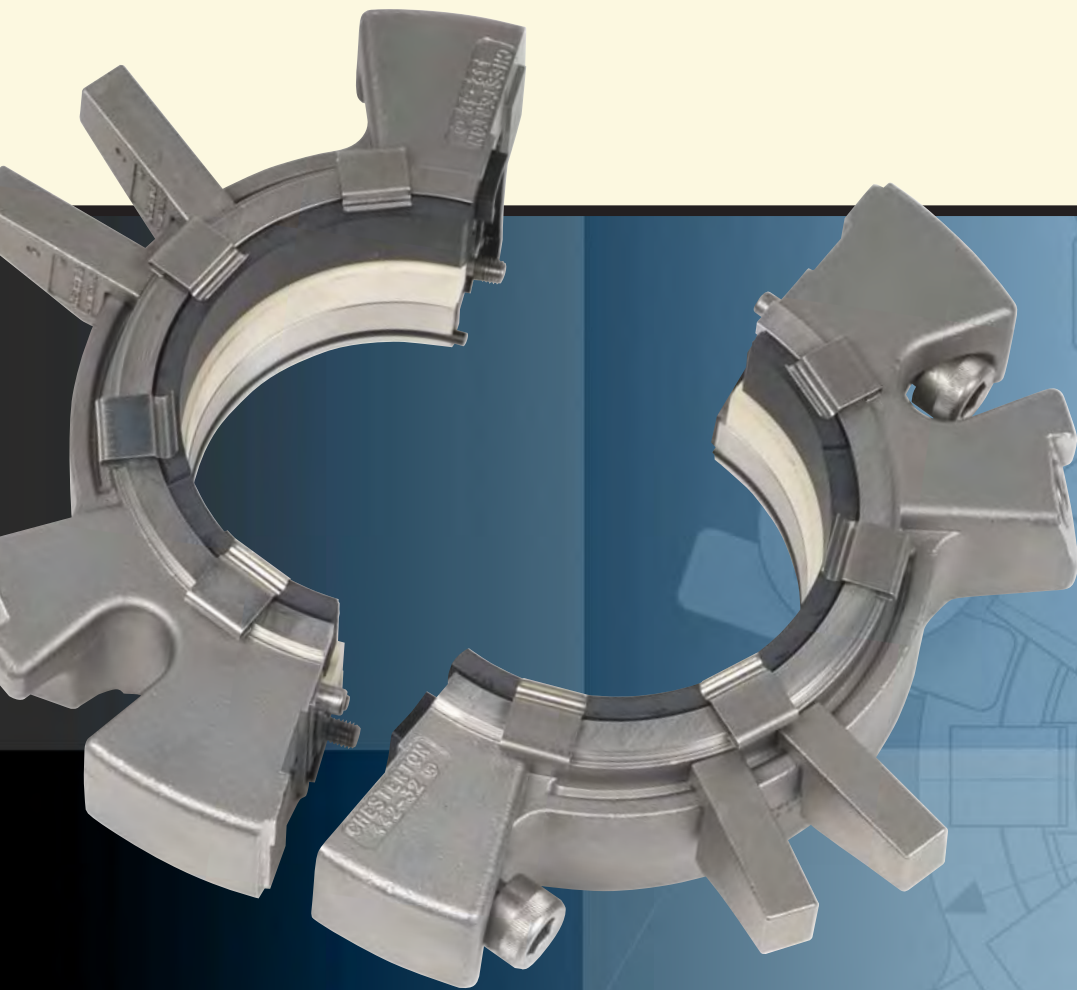
**CUP-TYPE RECESSED IMPELLER PUMPS**

**INTERCHANGEABILITY CHART**



# 442™ SPLIT MECHANICAL SEAL

HIGH PERFORMANCE — EASY TO INSTALL



# 442

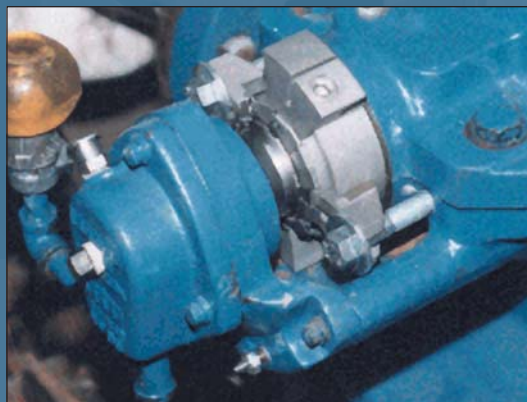
## 442™ SPLIT MECHANICAL SEAL PATENTED

### The difference is obvious

Chesterton, the world leader in split seal technology, has the largest installed base globally. Our broad experience in split sealing enables a wide array of users to improve plant efficiencies. Today, with years of proven performance, Chesterton split seals are used in more types of equipment, sealing more types of process materials.



*SIDE ENTRY MIXERS*



*HORIZONTAL SPLIT CASE PUMPS*



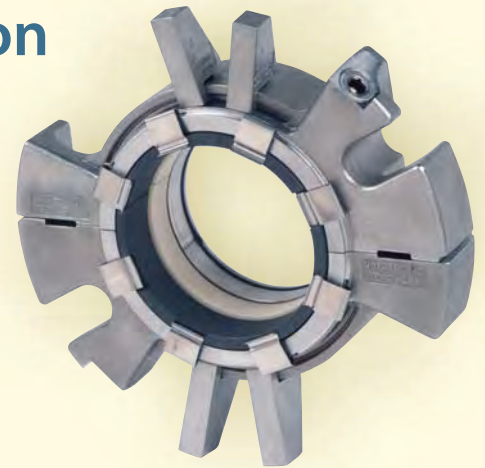
*VERTICAL PUMPS*

- Broad range of sizes—to diameters of 24 inches (610 mm) and beyond
- Easy to install/simple field repair—no glued or bonded components
- Superior performance, high pressure, and vacuum sealing
- Compact design fits most rotating equipment

# PERFORMANCE

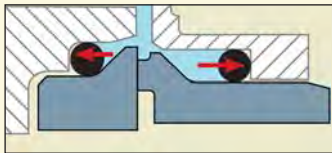
## Chesterton patented innovation drives performance

*The 442's unique, patented adjustable gland, with captured fasteners, and automatic centering deliver unsurpassed ease of use.*

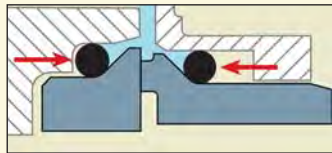


### 442 high pressure and vacuum sealing

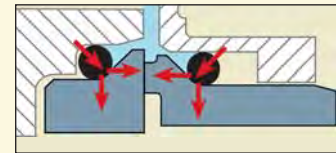
**Patented ramped stationary design** keeps seal face splits together under pressure and vacuum conditions, ensuring reliable sealing during pressure to vacuum shifts.



*Under pressure conditions the seal ring halves are forced together.*



*Under vacuum conditions atmospheric pressure acts on o-rings, forcing them against the ramped surfaces of the seal faces.*



*Ramped surfaces cause radial and axial closing forces to keep splits together.*

**We raised the bar!** The 442 Split Seal pressure capability has been increased to 450 Psig (30 bar g). This is over twice that of most split seals, enabling the use of the 442 in a much larger application base.



### Materials of Construction

Component	Standard Materials
Rotary Face	Ceramic Silicon Carbide
Stationary Face	Carbon Duplex Carbide™ Silicon Carbide
Elastomers	Aflas™ Ethylene Propylene Fluorocarbon
Spring	Elgiloy™
Metal Parts	316 Stainless Steel

### Operating Parameters

Pressure*	28" (710 mm) Hg to 450 Psig (30 bar g)
Temperature	To 250°F (120°C)
Speed	To 4000 fpm (20 m/s)
Size	1.250" (32 mm) to 7.750" (195 mm)

\*Seal pressure capabilities are dependent on the fluid sealed, temperature, speed, and seal face combinations.

*Consult Chesterton Engineering for your applications, including applications exceeding published operating parameters, and for additional seal sizes.*

## Proven Design, Superior Performance

*Chesterton split seals are installed in all types of equipment and deliver years of reliable service.*

Applications include:

Cooling tower pumps	Condensate pumps	Stern tubes
Raw water pumps	Process pumps	Conveyors
Side entry mixers	Top entry mixers	Fans
Blenders	Bottom entry mixers	Dryers
Processing tanks	Vacuum pumps	Cookers
Fermentors	Boiler feed pumps	Water turbines

### Why disassemble equipment?

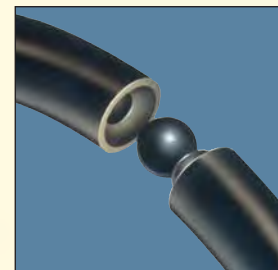
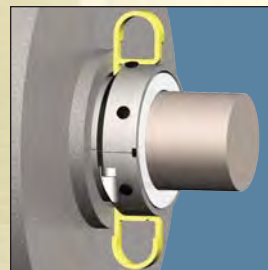
Chesterton's 442 Split Mechanical Seal offers a reliable sealing solution—reducing maintenance costs.

- Reduces install time
- Avoids coupling realignment
- Eliminates sleeve wear
- Increases equipment availability

### Easy to install

- "P" shaped spacer positions the 442 seal for easy installation.
- Ball-and-socket o-rings are leak-free, without the use of adhesives.

*Installation video is available to demonstrate easy installation.*





## 442 Split Seal Innovations

- 1 Patented Adjustable Gland™**  
 Patented adjustable gland tabs fit your equipment bolt position. Easy adjustment avoids “special order” gland designs necessary with other split seals.
- 2 Integral Flush Ports**  
 Dual flush ports, located 180° apart and combined with the adjustable gland, give maximum flexibility when venting or flushing.
- 3 Patented Captured Fasteners**  
 Captured fasteners remain in the 442 seal housings when disassembled. Captured fasteners make installation easier.
- 4 Non-Clogging Springs**  
 Non-clogging finger springs, positioned out of the sealed fluid, avoid clogging while allowing substantial axial shaft movement.
- 5 Balanced Seal Design**  
 Hydraulically-balanced, computer-modeled seal face design generates less heat for more reliable sealing.
- 6 Patented Automatic Centering**  
 Centering buttons align the rotating element inside the seal gland. Automatic centering delivers simplified installation.
- 7 Compact Gland**  
 The 442 low-profile gland fits more equipment without the need for modification or special adaptation.
- 8 Captive Groove Design**  
 The 442 seal’s captive o-ring groove holds the split shaft o-ring in place, without adhesives, to simplify installation and field repair.



## GLOBAL SOLUTIONS, LOCAL SERVICE

Since 1884, Chesterton has been providing value driven solutions to meet industry's needs. Chesterton solutions have been implemented around the world with documented success and recognition. Increasing equipment reliability, optimizing energy consumption, and providing local technical support and service are what Chesterton offers industry worldwide.

- Servicing Plants in Over 100 Countries
- Global Manufacturing Operations
- Over 500 Service Centers and Sales Offices Worldwide
- Over 1200 Trained Local Service Specialists and Technicians

Visit our website at  
[www.chesterton.com](http://www.chesterton.com)

Chesterton ISO certificates available on [www.chesterton.com/corporate/iso](http://www.chesterton.com/corporate/iso)

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Elgiloy is a registered trademark of Elgiloy Limited Partnership.

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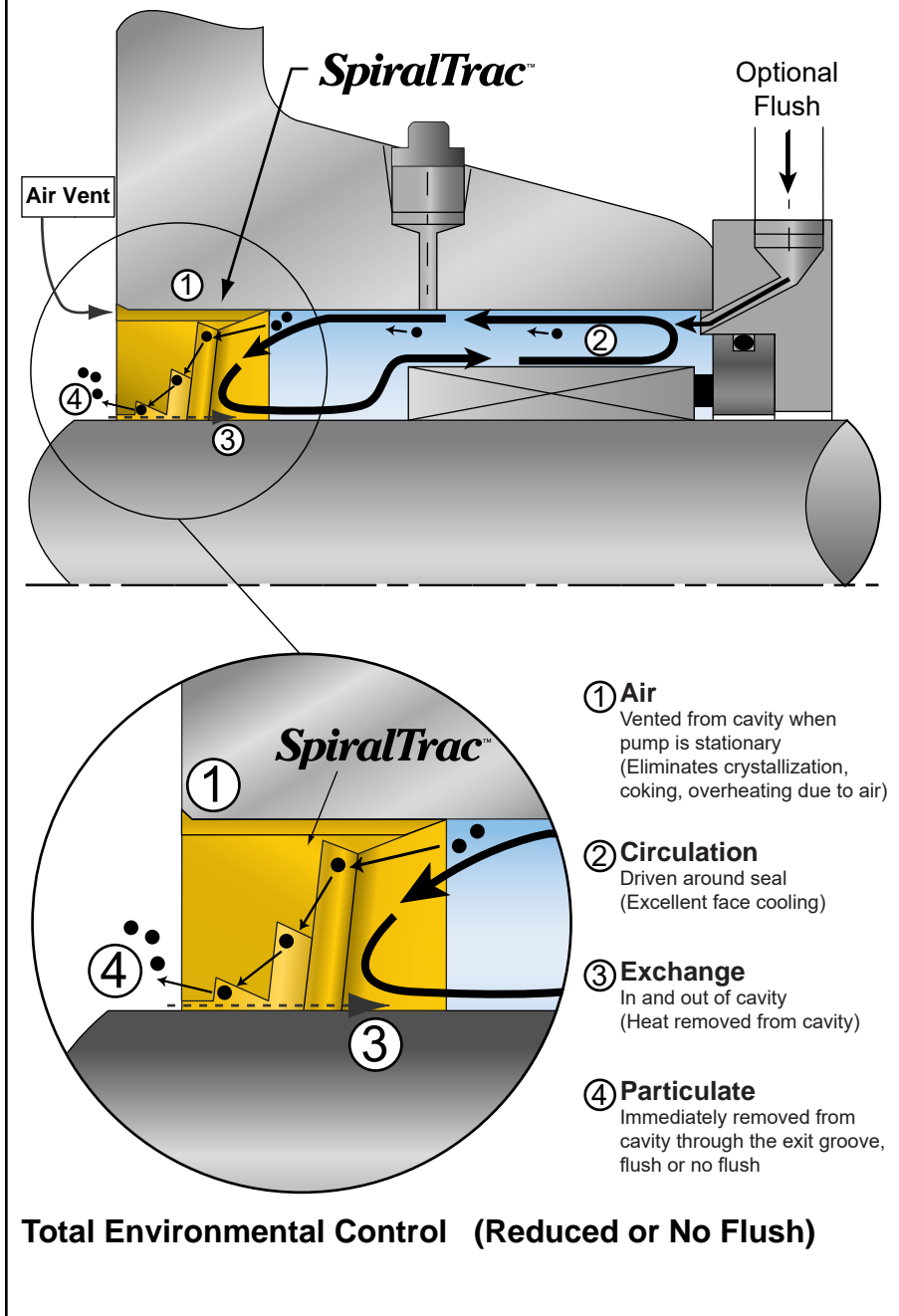
FORM NO. 073385 PART A

PRINTED IN USA 5/07

# SpiralTrac™ D

## How Version D Works in Fibrous Applications

### SpiralTrac™ Version D, Type I Installed in a Seal Cavity



During operation, *SpiralTrac* converts some of the rotating flow in the seal cavity into a strong axial flow component. This axial flow is driven along the seal cavity bore in the direction from the gland toward the throat. Since contaminants are centrifuged to the bore during pump operation, the axial flow sweeps them in the direction of *SpiralTrac*, then along a shallow angled lead in ramp, increasing velocity and therefore centrifugal force on the abrasives.

With *SpiralTrac* Version D, there are two spirals cut into the front face. The collection groove leads directly into the spiral that leads to the exit groove at the shaft. The second spiral ends at the shaft, and is only used to create the pumping action necessary to drive the axial flows in the chamber.

The main spiral joins the exit groove with very little decrease in cross-section. This avoids plugging by fibrous contaminants. The exit groove passes through an extended interior section and is designed to capture incoming particulate, cleaning the flow returning through the clearance to the shaft. *SpiralTrac D* performs these functions with or without flush. Flush is only required for face cooling if the pumpage is aerated or the pump is run dry.



## SPEED SELECTOR, INC.

17050 Munn Road • Chagrin Falls, OH 44023

Ph: 440/543-8233 • Fax: 440/543-8527

www.speedselector.com • email: sales@speedselector.com

### Fixed Center Drives - Series 45

The Series 45 consists of three drive system components: a mechanically operated driver pulley mounted on the motor shaft, a spring-loaded pulley mounted on the driven shaft, and a variable speed belt running between the two pulleys.

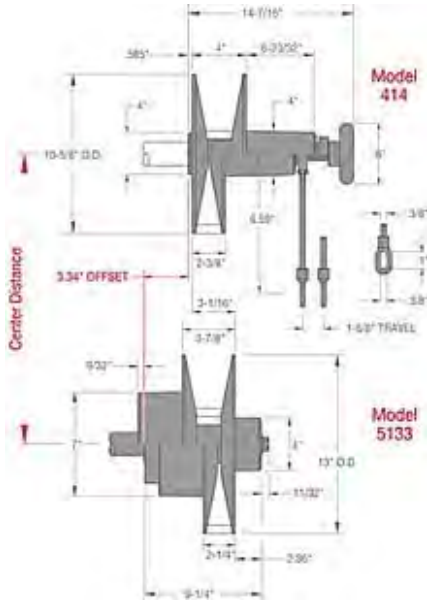
Output speed is reduced by turning the handwheel on the motor pulley, while the drive is running, to mechanically open the pulley face. This allows the belt to drop down to a lower pitch diameter on the driver pulley, while spring pressure in the driven pulley forces the belt to a higher pitch diameter. Speed increase is accomplished in exactly the opposite manner.



# Series 45 - Classic V-Belt Fixed Center Drives 414 - 5133 Pulley Combination

[Home](#) [Products](#) [Engineering](#) [Company](#) [Price List](#) [Contact Us](#)

## Drive System Dimensional Data



### Model 414 Controllable Pulley

- Standard Bore Sizes: 1-3/8", 1-5/8", 1-7/8", 42mm, 48mm
- Bore Depth: 4-5/8"
- Maximum Bore Size: 2-1/8"
- Approximate Pitch Diameters:
  - Maximum: 10.26"
  - Minimum: 4.06"
- Weight: 23.25 lbs.
- Handwheel Turns for Full Range: 23

[Click Here for Pulley Mounting Details](#)

### Model 5133 Spring-Loaded Pulley with 7713C Mounting Collet

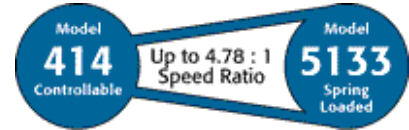
- Standard Bore Sizes: 1-1/8", 1-1/4", 1-3/8", 1-5/8", 1-3/4", 1-7/8", 42mm, 48mm
- Bore Depth: 4-7/8"
- Maximum Bore Size: 2"
- Approximate Pitch Diameters:
  - Maximum: 12.60"
  - Minimum: 6.50"
- Weight: 24.8 lbs.
- Collet Weight: 1.1 lbs.

[Click Image to View Full Screen](#)

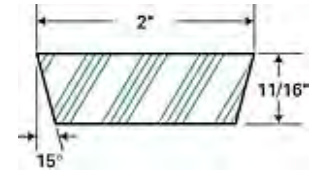
[Click here to View Installation Alternatives](#)

## Power Ratings

HORSEPOWER RATINGS	
30, 25 H.P.	with 1750 RPM Driver
20, 15 H.P.	with 1150 RPM Driver



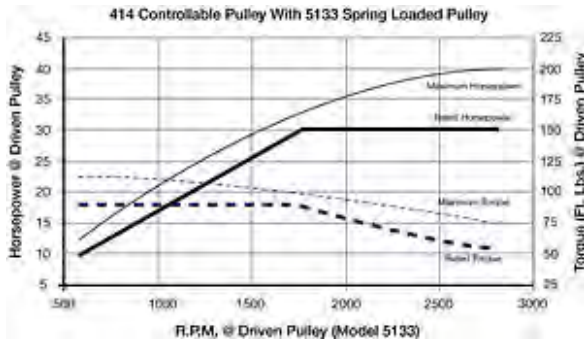
## Belt Dimensions



BELT	CENTER DISTANCE
3230HV528	12.60
3230HV546	13.55
3230HV553	13.92
3230HV570	14.81
3230HV585	15.59
3230HV603	16.52
3230HV613	17.04
3230HV620	17.40
3230HV626	17.71
3230HV644	18.63

[More Belt Options](#)

## Power Curves vs. Driven Speed



[Click to View Full Screen](#)

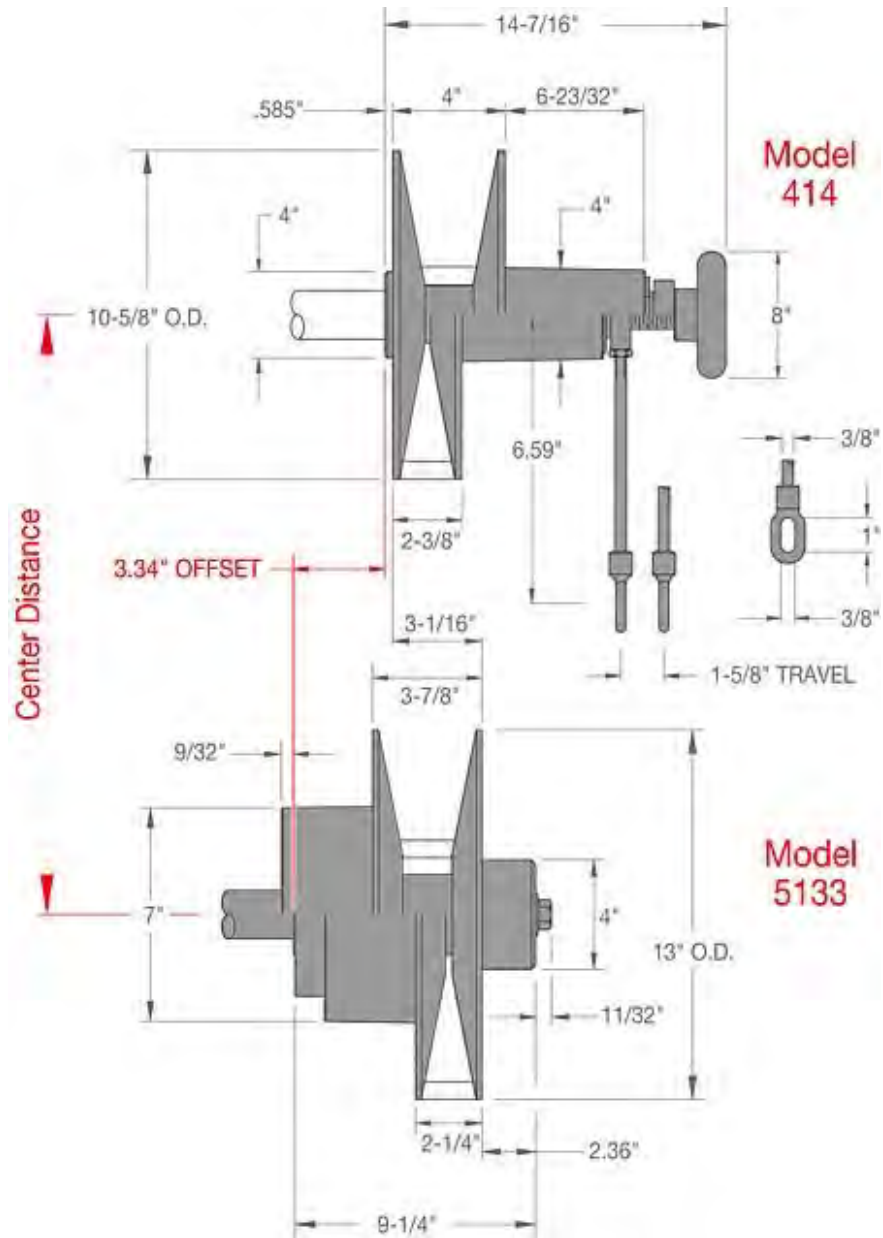
[sales@speedselector.com](mailto:sales@speedselector.com)

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# Series 45 - Classic V-Belt Fixed Center Drives 414 - 5133 Dimensional Data

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## Drive System Dimensional Data



All belt drives must be adequately guarded for personal safety during operation.

[Click to View Installation Alternatives](#)

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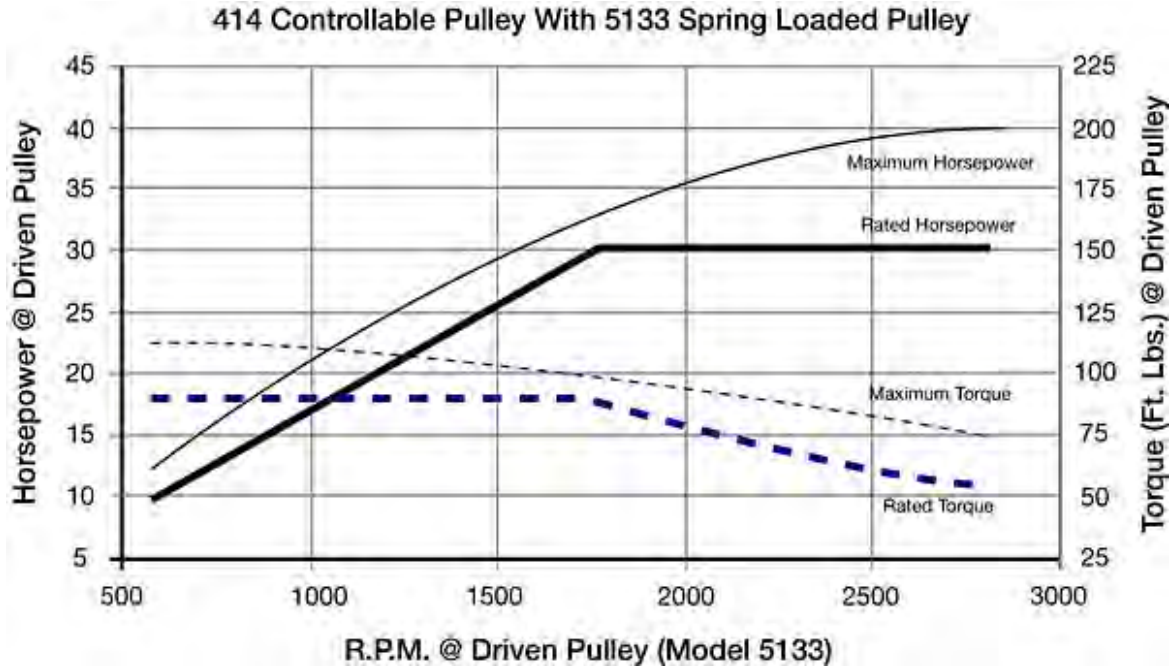
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## Series 45 - Classic V-Belt Fixed Center Drives 414 - 5133 Power Curves vs Driven Speed

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### Power Curves vs Driven Speed



#### Important Notes:

1. Drive selection should be based upon **RATED** horsepower and torque capacities. Maximum horsepower and torque capacities are theoretical, and are illustrated to show the drives ability to handle an unintended overload.
2. All driven data presented on this page is based upon a 1750 RPM input speed.
3. Power curves and driven data for input speeds other than 1750 RPM are available upon request.

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## Series 45 - Classic V-Belt Fixed Center Drives 414 - 5133 Belt Selection Chart

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Belt Selection Chart

### 414 - 5133 Belt Selection Chart

BELT VS. CENTER DISTANCE		DRIVEN SPEED WITH 1750 RPM DRIVER		SPEED RATIO
BELT	CENTER DISTANCE	MIN RPM	MAX RPM	
3230HV528	12.60	564	2486	4.41
3230HV546	13.55	564	2507	4.45
3230HV553	13.92	564	2515	4.46
3230HV570	14.81	564	2531	4.49
3230HV585	15.59	564	2544	4.51
3230HV603	16.52	564	2558	4.54
3230HV613	17.04	564	2565	4.55
3230HV620	17.40	564	2570	4.56
3230HV626	17.71	564	2574	4.56
3230HV644	18.63	564	2585	4.58
3230HV685	20.73	564	2606	4.62
3230HV702	21.60	564	2614	4.63
3230HV723	22.67	564	2622	4.65
3230HV783	25.72	564	2643	4.69
3230HV821	27.64	564	2653	4.71
3230HV856	29.41	564	2662	4.72
3230HV931	33.20	564	2677	4.75
3230HV960	34.66	564	2683	4.76
3230HV1060	39.69	564	2697	4.78

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## Series 45 - Fixed Center Drives Mounting Details

Home Products Engineering Company Price List Contact Us

### Installation Configurations

#### A. Controllable (mechanical) Pulley:

The standard controllable pulley is bored to size with a NEMA standard keyway.

These pulleys are affixed to the shaft by means of two setscrews located 120 degrees apart, with one of the setscrews located over the keyway.

#### B. Spring-Loaded Driven Pulley:

Our standard spring-loaded driven pulley is affixed to the shaft via our interchangeable collet, as illustrated to the right.

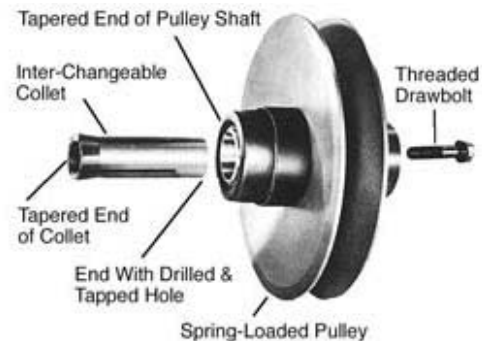
One end of the collet is tapered to match the tapered pulley shaft, and the opposite end of the collet features a drilled and tapped hole.

The drawbolt is inserted through the pulley, and threads into the back end of the collet.

As the collet is drawn into the pulley shaft, the tapers of the collet and pulley shaft engage, and the collet locks down with a 360 degree grip on the driven shaft, and results in a truer running pulley.

Eliminating the use of setscrews, and in most instances keyway and key, pulley installation can be accomplished in minutes.

Absent the primary sources of fretting corrosion, pulley removal can likewise be accomplished swiftly, even after years of service in the field.



#### C. Non-Standard Bores:

Always **contact the engineering department** in the event that you anticipate using a **non-standard bore**, or **non-standard size**.

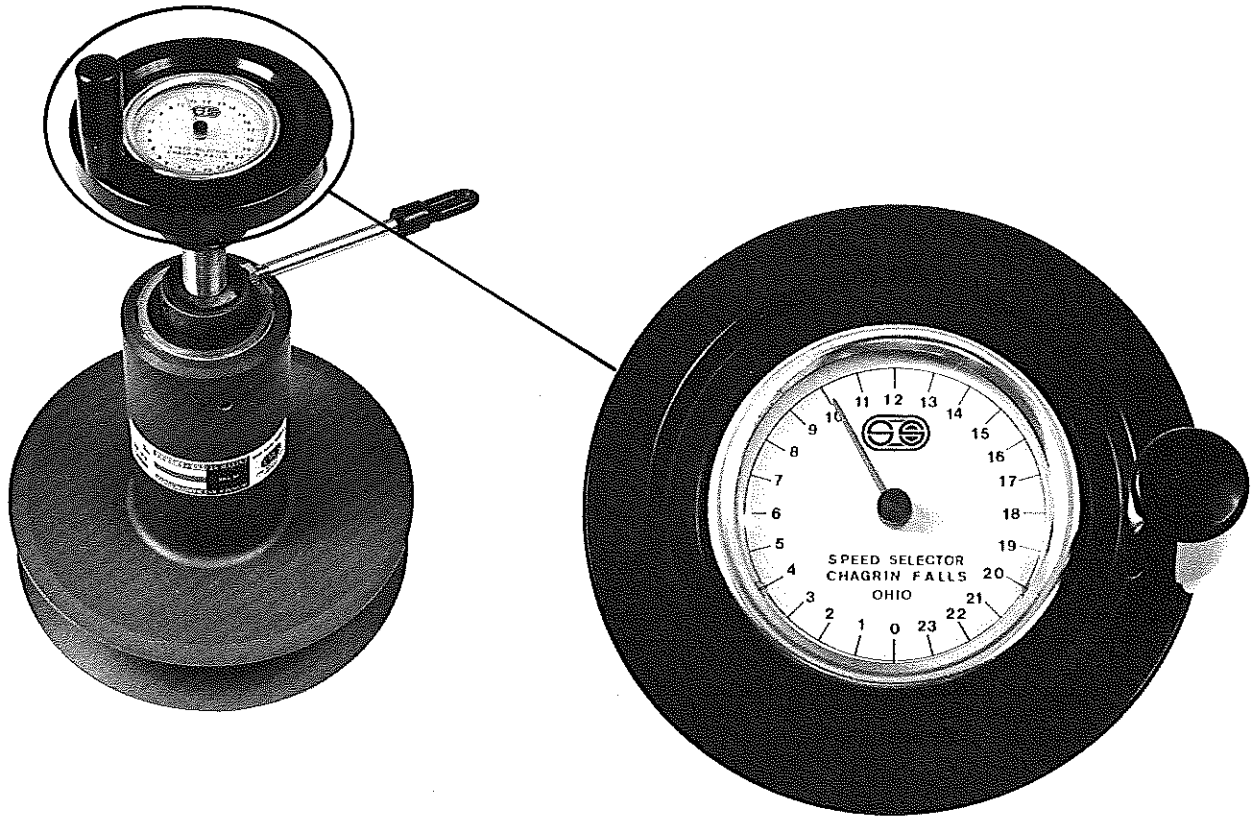
By way of example, if you require a **through bore** in the spring loaded pulley, the I.C. collet cannot be utilized.

In this instance, we would bore the pulley shaft to size, but a discussion of keyway size and length as well as setscrew locations would be in order.

Likewise, **non-standard bore sizes** may warrant a discussion on attending keyway dimensions, and one time tooling charges to accommodate your special bore size request.

# SPEC 383

## MODIFICATION OF CONTROL PULLEYS WITH DIAL INDICATOR HANDWHEEL TO MONITOR OUTPUT SPEED OF THE DRIVE



The Spec. 383 designation calls for the controllable pulley to be equipped with a Dial Indicator Handwheel in place of the less costly standard handwheel.

### HOW IT WORKS:

Consider for example the Model 411 pulley depicted above, and notice that the indicator handwheel reads from 0 to 23.

The 411 pulley requires 23 turns of the handwheel for the drive to deliver its full output speed range (see page 14).

The Dial Indicator Handwheel used on the 411 pulley is calibrated to the 23 turns that are required for full output speed range, so the drive operator can determine the drives output speed simply by monitoring the handwheel being turned.

For further information please consult the factory.





# HI-BUILD EPOXOLINE® II SERIES N69

## PRODUCT PROFILE

- GENERIC DESCRIPTION** Polyamidoamine Epoxy
- COMMON USAGE** An advanced generation epoxy for protection and finishing of steel and concrete. It has excellent resistance to abrasion and is suitable for immersion as well as chemical contact exposure. Contact your local Tnemec representative for a list of chemicals. This product can also be used for lining storage tanks that contain demineralized, deionized or distilled water.
- COLORS** Refer to Tnemec Color Guide. **Note:** Epoxies chalk with extended exposure to sunlight. Lack of ventilation, incomplete mixing, miscatalyzation or the use of heaters that emit carbon dioxide and carbon monoxide during application and initial stages of curing may cause yellowing to occur.
- FINISH** Satin
- SPECIAL QUALIFICATIONS** A two-coat system at 4.0-6.0 dry mills (100-150 dry microns) per coat passes the performance requirements of **MIL-PRF-4556F** for fuel storage.
- PERFORMANCE CRITERIA** Extensive test data available. Contact your Tnemec representative for specific test results.

## COATING SYSTEM

- SURFACER/FILLER/PATCHER** 215
- PRIMERS**
  - Steel:** Self-priming or Series 1, 27, 37H, 66, L69, L69F, N69F, V69F, 90E-92, 90-97, H90-97, 90G-1K97, 90-98, 91-H<sub>2</sub>O, 94-H<sub>2</sub>O, 135, 161, 394, 530
  - Galvanized Steel and Non-Ferrous Metal:** Self-priming or Series 66, L69, L69F, N69F, V69F, 161
  - Concrete:** Self-priming or Series 130, 215, 218
  - CMU:** Self-priming or 130, 215, 218, 1254
- TOPCOATS** 22, 46H-413, 66, L69, L69F, N69, N69F, V69, V69F, 72, 73, 84, 104, 113, 114, 141, 156, 157, 161, 175, 180, 181, 287, 446, 740, 750, 1028, 1029, 1070, 1070V, 1071, 1071V, 1072, 1072V, 1074, 1074U, 1075, 1075U, 1077, 1078, 1080, 1081. Refer to COLORS on applicable topcoat data sheets for additional information. **Note:** The following recoat times apply for Series N69: Immersion Service—Surface must be scarified after 60 days. Atmospheric Service—After 60 days, scarification or an epoxy tie-coat is required. When topcoating with Series 740 or 750, recoat time for N69 is 21 days for atmospheric service. Contact your Tnemec representative for specific recommendations.

## SURFACE PREPARATION

- PRIMED STEEL** **Immersion Service:** Scarify the epoxy prime coat surface by abrasive blasting with fine abrasive before topcoating if it has been exterior exposed for 60 days or longer and N69 is the specified topcoat.
- STEEL** **Immersion Service:** SSPC-SP10/NACE 2 Near-White Blast Cleaning with a minimum angular anchor profile of 1.5 mils. **Non-Immersion Service:** SSPC-SP6/NACE 3 Commercial Blast Cleaning with a minimum angular anchor profile of 1.5 mils.
- GALVANIZED STEEL & NON-FERROUS METAL** Surface preparation recommendations will vary depending on substrate and exposure conditions. Contact your Tnemec representative or Tnemec Technical Services.
- CAST/DUCTILE IRON** Contact your Tnemec representative or Tnemec Technical Services.
- CONCRETE** Allow new concrete to cure 28 days. For optimum results and/or immersion service, abrasive blast referencing SSPC-SP13/NACE 6, ICRI CSP 2-4 Surface Preparation of Concrete and Tnemec's Surface Preparation and Application Guide.
- CMU** Allow mortar to cure for 28 days. Level protrusions and mortar spatter.
- PAINTED SURFACES** **Non-Immersion Service:** Ask your Tnemec representative for specific recommendations.
- ALL SURFACES** Must be clean, dry and free of oil, grease, chalk and other contaminants.

## TECHNICAL DATA

- VOLUME SOLIDS** 67.0 ± 2.0% (mixed) †
- RECOMMENDED DFT** 2.0 to 10.0 mils (50 to 255 microns) per coat. **Note:** MIL-PRF-4556F applications require two coats at 4.0-6.0 mils (100-150 microns) per coat. Otherwise, the number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.
- CURING TIME AT 5 MILS DFT** Without 44-700 Accelerator

Temperature	To Handle	To Recoat	Immersion
90°F (32°C)	5 hours	7 hours	7 days
80°F (27°C)	7 hours	9 hours	7 days
70°F (21°C)	9 hours	12 hours	7 days
60°F (16°C)	16 hours	22 hours	9 to 12 days
50°F (10°C)	24 hours	32 hours	12 to 14 days

Curing time varies with surface temperature, air movement, humidity and film thickness. **Note:** For faster curing and low-temperature applications, add No. 44-700 Epoxy Accelerator; see separate product data sheet for cure information.

- VOLATILE ORGANIC COMPOUNDS**
  - Unthinned:** 2.40 lbs/gallon (285 grams/litre)
  - Thinned 10% (No. 4 Thinner):** 2.80 lbs/gallon (334 grams/litre)
  - Thinned 10% (No. 60 Thinner):** 2.80 lbs/gallon (335 grams/litre)
- HAPS**
  - Unthinned:** 2.40 lbs/gal solids
  - Thinned 10% (No. 4 Thinner):** 3.25 lbs/gal solids
  - Thinned 10% (No. 60 Thinner):** 2.40 lbs/gal solids
- THEORETICAL COVERAGE** 1,074 mil sq ft/gal (26.4 m<sup>2</sup>/L at 25 microns). See APPLICATION for coverage rates. †

# HI-BUILD EPOXOLINE® II | SERIES N69

<b>NUMBER OF COMPONENTS</b>	Two: Part A (amine) and Part B (epoxy) — One (Part A) to one (Part B) by volume.
<b>PACKAGING</b>	5 gallon (18.9L) pails and 1 gallon (3.79L) cans — Order in multiples of 2.
<b>NET WEIGHT PER GALLON</b>	13.67 ± 0.25 lbs (6.10 ± .11 kg) (mixed) †
<b>STORAGE TEMPERATURE</b>	Minimum 20°F (-7°C) Maximum 110°F (43°C)
<b>TEMPERATURE RESISTANCE</b>	(Dry) Continuous 250°F (121°C) Intermittent 275°F (135°C)
<b>SHELF LIFE</b>	Part A: 24 months; Part B: 12 months at recommended storage temperature.
<b>FLASH POINT - SETA</b>	Part A: 82°F (28°C) Part B: 93°F (34°C)
<b>HEALTH &amp; SAFETY</b>	Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product. <b>Keep out of the reach of children.</b>

## APPLICATION

COVERAGE RATES	Dry MILS (Microns)	Wet MILS (Microns)	Sq Ft/Gal (m <sup>2</sup> /Gal)
Suggested (1)	6.0 (150)	9.0 (230)	179 (16.6)
Minimum	2.0 (50)	3.0 (75)	537 (49.9)
Maximum	10.0 (250)	15.0 (375)	107 (10.0)

**Dense Concrete & Masonry:** From 100 to 150 sq ft (9.3 to 13.9 m<sup>2</sup>) per gallon.  
**CMU:** From 75 to 100 sq ft (7.0 to 9.3 m<sup>2</sup>) per gallon.  
**(1) Note for Steel:** Roller or brush application requires two or more coats to obtain recommended film thickness. Also, Series N69 can be spray applied to an optional high-build film thickness range of 8.0 to 10.0 dry mils (205 to 255 dry microns) or 11.5 to 14.5 wet mils (209 to 370 wet microns). Allow for overspray and surface irregularities. Film thickness is rounded to the nearest 0.5 mil or 5 microns. Application of coating below minimum or above maximum recommended dry film thicknesses may adversely affect coating performance. †

- MIXING**
- Start with equal amounts of both Parts A & B.
  - Using a power mixer, separately stir Parts A & B.
  - (For accelerated version. If not using 44-700, skip to No. 4.)
  - Add four (4) fluid ounces of 44-700 per gallon of Part A while Part A is under agitation.
  - Add Part A to Part B under agitation, stir until thoroughly mixed.
  - Both components must be above 50°F (10°C) prior to mixing. For application of the unaccelerated version to surfaces between 50°F to 60°F (10°C to 16°C) or the accelerated version to surfaces between 35°F to 50°F (2°C to 10°C), allow mixed material to stand 30 minutes and restir before using.
  - For optimum application properties, the material temperature should be above 60°F (16°C).
- Note:** The use of more than the recommended amount of 44-700 will adversely affect performance.

**THINNING** Use No. 4 or No. 60 Thinner. For air spray, thin up to 10% or 3/4 pint (380 mL) per gallon. For airless spray, roller or brush, thin up to 5% or 1/4 pint (190 mL) per gallon.

**POT LIFE** Without 44-700: 6 hours at 50°F (10°C) 4 hours at 75°F (24°C) 1 hour at 100°F (38°C)  
 With 44-700: 2 hours at 50°F (10°C) 1 hour at 75°F (24°C) 30 minutes at 100°F (38°C)

**SPRAY LIFE** Without 44-700: 1 hour at 75°F (24°C) With 44-700: 30 minutes at 75°F (24°C)

**Note:** Spray application after listed times will adversely affect ability to achieve recommended dry film thickness.

**APPLICATION EQUIPMENT**

**Air Spray ‡**

Gun	Fluid Tip	Air Cap	Air Hose ID	Mat'l Hose ID	Atomizing Pressure	Pot Pressure
DeVilbiss JGA	E	765 or 704	5/16" or 3/8" (7.9 or 9.5 mm)	3/8" or 1/2" (9.5 or 12.7 mm)	75-100 psi (5.2-6.9 bar)	10-20 psi (0.7-1.4 bar)

Low temperatures or longer hoses require higher pot pressure.

**Airless Spray ‡**

Tip Orifice	Atomizing Pressure	Mat'l Hose ID	Manifold Filter
0.015"-0.019" (380-485 microns)	3000-4800 psi (207-330 bar)	1/4" or 3/8" (6.4 or 9.5 mm)	60 mesh (250 microns)

Use appropriate tip/atomizing pressure for equipment, applicator technique and weather conditions.  
 ‡ Spray application of first coat on CMU should be followed by backrolling. **Note:** Application over inorganic zinc-rich primers: Apply a wet mist coat and allow tiny bubbles to form. When bubbles disappear in 1 to 2 minutes, apply a full wet coat at specified mil thickness.

**Roller:** Use 3/8" or 1/2" (9.5 mm or 12.7 mm) synthetic woven nap roller cover. Use longer nap to obtain penetration on rough or porous surfaces.

**Brush:** Recommended for small areas only. Use high quality natural or synthetic bristle brushes.

**SURFACE TEMPERATURE** Minimum 50°F (10°C) Maximum 135°F (57°C) The surface should be dry and at least 5°F (3°C) above the dew point. Coating will not cure below minimum surface temperature.

**CLEANUP** Flush and clean all equipment immediately after use with the recommended thinner or MEK.  
 † Values may vary with color.

WARRANTY & LIMITATION OF SELLER'S LIABILITY: Tnemec Company, Inc. warrants only that its coatings represented herein meet the formulation standards of Tnemec Company, Inc. THE WARRANTY DESCRIBED IN THE ABOVE PARAGRAPH SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. The buyer's sole and exclusive remedy against Tnemec Company, Inc. shall be for replacement of the product in the event a defective condition of the product should be found to exist and the exclusive remedy shall not have failed its essential purpose as long as Tnemec is willing to provide comparable replacement product to the buyer. NO OTHER REMEDY (INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY, ENVIRONMENTAL INJURIES OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE TO THE BUYER. Technical and application information herein is provided for the purpose of establishing a general profile of the coating and proper coating application procedures. Test performance results were obtained in a controlled environment and Tnemec Company makes no claim that these tests or any other tests, accurately represent all environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection and use of the coating.

## **TAB3 – Cover Page**

**City of Hollywood Grit Pumps  
Hollywood, FL**

# **TAB 3**

---

## **Motor Information**

**NIDEC MOTOR CORPORATION**

8050 WEST FLORISSANT AVE.  
ST. LOUIS, MO 63136



**DATE:** 2/27/2015

**P.O. NO.:** DL03  
**Order/Line NO.:** 21375 MN 100

**TO:**

**Model Number:** DL03  
**Catalog Number:** 8P20P3C  
841 Plus Configuration  
CONF,MOTOR,841 PLUS

**REVISIONS:**  
(NONE)

**ALL DOCUMENTS HEREIN ARE CONSIDERED CERTIFIED BY NIDEC MOTOR CORPORATION.  
THANK YOU FOR YOUR ORDER AND THE OPPORTUNITY TO SERVE YOU.**

**Features:**

Horsepower ..... 00020.00 ~ KW: 14.92  
Enclosure ..... TEFC  
Poles ..... 06 ~ RPM: 1200  
Frame Size ..... 286~T  
Phase/Frequency/Voltage.. 3~060~460 ~ Random Wound  
Service Factor ..... 1.15  
Insulation Class ..... Class "F" ~ Insulife 2000  
Altitude In Feet (Max) .. 3300 Ft.(1000 M)  
Ambient In Degree C (Max) +40 C  
Assembly Position ..... "F-1" Assembly Position  
Efficiency Class ..... Premium Efficiency  
Application ..... Unknown  
Customer Part Number ....  
"AK" Dimension (Inches).. NA  
Temperature Rise (Sine Wave): "B" Rise @ 1.0 SF (Resist)  
Starting Method ..... Direct-On-Line Start  
Duty Cycle ..... Continuous Duty  
Efficiency Value ..... 91.7 % ~ NEMA Nominal  
Load Inertia (lb-ft<sup>2</sup>): NEMA ~ NEMA Inertia: 262.00 ~  
1.00 Number Of Starts Per Hour: NEMA  
Motor Type Code ..... CE  
Rotor Inertia (LB-FT<sup>2</sup>) ..... 6.23 LB-FT<sup>2</sup>  
Qty. of Bearings PE (Shaft) 1  
Qty. of Bearings SE (OPP) 1  
Bearing Number PE (Shaft)  
50BC03J3 Bearing Number SE (OPP)  
50BC03J3  
Space Heater

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# NIDEC MOTOR CORPORATION

8050 WEST FLORISSANT AVE.  
ST. LOUIS, MO 63136



**DATE:** 2/27/2015

**P.O. NO.:** DL03  
**Order/Line NO.:** 21375 MN 100

**TO:**

**Model Number:** DL03  
**Catalog Number:** 8P20P3C  
841 Plus Configuration  
CONF,MOTOR,841 PLUS

**REVISIONS:**  
(NONE)

**ALL DOCUMENTS HEREIN ARE CONSIDERED CERTIFIED BY NIDEC MOTOR CORPORATION.  
THANK YOU FOR YOUR ORDER AND THE OPPORTUNITY TO SERVE YOU.**

**Accessories:**

Corro-Duty  
Ground Lug In Conduit Box  
Precision Balance

Standard Leadtime: REFER TO OFFICE  
Est. Weight (lbs ea): 410 ~ F.O.B.: St. Louis, MO

**USE THE DATA PROVIDED BELOW TO SELECT THE APPROPRIATE DIMENSION PRINT**

<b>Horsepower</b>	20
<b>Pole(s)</b>	06
<b>Voltage(s)</b>	460
<b>Frame Size</b>	286T
<b>Shaft U Diameter</b>	1.875
<b>Outlet Box AF</b>	3.25
<b>Outlet Box AA</b>	2.00

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EFFECTIVE:  
08-AUG-14

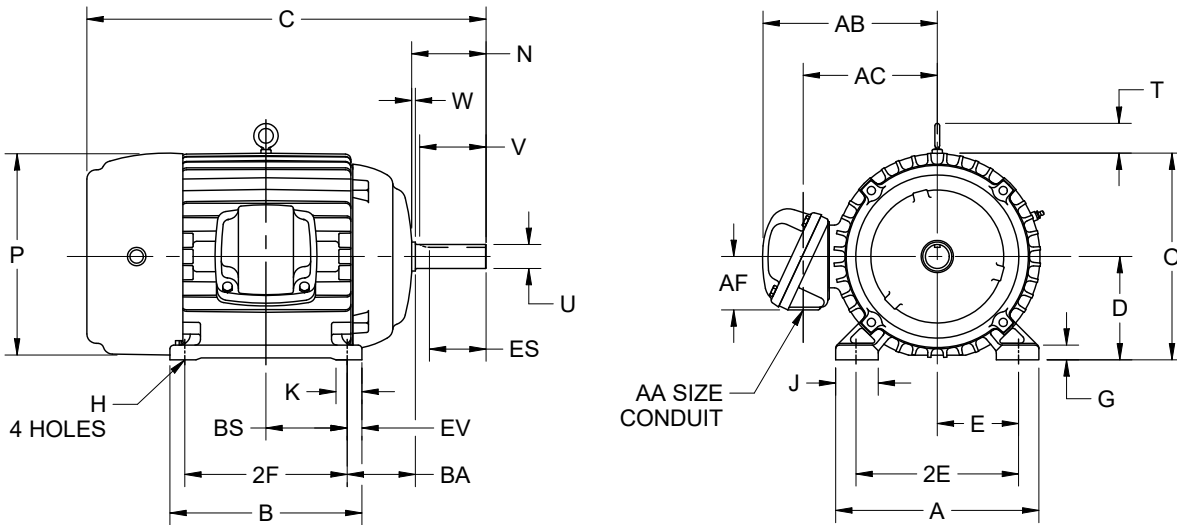
# DIMENSION PRINT

PRINT:  
07-2779

SUPERSEDES:  
14-APR-14

FRAME: 280T, TS  
BASIC TYPE: CE

SHEET:  
1 OF 1



ALL DIMENSIONS ARE IN INCHES AND MILLIMETERS

UNITS	A	B	D -.06	E	2E ±.03	G	H +.05	J	K	O	P <sup>2</sup>	T
IN	14.00	13.00	7.00	5.50	11.00	1.00	.53	2.88	3.13	14.16	14.31	2.03
MM	356	330	178	140	279	25	13	73	80	360	364	52

UNITS	W	AA	AB	AC	AF	BA	BS	EV
IN	.38	2 NPT	13.19	9.69	3.25	4.75	5.50	1.00
MM	10		335	246	83	121	140	25

FRAME	UNITS	C	N	U -.001	V MIN	ES MIN	SQ KEY
284, 286T	IN	27.66	5.00	1.875	4.38	3.28	.500
	MM	703	127	47.63	111	83	12.70
284, 286TS	IN	26.28	3.63	1.625	3.00	1.91	.375
	MM	668	92	41.28	76	48	9.53

FRAME	UNITS	2F ±.03
284T, TS	IN	9.50
	MM	241
286T, TS	IN	11.00
	MM	279

1. ALL ROUGH CASTING DIMENSIONS MAY VARY BY .25" DUE TO CASTING AND/OR FABRICATION VARIATIONS.
2. LARGEST MOTOR WIDTH.
3. TOLERANCES SHOWN ARE IN INCHES ONLY.

4. STANDARD ASSEMBLY POSITION F-1 IS SHOWN F-2 IS PROVIDED WHEN SPECIFIED. CONDUIT OPENINGS MAY BE LOCATED IN STEPS OF 90 DEGREES REGARDLESS OF LOCATION. STANDARD AS SHOWN WITH CONDUIT OPENING DOWN.

**Nidec Motor Corporation**  
St. Louis, Missouri

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ISSUED BY  
M. YRISSE  
APPROVED BY  
R. TIMMERMAN

IHP\_DP\_NMCA (MAR-2011) SOLIDEDGE

# NAMEPLATE DATA

CATALOG NUMBER: <input style="width: 100%;" type="text" value="8P20P3C"/>	NAMEPLATE PART #: <input style="width: 100%;" type="text" value="422696-002"/>
MODEL: <input style="width: 15%;" type="text" value="DL03"/> FR <input style="width: 15%;" type="text" value="286T"/>	TYPE: <input style="width: 15%;" type="text" value="CE"/> ENCL <input style="width: 15%;" type="text" value="TEFC"/>
SHAFT END BRG: <input style="width: 100%;" type="text" value="50BC03J3 - QTY 1"/>	
PH: <input style="width: 15%;" type="text" value="3"/> MAX AMB: <input style="width: 15%;" type="text" value="40 C"/>	ID#: <input style="width: 100%;" type="text"/>
INSUL CLASS: <input style="width: 15%;" type="text" value="F"/> Asm. Pos: <input style="width: 15%;" type="text" value="F1"/>	DUTY: <input style="width: 100%;" type="text" value="CONT"/>
HP: <input style="width: 15%;" type="text" value="20"/> RPM: <input style="width: 15%;" type="text" value="1180"/>	HP: <input style="width: 15%;" type="text"/> RPM: <input style="width: 15%;" type="text"/>
VOLTS: <input style="width: 15%;" type="text" value="460"/>	VOLTS: <input style="width: 15%;" type="text"/>
FL AMPS: <input style="width: 15%;" type="text" value="24.5"/>	FL AMPS: <input style="width: 15%;" type="text"/>
SF AMPS: <input style="width: 15%;" type="text" value="28.2"/>	SF AMPS: <input style="width: 15%;" type="text"/>
SF: <input style="width: 15%;" type="text" value="1.15"/> DESIGN: <input style="width: 15%;" type="text" value="B"/> CODE: <input style="width: 15%;" type="text" value="G"/>	SF: <input style="width: 15%;" type="text"/> DESIGN: <input style="width: 15%;" type="text"/> CODE: <input style="width: 15%;" type="text"/>
NEMA NOM EFFICIENCY: <input style="width: 15%;" type="text" value="91.7"/> NOM PF: <input style="width: 15%;" type="text" value="83.5"/> KiloWatt: <input style="width: 15%;" type="text" value="14.920"/>	NEMA NOM EFFICIENCY: <input style="width: 15%;" type="text"/> NOM PF: <input style="width: 15%;" type="text"/>
GUARANTEED EFFICIENCY: <input style="width: 15%;" type="text" value="90.2"/> MAX KVAR: <input style="width: 15%;" type="text" value="5.8"/> HZ: <input style="width: 15%;" type="text" value="60"/>	GUARANTEED EFFICIENCY: <input style="width: 15%;" type="text"/> MAX KVAR: <input style="width: 15%;" type="text"/> HZ: <input style="width: 15%;" type="text"/>

**HAZARDOUS LOCATION DATA (IF APPLICABLE):**

DIVISION: <input style="width: 100%;" type="text"/>	CLASS I: <input style="width: 100%;" type="text"/>	GROUP I: <input style="width: 100%;" type="text"/>
TEMP CODE: <input style="width: 100%;" type="text"/>	CLASS II: <input style="width: 100%;" type="text"/>	GROUP II: <input style="width: 100%;" type="text"/>

**VFD DATA (IF APPLICABLE):**

VOLTS: <input style="width: 100%;" type="text"/>	TORQUE 1: <input style="width: 100%;" type="text"/>	TORQUE 2: <input style="width: 100%;" type="text"/>
AMPS: <input style="width: 100%;" type="text"/>	VFD LOAD TYPE 1: <input style="width: 100%;" type="text"/>	VFD LOAD TYPE 2: <input style="width: 100%;" type="text"/>
	VFD HERTZ RANGE 1: <input style="width: 100%;" type="text"/>	VFD HERTZ RANGE 2: <input style="width: 100%;" type="text"/>
	VFD SPEED RANGE 1: <input style="width: 100%;" type="text"/>	VFD SPEED RANGE 2: <input style="width: 100%;" type="text"/>
SERVICE FACTOR: <input style="width: 100%;" type="text"/>	FL SLIP: <input style="width: 100%;" type="text"/>	
NO. POLES: <input style="width: 15%;" type="text" value="6"/>	MAGNETIZING AMPS: <input style="width: 15%;" type="text" value="8.6"/>	
VECTOR MAX RPM: <input style="width: 100%;" type="text"/>	Encoder PPR: <input style="width: 100%;" type="text"/>	
Radians / Seconds: <input style="width: 15%;" type="text" value="1"/>	Encoder Volts: <input style="width: 100%;" type="text"/>	

**TEAO DATA (IF APPLICABLE):**

HP (AIR OVER): <input style="width: 15%;" type="text"/>	HP (AIR OVER M/S): <input style="width: 15%;" type="text"/>	RPM (AIR OVER): <input style="width: 15%;" type="text"/>	RPM (AIR OVER M/S): <input style="width: 15%;" type="text"/>
FPM AIR VELOCITY: <input style="width: 15%;" type="text"/>	FPM AIR VELOCITY M/S: <input style="width: 15%;" type="text"/>	FPM AIR VELOCITY SEC: <input style="width: 15%;" type="text"/>	

**ADDITIONAL NAMEPLATE DATA:**

Decal / Plate	WD=499495	Customer PN	
Notes		Non Rev Ratchet	
Max Temp Rise	80C RISE/RES@1.00SF	OPP/Upper Oil Cap	GREASE
Thermal (WDG)		SHAFT/Lower Oil Cap	GREASE
Altitude			
Regulatory Notes		Regulatory Compliance	CC 030A
COS		Marine Duty	
Balance	0.05 IN/SEC	Arctic Duty	
3/4 Load Eff.	92.8	Inrush Limit	
Motor Weight (LBS)	410	Direction of Rotation	
Sound Level		Special Note 1	
Vertical Thrust (LBS)		Special Note 2	
Thrust Percentage		Special Note 3	
Bearing Life		Special Note 4	
Starting Method		Special Note 5	
Number of Starts		Special Note 6	
200/208V 60Hz Max Amps		SH Max. Temp.	
190V 50 hz Max Amps		SH Voltage	
380V 50 Hz Max Amps		SH Watts	
NEMA Inertia		Load Inertia	
Sumpheater Voltage		Sumpheater Wattage	
Special Accessory Note 1		Special Accessory Note 16	
Special Accessory Note 2		Special Accessory Note 17	
Special Accessory Note 3		Special Accessory Note 18	
Special Accessory Note 4		Special Accessory Note 19	
Special Accessory Note 5		Special Accessory Note 20	
Special Accessory Note 6		Special Accessory Note 21	
Special Accessory Note 7		Special Accessory Note 22	
Special Accessory Note 8		Special Accessory Note 23	
Special Accessory Note 9		Special Accessory Note 24	
Special Accessory Note 10		Special Accessory Note 25	
Special Accessory Note 11		Special Accessory Note 26	
Special Accessory Note 12		Special Accessory Note 27	
Special Accessory Note 13		Special Accessory Note 28	
Special Accessory Note 14		Special Accessory Note 29	
Special Accessory Note 15		Special Accessory Note 30	

**NIDEC MOTOR CORPORATION  
ST. LOUIS, MO**



TYPICAL NAMEPLATE DATA  
ACTUAL MOTOR NAMEPLATE LAYOUT MAY VARY  
SOME FIELDS MAY BE OMITTED

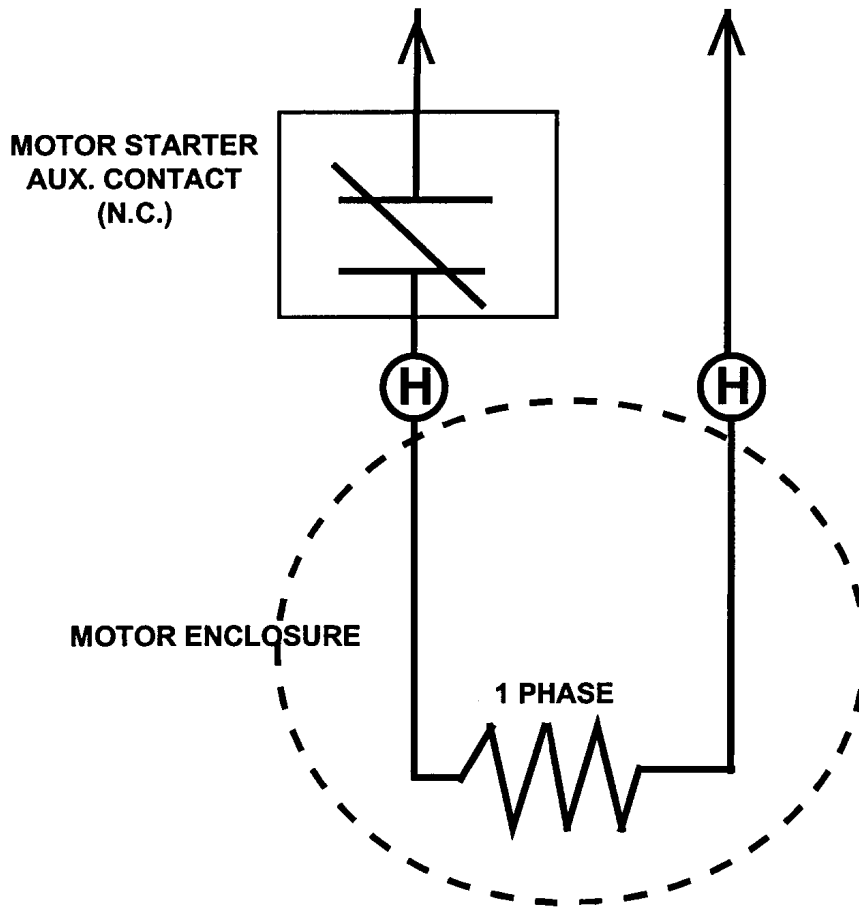
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970798

# SPACE HEATER CONNECTION DIAGRAM

SPACE HEATER LEADS MAY BE LOCATED IN EITHER THE MAIN OUTLET BOX  
OR IF SO EQUIPPED, AN AUXILIARY BOX



THIS EQUIPMENT IS SUPPLIED WITH  
ANTI-CONDENSATION HEATERS. HEATERS  
SHOULD BE ENERGIZED WHEN EQUIPMENT  
IS NOT OPERATING TO PROTECT UNIT BY  
PREVENTING INTERNAL CONDENSATION.  
CONNECT THE "H" OR HEATER LEADS TO


VOLTS  
WATTS RATING.

668434

SPACE HEATER NAMEPLATE (ON MOTOR)

## MOTOR PERFORMANCE

MODEL NO.	CATALOG NO.	PHASE	TYPE	FRAME
DL03	8P20P3C	3	CE	286T

ORDER NO.	21375	LINE NO.

MPI:	28685
HP:	20
POLES:	6
VOLTS:	460
HZ:	60
SERVICE FACTOR:	1.25
EFFICIENCY (%):	
S.F.	90.1
FULL	91.7
3/4	93.1
1/2	93
1/4	90.1
POWER FACTOR (%):	
S.F.	84.7
FULL	83.7
3/4	80.3
1/2	72
1/4	51.2
NO LOAD	4.7
LOCKED ROTOR	41.4
AMPS:	
S.F.	31
FULL	24.4
3/4	18.8
1/2	14
1/4	10.1
NO LOAD	8.7
LOCKED ROTOR	143.9
NEMA CODE LETTER	G
NEMA DESIGN LETTER	B
FULL LOAD RPM	1180
NEMA NOMINAL EFFICIENCY (%)	91.7
GUARANTEED EFFICIENCY (%)	90.2
MAX KVAR	5.9
AMBIENT (°C)	40
ALTITUDE (FASL)	3300
SAFE STALL TIME-HOT (SEC)	30
SOUND PRESSURE (DBA @ 1M)	56
TORQUES:	
BREAKDOWN{% F.L.}	251
LOCKED ROTOR{% F.L.}	200
FULL LOAD{LB-FT}	89

NEMA Nominal and Guaranteed Efficiencies are up to 3,300 feet above sea level and 25 ° C ambient

The Above Data Is Typical, Sinewave Power Unless Noted Otherwise

**NIDEC MOTOR CORPORATION**  
ST. LOUIS, MO

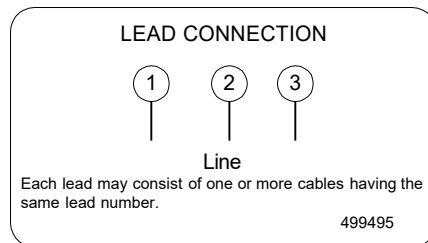
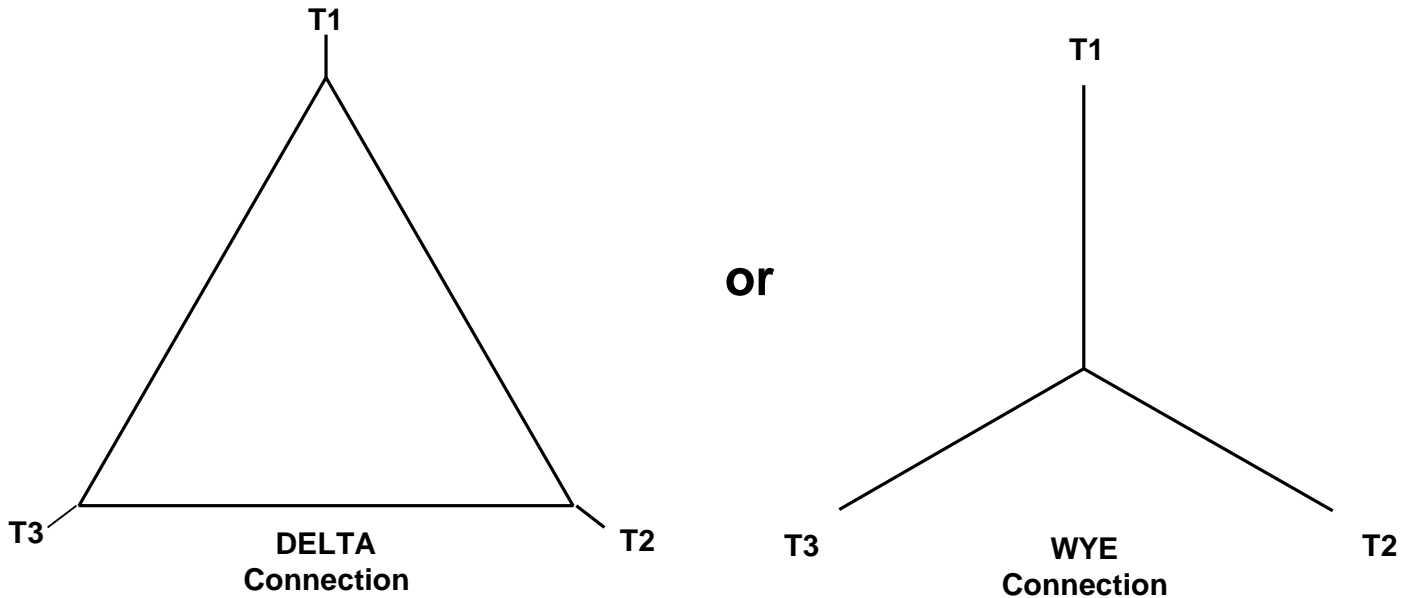


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499495

### Motor Wiring Diagram



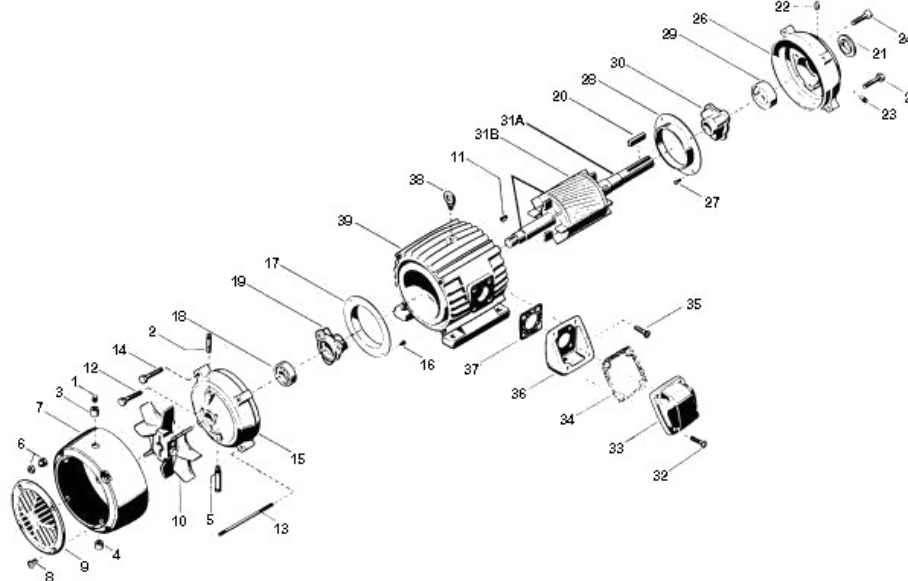
To reverse direction of rotation interchange connections L1 and L2.

Each lead may be comprised of one or more cables.  
Each cable will be marked with the appropriate lead number.

## RENEWAL PARTS

FRAMES 254T THRU 447T - TOTALLY ENCLOSED AND EXPLOSIONPROOF MOTORS

TYPES: CE, CE1, CE4, CEF, CT, CT1, CT4, CTC, CTE, CTE1, CTE4, CTEF, CTEF1, CTEF4, CTEI, CTEN, CTF, CTF1, CTF4, CTFI, CTFI1, CTFI4, CTFN, CTI, CTI4, CTN, CTNI, EC, ECEI, FCT, FCTF, FCTF1, FCTN, FD, FDF, FDF1, FL, FLC, FLCA, FLCF, FLF, FN, FNC, FTC, FTCF, JAD, JDE, L, L1, L4, LC, LC1, LCA, LCAE, LCE, LCEF, LCEI, LCE1, LCF, LCFI, LCI, LE, LE1, LE4, LEF, LF, LF1, LF4, LFC, LFI, LI, LN, N, NC, NCE, NCEF, NCF, NCFI, NCI, NE, NF, NN, T, T1, T4, TC, TC1, TC4, TCA, TCE, TCE1, TCE4, TCEF, TCEF4, TCEI, TCEN, TCEP, TCF, TCF1, TCFI, TCI, TC11, TCN, TE, TEF, TEN, TF, TFC, TFN, TN



ITEM NO.	QTY	NAME OF PART
1	1	Slotted Headless Pipe Plug
2	1	Pipe Coupling
3	1	Pipe Nipple
4	1	Pipe Cap
5	1	Pipe Nipple
6	2	Cap and Jam Nut
7	1	Fan Cover Guard
8	3	Screw & Lockwasher
9	1	Grill
10	1	Vent Fan Assembly
11	1	Woodruff Key (Not used on frames 254T & 256T)
12	2	Screw
13	2	Stud & Nut
14	2	Screw (Qty 6 on frames 254T & 256T)
15	1	Bracket
16	4	Screw (Used only on frame 286T & 326T)
17	1	Air Deflector (Used only on frame 286T & 326T)
18	1	Ball Bearing
19	1	Bearing Cap
20	1	Key
21	1	Water Deflector

ITEM NO.	QTY	NAME OF PART
22	1	Slotted Headless Pipe Plug
23	1	Pipe Plug
24	2	Screw
25	4	Screw (Qty 8 on frames 286T & 326T)
26	1	Bracket (Not used on types TF)
27	4	Screw (Used only on frame 286T & 326T)
28	1	Air Deflector ((Used only on frame 286T & 326T)
29	1	Ball Bearing
30	1	Bearing Cap
31	1	Rotor Assembly (Includes items 31A & 31B)
31A	1	Motor Shaft
31B	1	Rotor Core
32	4	Screw
33	1	Outlet Box Cover
34	1	Gasket
35	4	Screw (Qty 2 on frames 254T & 256T)
36	1	Outlet Box Base
37	1	Gasket (Outlet Box Base)
38	1	Eyebolt
39	1	Wound Stator Assembly

**WARNING:**

Any disassembly or repair work on explosionproof motors will void the Underwriters Laboratories, Inc. label unless done by the manufacturer, or a facility approved by the Underwriters Laboratories, Inc. Refer to your nearest sales office for assistance.

**BEARINGS:**

Refer to motor nameplate for the bearing numbers.

**PRICES:**

Parts stocking distributors: refer to renewal parts numerical index. All Others: refer to your nearest parts distributor.

reference: Renewal Parts Section 700, Page 19

# 841 PLUS<sup>®</sup> Motors

## Horizontal A.C. Motors, Totally Enclosed Fan Cooled



**Horsepower:** 1 – 200 HP

**Frame Sizes:** 143 – 447

**Pole Designs:** 2, 4, 6, 8

**Design Voltages:** 460 and 575 Volts at 60 Hz

**Requirements:** Meets or exceeds Energy Independence and Security Act of 2007 (EISA);  
Meets or exceeds IEEE 841 Standard-2009;  
Meets vibration requirements of GM7E-TA

**Warranty:** 5-year limited warranty



### Product Overview and Options

Designed to exceed the industry's most stringent IEEE 841 standards, the U.S. MOTORS<sup>®</sup> brand 841 PLUS<sup>®</sup> motors are commonly used in severe duty environments for pumps, compressors, fans, blowers, and other material processing applications. These rugged motors are ideal for constant speed or inverter duty applications typically found in the petroleum, chemical, pulp and paper, wastewater, automotive and mining industries.

U.S. MOTORS brand 841 PLUS motors are rated NEMA Premium<sup>®</sup> efficient. Low-loss silicone steel construction and streamlined design enables the motor to operate at lower temperatures resulting in lower energy costs. This motor is designed to operate in ambient temperatures of -30°C to 40°C, in altitudes of up to 1,000 meters above sea level and with NEMA Design B torque-current characteristics. Inertiaload acceleration capabilities for the 841 Plus motor meet the stringent requirements of NEMA MG 1-2009, Section 12.54.

#### Product Features:

- NEMA Premium<sup>®</sup> efficient
- 1.15 Service Factor on sine wave power; 1.0 Service Factor on Inverter Duty
- Class B temperature rise at 1.0 Service Factor by resistance with sine wave power
- Class F insulation materials to increase motor life
- Exceeds NEMA MG1 Part 31 Inverter Duty
- Polyurea grease
- Stainless-steel nameplate
- Variable frequency drive or full voltage, across-the-line starting
- Ground on frame

- Division 2 suitable per NEC article 500 (NFPA 70)
- AFBMA bearing numbers on nameplate
- Protective coating on each rotor and shaft from bearing journal to bearing journal

#### Inverter Duty

Nidec Motor Corporation's patented inverter grade insulation system allows the U.S. MOTORS brand 841 PLUS motor to withstand spike and transient voltages induced by insulated bipolar gate transistor drives, making it fully compliant with NEMA MG-1, Part 31. This is made possible through:

- Pulse-resistant magnetic wire that provides protection against high-voltage spikes
- Additional lacing on the end turns improve coil rigidity
- Multiple bake cycles to help prevent coil-to-coil circuits
- Phase paper to help prevent phase-to-phase arcs
- Adjustable frequency of 5:1 constant torque or 10:1 variable torque for the full product line.



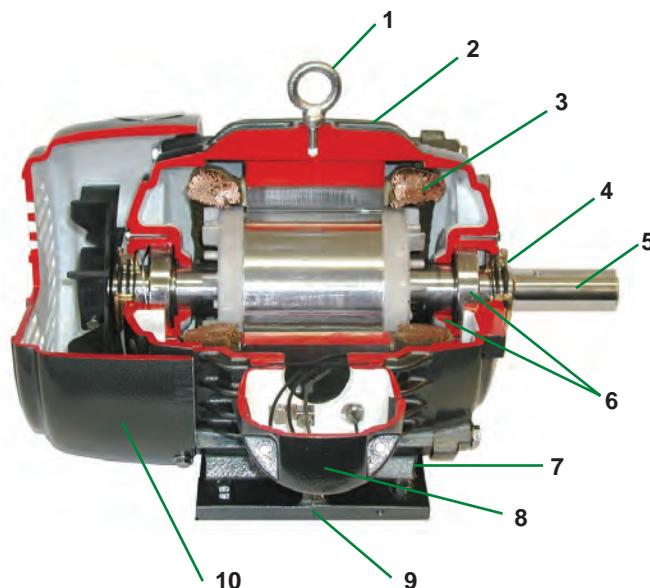
841 PLUS<sup>®</sup>



## Product Overview and Options *continued*

### Typical 841 PLUS® Motor Construction:

1. Corrosion resistant zinc dichromate-plated hardware
2. Heavy duty cast-iron enclosure for long life and reduced vibration
3. Inverter grade insulation
4. Inpro/Seal™ “VBXX” on both ends provides IP56 protection and prolongs motor life by shielding bearings from contaminants in even the harshest environments
5. Special shaft runouts for ball bearing motors of 0.0010 inches for shafts up to 1.625 inches and 0.0015 inches for larger shafts.
6. Same size oversized bearings on each end. Cast iron inner bearing caps
7. Brass breather drains
8. Oversized, double-gasketed and rotatable conduit box to protect against contaminants and correctly position non-braided, non-wicking motor leads
9. Foot flatness machined to within 0.005 inch tolerance ensures easy installation and proper alignment
10. Corrosion-resistant mill and chemical duty paint capable of withstanding a 500-hour salt spray test



### Options and Accessories

Nidec Motor Corporation offers the following custom-design options on the U.S. MOTORS brand 841 PLUS motor:

- SKF CARB™ roller bearings where applicable
- Horizontal or vertical mounting
- Vibration detectors
- Sealed insulation treatments, available on form wound, medium voltage motors above 200 HP, to help shield motor windings
- Winding and bearing thermal protection for motors 250 HP and up
- Inpro/Seal™ MGS grounding shaft rings
- API 661 Duty

#### 841 Plus Stock Motors

- 1 – 200 HP
- 2, 4, 6 pole designs
- 460 and 575 Volts
- Constant or variable torque
- 1–10 HP C-Face Footless

#### Custom and Conversion Motors

- 1 – 500 HP
- 2, 4, 6, 8 pole designs
- 200, 230, 460, 575, 2300, 4000 Volts
- Constant or variable torque
- C & D flange kits available 140 – 440 frame

### Testing and Inspection

Nidec Motor Corporation conducts extensive testing and inspections on each of its U.S. MOTORS brand 841 PLUS motors.

- No load current, power and speed
- High-potential test on stator windings

- Insulation resistance test by megohmmeter and polarization index
- Precision balanced to typical vibration levels of less than 0.05 inches per second
- Optional complete test, including full load test

For additional information, please refer to our Full Line Standard Motor Catalog (FL600) or contact your Nidec Motor Corporation representative.

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Nidec Motor Corporation, 2011; All Rights Reserved. U.S. MOTORS® is a registered trademark of Nidec Motor Corporation. Nidec Motor Corporation trademarks followed by the ® symbol are registered with the U.S. Patent and Trademark Office.

**Nidec**  
NIDEC MOTOR CORPORATION

8050 W. Florissant Avenue | St. Louis, MO 63136  
Phone: 888-637-7333 | Fax: 866-422-7758

# Suitability of Integral Horsepower (IHP)\* Motors on Variable Frequency Drives

## Variable Frequency Drives (VFD)

All Nidec Motor Corporation inverter duty motors have 40°C ambient, 1.0 SF on Inverter Power, 3300 ft. max altitude, 460 voltage or less line power, up to 10:1 speed range on Variable Torque and Class F Insulation.

Nidec Motor Corporation's INVERTER GRADE® insulated motors exceeded NEMA® MG-1 Part 30 & 31 before the standards were established.

We are a leader in the development of electric motors to withstand pulse width modulated (PWM) drives evolution from power transistors to higher switching frequency insulated gate bipolar transistors (IGBTs).

Today, as the need for medium duty motor inverter applications grows, Nidec Motor Corporation provides products to meet these demands.

Through continued research and development, Nidec Motor Corporation has included the insulation wire from its INVERTER GRADE® motors in all Premium Efficient motors, enhancing their potential inverter compatibility.

Inverter compatibility with motors is complex. As a result, many variables must be considered when determining the suitability of certain types of motors. These variables include:

- Torque requirements (Constant or Variable)
- Speed Range
- Line/System Voltage
- Cable Length between VFD & Motor
- Drive Switching (Carrier) Frequency Motor Construction
- VFD dv/dt
- High Temperatures High Humidity

Wider speed ranges, higher voltages, higher switching frequencies and increased cable lengths all add to the severity of the application and therefore the potential for premature motor failure. Nidec Motor Corporation has differentiated its products into families for your ease of selection for various inverter applications.

## Warranty Guidelines

The information within this section refers to the motor and drive application guidelines and limitations for warranty.

## Hazardous Location Motors

Use of a variable frequency drive with the motors in this catalog, intended for use in hazardous locations, is only approved for Division 1, Class I, Group D hazardous location motors with a T2B temperature code, with a limitation of 2:1 constant torque or 10:1 variable torque output. No other stock hazardous location motors are inherently suitable for operation with a variable frequency drive. If other requirements are needed, including non-listed Division 2, please contact your Nidec Motor Corporation territory manager to conduct an engineering inquiry.

## 575 Volt Motors

575 volt motors can be applied on inverters when output filters are used.

## Applying INVERTER GRADE® Insulated Motors on Variable Frequency Drives (2, 4, 6 pole)

The products within this catalog labeled "Inverter Duty" or "Vector Duty" are considered INVERTER GRADE® insulated motors. INVERTER GRADE® motors exceed the NEMA® MG-1 Part 31 standard.

Nidec Motor Corporation provides a three-year limited warranty on all NEMA® frame INVERTER GRADE® insulated motors and allows long cable runs between the motor and the VFD (limited to 400 feet typical without output filters). Cable distance can be further limited by hot and humid environments and VFD manufacturers cable limits. These motors may be appropriate for certain severe inverter application or when the factors relating to the end use application are undefined (such as spares).

Nidec Motor Corporation's U.S. Motors® brand is available in the following INVERTER GRADE® insulated motors:

- Inverter Duty NEMA® frame motors good for 10:1 Variable Torque & 5:1 Constant Torque, including Vertical Type RUSI
- Inverter Duty motors rated for 10:1 Constant Torque
- ACCU-Torc® and Vector Duty Motors with full torque to 0 Speed
- 841 Plus® NEMA® Frame Motors

## Applying motors that do not have INVERTER GRADE® insulation on Variable Frequency Drives (2, 4, 6 pole)

Meet NEMA® MG-1, Section IV, Part 31.4.4.2. They can be used with adjustable frequency drives under the following parameters: On NEMA® frame motors, 10:1 speed rating on variable torque loads & 4:1 speed range on constant torque loads. On TITAN® frame motors, 10:1 speed rating on variable torque loads. On TITAN® frame motors, inquiry required for suitability on constant torque loads. Cable distances are for reference only and can be further limited by hot and humid environments. Refer to specific VFD manufacturers cable limits.

Cable Distances			
Maximum Cable Distance VFD to Motor			
Switching Frequency	460 Volt	230 Volt	380 Volt
3 KHz	127 ft	400 ft	218 ft
6 KHz	90 ft	307 ft	154 ft
9 KHz	73 ft	251 ft	126 ft
12 KHz	64 ft	217 ft	109 ft
15 KHz	57 ft	194 ft	98 ft
20 KHz	49 ft	168 ft	85 ft

**Applying Standard & Energy Efficient Motors on Variable Frequency Drives is not recommended. VFD related failures on standard and energy efficient motors 444 frame and above will not be covered under warranty.**

\*This information applies only to Integral Horsepower (IHP) motors as defined on the Agency Approval page, under UL® & CSA® listings where indicated.

† All marks shown within this document are properties of their respective owners.



# Motor / Inverter Compatibility

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## Thermal Overloads and Single Phase Motors

Motors with thermal overloads installed may not operate properly on a VFD. The current carrying thermal overload is designed for sine wave power. Operation on a VFD may cause nuisance tripping or potentially not protect the motor as would be expected on line power. Thermo-stats or thermistors installed in the motor and connected properly to the VFD may provide suitable thermal overload protection when operating on a VFD. (Consult Codes)

Single phase motors and other fractional horsepower ratings are not designed to be operated on a VFD. Within Nidec Motor Corporation standard products, all motors NEMA<sup>®†</sup> 48 frame (5.5" diameter) and smaller are not suitable for VFD applications. Three phase 56 and 143/145 frame applications should be noted on the catalog price page; or if in doubt ask an Nidec Motor Corporation technical representative for recommendations on compatibility with a VFD.

## Slow Speed Motors

Motors with a base design of slower than six poles require special consideration regarding VFD sizing and minimizing harmonic distortion created at the motor terminals due to cable installation characteristics. Additional external PWM waveform filters and shielded motor cables designed for PWM power may be required to provide acceptable motor life. Harmonic distortion on the output waveform should be kept to a minimum level (less than 10%).

## 690V Applications

Motors that will be applied to 690VAC PWM VFDs require the use of an external filter to limit peak voltage spikes and the use of an INVERTER GRADE<sup>®</sup> motor. Where available, an alternative to using an output filter is to upgrade to a 2300V insulation system.

## Low Voltage TITAN<sup>®</sup> Motors

When using 449 frame and larger motors on PWM type VFDs consider the use of an external filter and shielded motor cables designed for PWM power to minimize harmonic distortion and peak voltages at the motor terminals. Harmonic distortion on the output waveform should be kept to a minimum level (less than 10%).

## Bearing Currents related to PWM waveform

Due to the uniqueness of this condition occurring in the field, protection of the motor bearings from shaft currents caused by common mode voltages is not a standard feature on sine wave or Inverter Duty motor products, unless explicitly noted. Some installations may be prone to a voltage discharge condition through the motor bearings called fluting.

Fluting damage is related to characteristics of the PWM waveform, VFD programming and characteristics and installation.

Bearing fluting as a result of VFD waveform characteristics may be prevented by the installation of a shaft grounding device such as a brush or ring and/or correction of the installation characteristics causing the shaft voltage condition. Insulated bearing(s) may be required. VFD filters may be needed if bearing fluting is to be avoided.

## Multiple Motors on a Single VFD

Special considerations are required when multiple motors are powered from a single VFD unit. Most VFD manufacturers can provide guidelines for proper motor thermal considerations and starting/stopping of motors. Cable runs from the VFD and each motor can create conditions that will cause extra stress on the motor winding. Filters may be required at the motor to provide maximum motor life.

## Grounding and Cable Installation Guidelines

Proper output winding and grounding practices can be instrumental in minimizing motor related failures caused by PWM waveform characteristics and installation factors. VFD manufacturers typically provide detailed guidelines on the proper grounding of the motor to the VFD and output cable routing. Cabling manufacturers provide recommended cable types for PWM installations and critical information concerning output wiring impedance and capacitance to ground.

## Vertical Motors on VFDs

Vertical motors operated on VFD power present unique conditions that may require consideration by the user or installation engineer:

- Non-reversing-ratchet operation can interfere at low speeds (up to 300 RPM) causing locked rotor and drive tripping.
- Unexpected / unacceptable system vibration and or noise levels caused by the torque pulsation characteristics of the PWM waveform, a system critical frequency falling inside the variable speed range of the process or the added harmonic content of the PWM waveform exciting a system component
- Application related problems related to the controlled acceleration/ deceleration and torque of the motor on VFD power and the building of system pressure/ load.
- The impact the reduction of pump speed has on the down thrust reflected to the pump motor and any minimum thrust requirements of the motor bearings
- Water hammer during shutdown damaging the non-reversing ratchet

## Humidity and Non-operational Conditions

The possible build-up of condensation inside the motor due to storage in an uncontrolled environment or non-operational periods in an installation, can lead to an increased rate of premature winding or bearing failures when combined with the stresses associated with PWM waveform characteristics. Moisture and condensation in and on the motor winding over time can provide tracking paths to ground, lower the Megohm resistance of the motor winding to ground, and lower the Corona Inception Voltage level of the winding.

Proper storage and maintenance guidelines are important to minimize the potential of premature failures. Space heaters or trickle voltage heating methods are the preferred methods for drying out a winding that has low megaohm readings. Damage caused by these factors are not covered by the limited warranty provided unless appropriate heating methods are properly utilized during non-operational periods and prior to motor start-up.

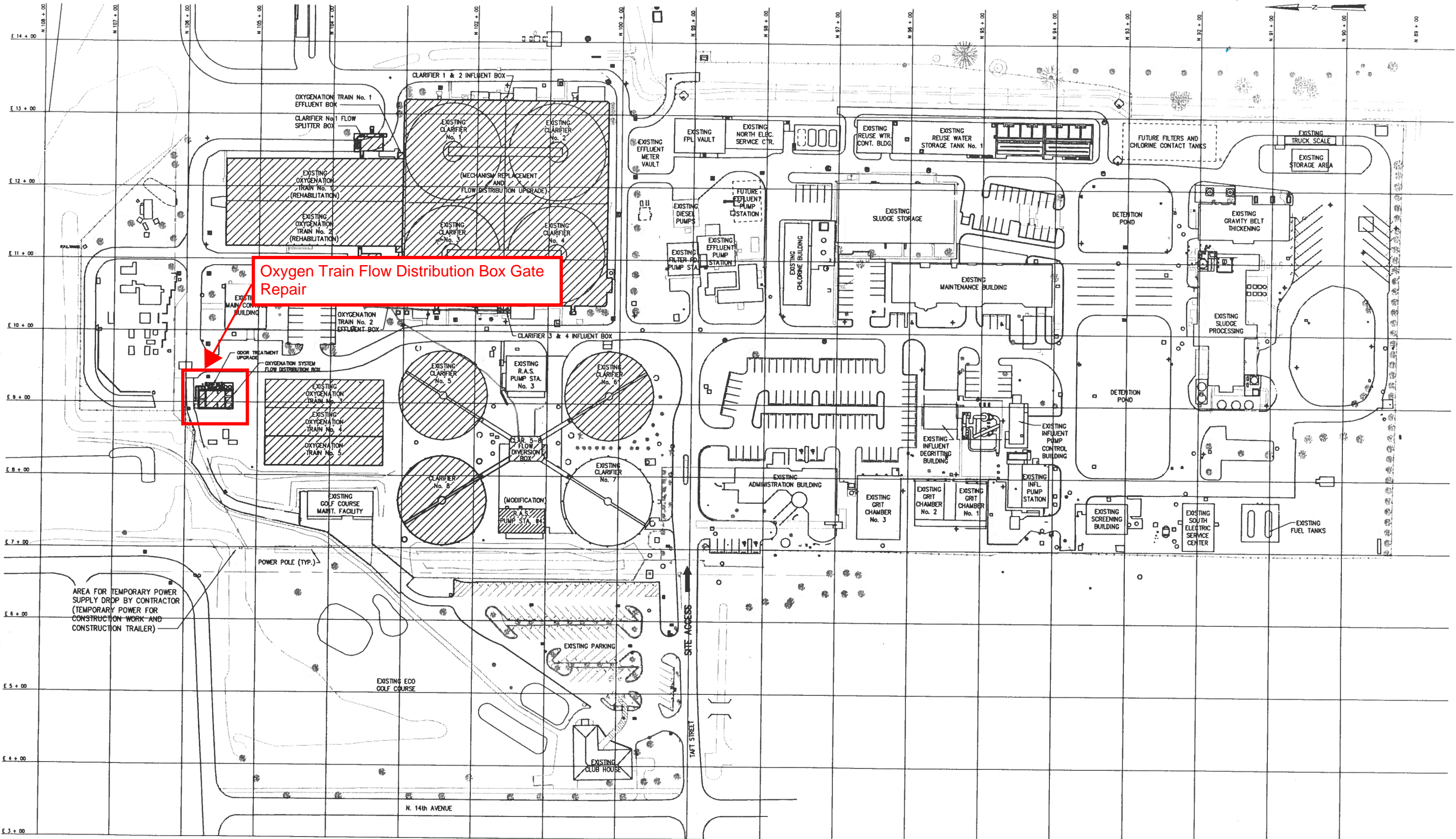
**NEMA<sup>®†</sup> Application Guide for AC Adjustable Speed Drive  
Systems: <http://www.nema.org/stds/acadjustable.cfm#download>**

\*This information applies only to Integral Horsepower (IHP) motors as defined on the Agency Approval page, under UL<sup>®†</sup> & CSA<sup>®†</sup> listings where indicated.

† All marks shown within this document are properties of their respective owners.



**PACKAGE 3 – OXYGENATION TRAIN FLOW DISTRIBUTION BOX**



Oxygen Train Flow Distribution Box Gate Repair

LEGEND



11/17/2002/11:19 A.M. - 47 H.UD - H:\2424\ENR\824204.dwg - SHEET 1, SP-TF-28, 824204 - PS 1-1

DESIGNED	P.J.V.
DRAWN	R.D.A.
CHECKED	R.F.C./G.N.C.
PROJ. ENGR.	P.J.V.

NO.	DATE	ISSUED FOR	BY
3	11/15/02	CONFORMED FOR CONSTRUCTION	P.J.V.
2	9/17/02	BIDDING	P.J.V.
1	8/29/02	PERMITTING	P.J.V.

PAUL J. VINCI  
No. 41787

**HAZEN AND SAWYER**  
Environmental Engineers & Scientists  
4000 Hollywood Boulevard, Suite 7504  
Hollywood, Florida 33021  
Certificate of Authorization Number: 2771

SCALE  
1"=60'

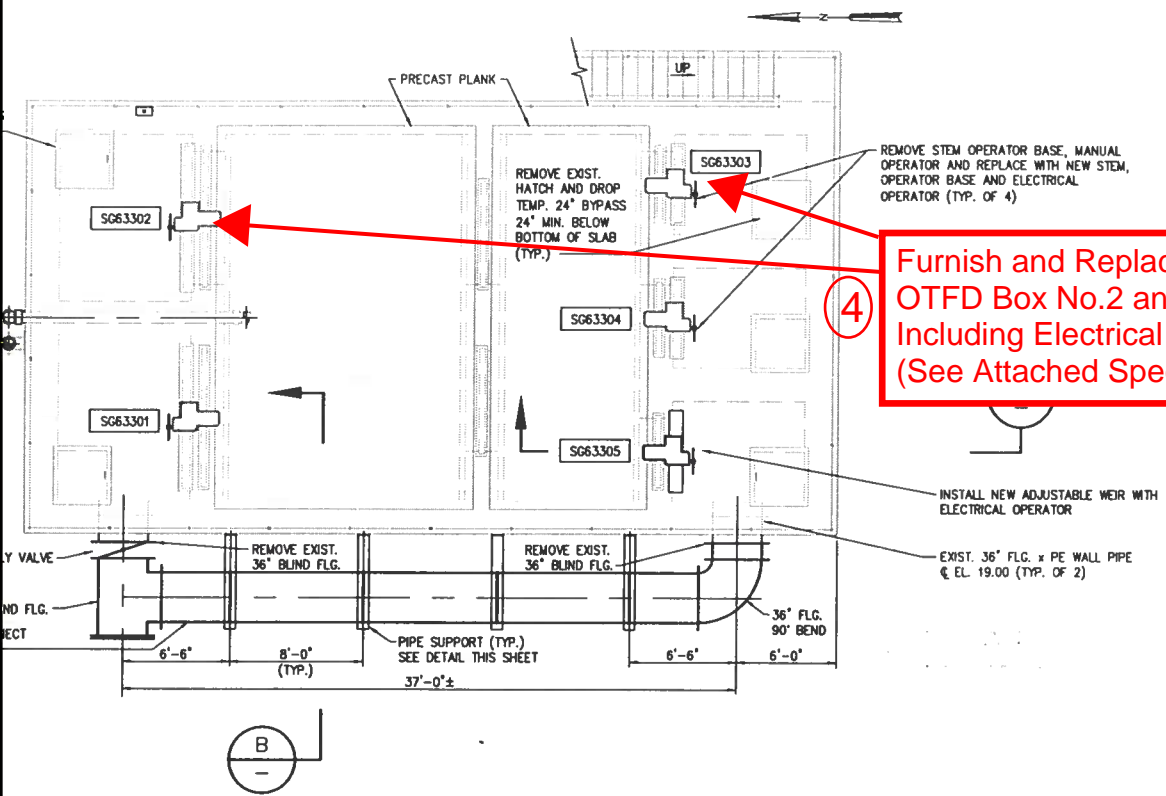
CONTRACT: -  
CLIENTS PROJECT: 99-9048  
ENGINEERS PROJECT: 8242  
CAD REFERENCE: 8242004

CITY OF HOLLYWOOD

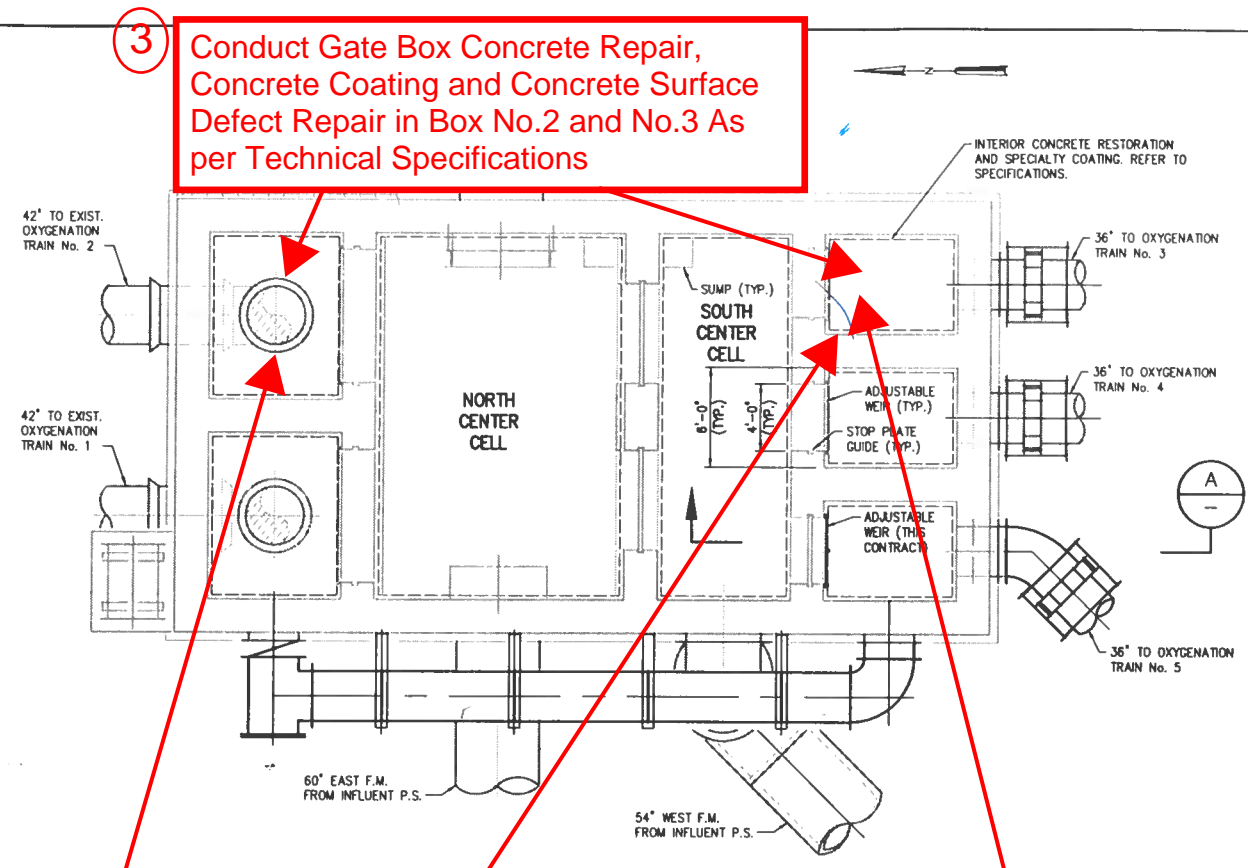
SOUTHERN REGIONAL WASTEWATER TREATMENT PLANT  
2002 W.W.T.P. UPGRADE

DATE: SEPTEMBER 2002  
SHEET: 4 of 170  
DRAWING: G-4

SITE PLAN



**UPPER PLAN**  
3/16"=1'-0"



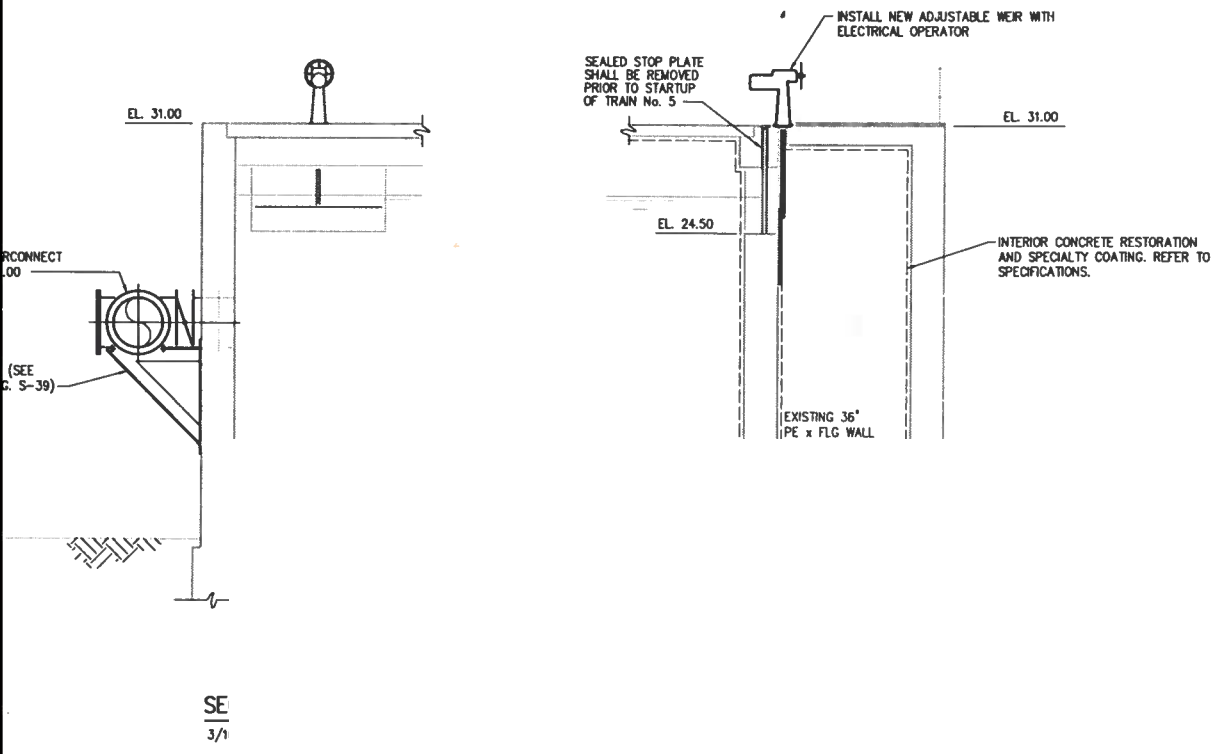
**LOWER PLAN**  
3/16"=1'-0"

**4** Furnish and Replace Gate for OTFD Box No.2 and No.3 Including Electrical Operators (See Attached Specification)

**3** Conduct Gate Box Concrete Repair, Concrete Coating and Concrete Surface Defect Repair in Box No.2 and No.3 As per Technical Specifications

**2** Conduct Pressure Cleaning and Sandblasting of OTFD Box No.2 and No.3

**1** Install Stop Logs (to Be Provided by the City) to Isolate Each Flow Distribution Cell As Needed



**NOTE:**  
COMPLY WITH SEQUENCE REQUIREMENTS  
SEE CONSTRUCTION SEQUENCE DRAWINGS.

**LEGEND**  
— EXISTING FACILITY  
— NEW FACILITY

2. Provide stem, stop collar, operator base, stem cover and other accessories necessary for electric operator replacement requirements.

DESIGNED	P.J.V.
DRAWN	R.D.A.
CHECKED	R.F.C./G.N.C.
PROJECT ENGINEER	P.J.V.

PAUL J. VINCI  
P.E.

**HAZEN AND SAWYER**  
Environmental Engineers & Scientists  
4000 Hollywood Boulevard, Suite 750N  
Hollywood, Florida 33021  
Certificate of Authorization Number: 2771

SCALE  
3/16"=1'-0"

CONTRACT: -  
CLIENTS PROJECT: 99-9048  
ENGINEERS PROJECT: 8242



CITY OF HOLLYWOOD

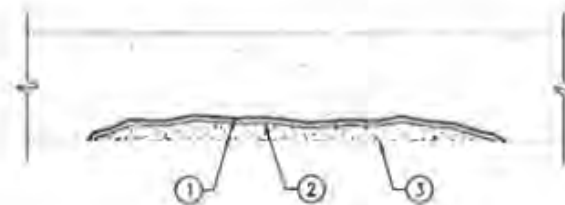
SOUTHERN REGIONAL WASTEWATER TREATMENT PLANT  
2002 W.W.T.P. UPGRADE

**EXISTING OXYGENATION SYSTEM  
FLOW DIVERSION BOX - MODIFICATIONS**

DATE: SEPTEMBER 20...  
SHEET: 64 of 17  
DRAWING: M-52

## WEIR GATE SCHEDULE

<u>Location</u>	<u>Function</u>	<u>Quantity</u>	<u>Gate Width</u>	<u>Gate Height</u>	<u>Seal Type</u>	<u>Seating/Unseating Head (ft)</u>	<u>Operator Type</u>	<u>Stem</u>
Existing Oxygenation System Flow Distribution Box	Influent to Train No. 3 and No. 4 <b>(Replace Manual Operator with Electric Operator only)<sup>(2)</sup></b>	2	4'-0"	4'-0"	"J" Mounted on Slide Plate	5/5	Motor Operated Bench Stand	Single
Existing Oxygenation System Flow Distribution Box	Influent to Train No. 1 and No. 2 <b>(Replace Manual Operator with Electric Operator only)<sup>(2)</sup></b>	2	8'-0"	4'-0"	"J" Mounted on Slide Plate	5/5	Motor Operated Bench Stand	Single

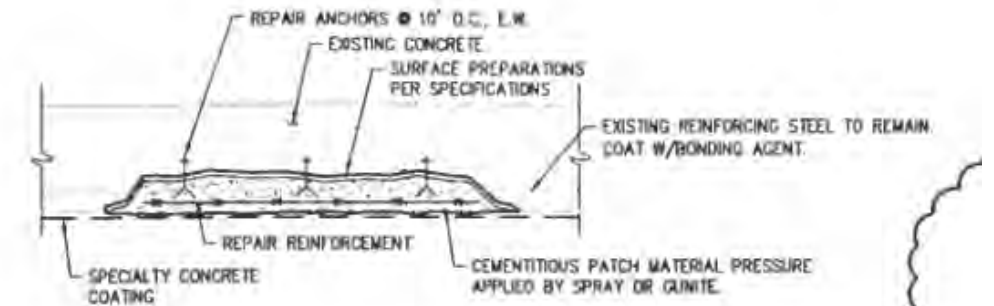


**PROCEDURE:**

- ① REMOVE ALL LOOSE MATERIAL. CLEAN SUBSTRATE. SUBSTRATE SHOULD BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER.
- ② APPLY EPOXY MATERIAL PATCH.
- ③ APPLY SPECIALTY COATING PER SPECIFICATIONS.

REPAIR PROCEDURE FOR SPALLS LESS THAN OR EQUAL TO 1-INCH IN DEPTH (VERTICAL/OVERHEAD)

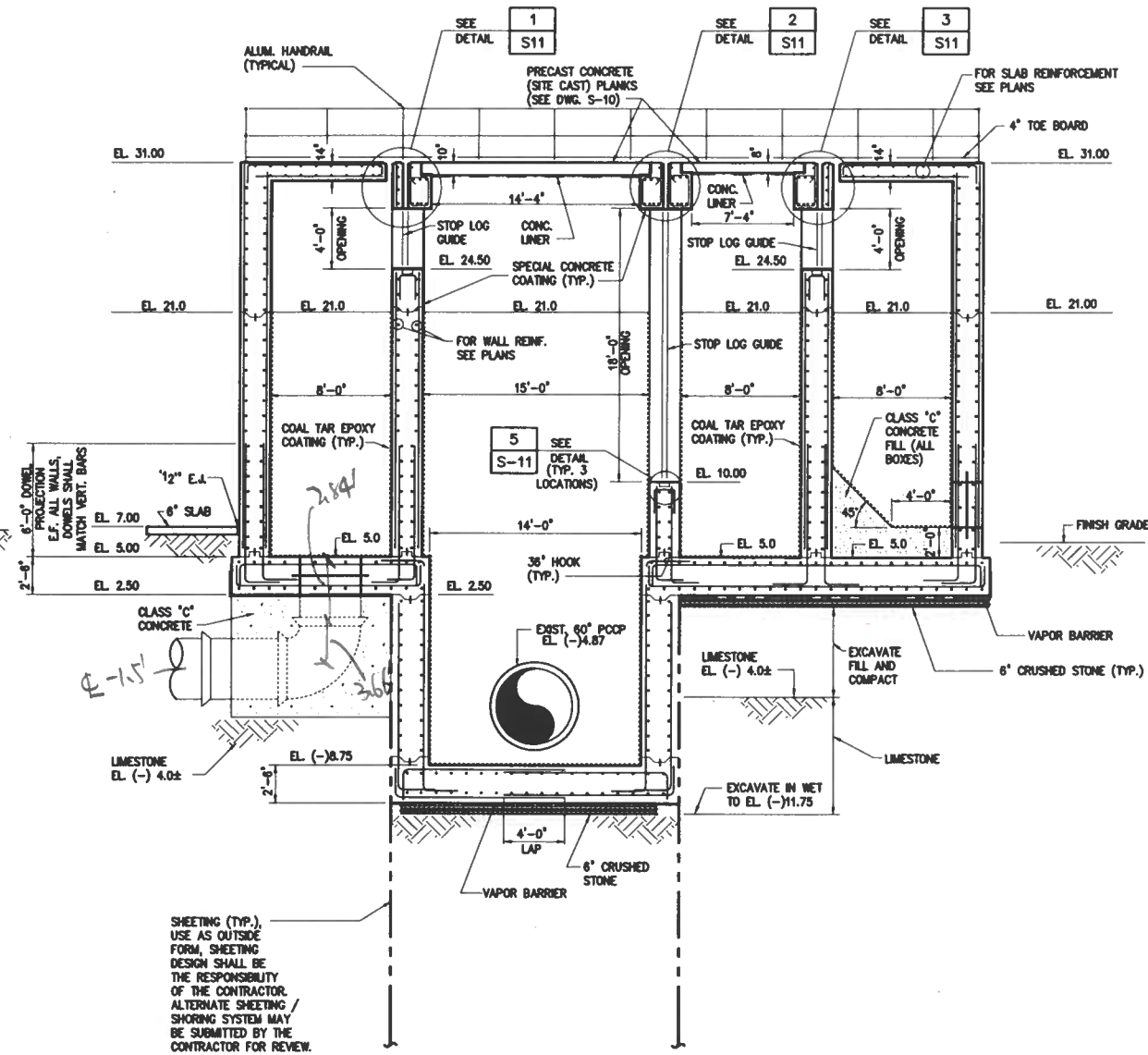
N.T.S.



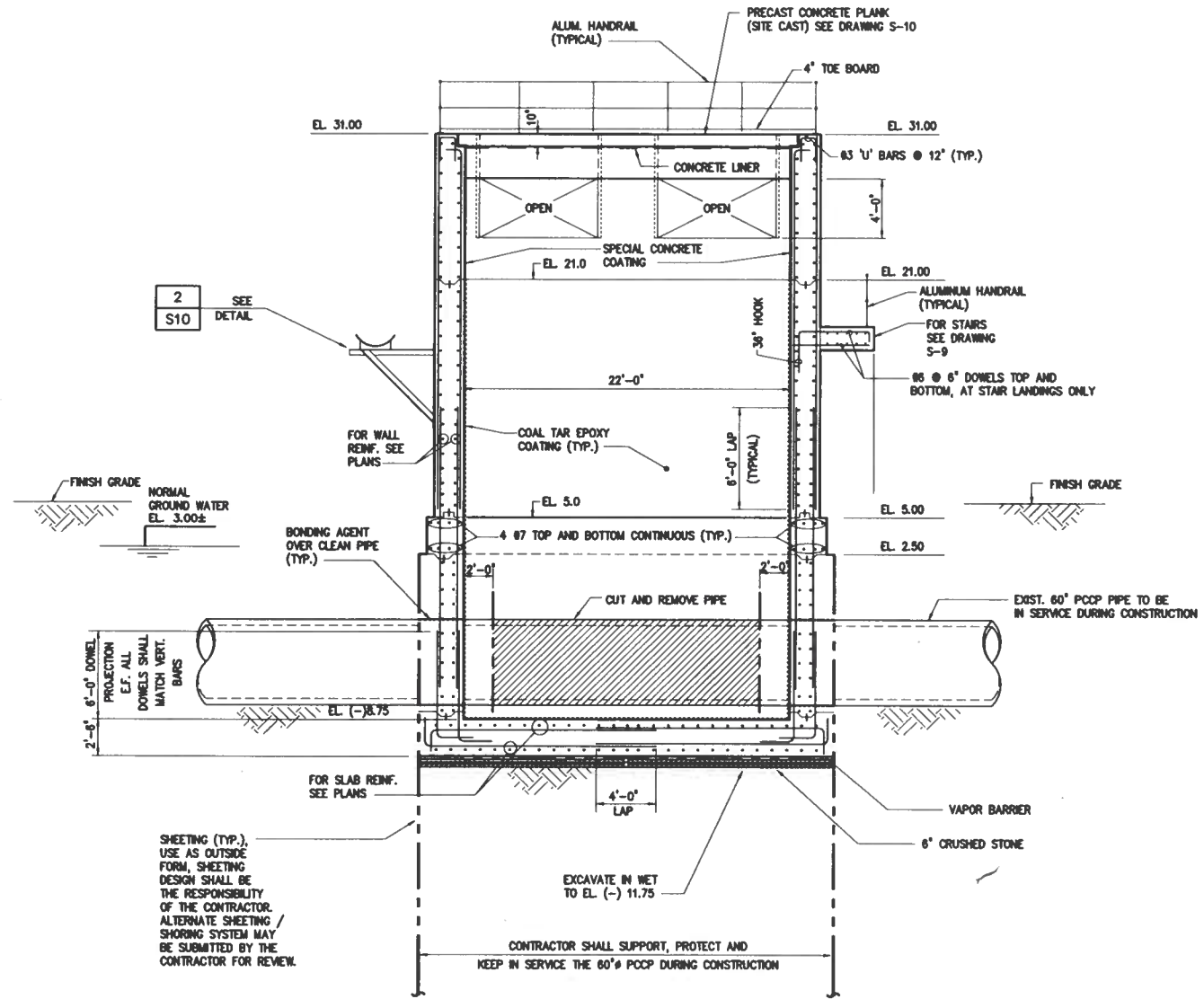
REPAIR PROCEDURE FOR SPALLS GREATER THAN 1-INCH IN DEPTH (VERTICAL/OVERHEAD)

N.T.S.

7/27/99/2-11 P.M. - 22 P.M. - K:\MS\VE\CON\148338.D 0023: 0 - Plot Scale 1:4

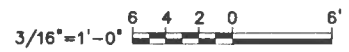


SECTION A  
3/16"=1'-0" S6



SECTION B  
3/16"=1'-0" S6

**PAINTING NOTE:**  
ALL EXTERIOR WALLS ABOVE FINAL GRADE SHALL BE PAINTED IN ACCORDANCE WITH SECTION 9A OF THE CONTRACT SPECIFICATIONS.



**RECORD DRAWING**

DESIGNED	S.J., A.M.W.
DRAWN	D.J.R.
CHECKED	S.J., A.M.W.
PROJ. ENGR.	P.J.V.
DATE	ISSUED FOR
3 11/26/97	RECORD DRAWING
2 12/18/92	BIDDING
1 9/25/92	CONSTRUCTION PERMIT

ANTON M. WYPYCH  
No. 9951 P.E.



MIAMI - HOLLYWOOD - BOCA RATON - JUPITER - FT. PIERCE - RALEIGH - NEW YORK

SCALE  
3/16"=1'-0"

CONTRACT:	6
CLIENTS PROJECT:	929011
ENGINEERS PROJECT:	4865
CAD REFERENCE:	4865S8



CITY OF HOLLYWOOD

SOUTHERN REGIONAL WASTEWATER TREATMENT PLANT	
TREATMENT PROCESS RELIABILITY UPGRADE	
OXYGENATION TRAIN FLOW DISTRIBUTION BOX SECTIONS - SHEET 1	

DATE:	DECEMBER 1992
SHEET:	98 OF 213
DRAWING:	S-8

## SECTION 15200 - GATE OPERATORS

### PART 1 -- GENERAL

#### 1.01 THE REQUIREMENT

- A. Furnish and install all gate operators and accessory equipment as specified herein and as shown on the Drawings.
- B. The gate operators and equipment shall be provided complete with all accessories, special tools, spare parts, mountings, anchor bolts and other appurtenances as specified and as may be required for a complete and operating installation.
- C. All gate operators and accessory equipment specified herein shall be the product of and be furnished by the same supplier of the weir gates.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01300 - Submittals
- B. Section 01650 – Equipment Testing and Startup
- C. Division 5 - Metals
- D. Section 09900 – Painting
- E. Section 11000 – Equipment General Provisions
- F. Section 15204 - Weir Gates
- G. Division 16 - Electrical
- H. Division 17 - Instrumentation

#### 1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Commercial Standards
  - 1. ASTM - American Society for Testing Materials
  - 2. AISC - American Institute of Steel Construction
  - 3. AWS - American Welding Society
  - 4. AFBMA - Anti-friction Bearings Manufacturer's Association
  - 5. NEMA - National Electrical Manufacturer's Association

#### 1.04 SUBMITTALS

- A. In accordance with the procedures and requirements set forth in Section 01300 - Submittals, submit the following:
1. Shop drawings and catalog data.
  2. Equipment specifications and data sheets identifying all materials used and methods of fabrication.
  3. Complete assembly, layout required clearances, installation and foundation with clearly marked dimensions.
  4. Complete motor data, electrical nameplate data and wiring descriptions.
  5. Total weight of the equipment plus the approximate total shipping weight.
  6. A list of manufacturer's recommended special tools, spare parts and recommended lubricants to be supplied.
  7. Operation and maintenance manuals.

#### 1.05 COORDINATION

- A. The Contractor shall coordinate all details, locations, clearances, and other conditions with the various equipment suppliers, so that the gate operators function as part of a complete system.
- B. The Contractor shall provide the services of a qualified manufacturer's technical representative who shall adequately supervise the installation and testing of all equipment furnished under this Contract and shall instruct the Owner's operating personnel in its maintenance and operation. The services of the manufacturer's representative shall be provided for a period of not less than two (2) days as follows:
1. At least one trip of one (1) day to check and supervise the equipment installation and field tests.
  2. One trip of one (1) day after acceptance of the equipment to supervise initial start-up and operation and instruct the Owner's personnel in proper operation and maintenance of the equipment.
- C. Any additional time required to achieve successful installation and operation shall be at the expense of the Contractor. The manufacturer's representative shall sign in and out at the office of the Engineer's Resident Project Representative on each day he is at the project.
- D. A written report covering the representative's findings and installation approval shall be mailed directly to the Engineer coverings all inspection and outlining in detail any deficiencies noted.

- E. The times specified are exclusive of travel time to and from the facility and shall not be construed as to relieve the manufacturer of any additional visits to provide sufficient service to place the equipment in satisfactory operation.

#### 1.06 GATE SCHEDULE

- A. Locations, dimensions, design criteria, number required, etc. for the gate operators are indicated in the appropriate Gate Schedule in Section 15204 – Weir Gates and shown on the Drawings.

### PART 2 -- PRODUCTS

#### 2.01 MANUAL OPERATORS

- A. Manual operation shall be by handwheel or crank-operated floor stand or bench stand with removable crank as indicated on the Drawings and specified in the Gate Schedule.
  - 1. Handwheel-operated type shall be without gear reduction and crank-operated type shall have either single or double gear reduction depending upon the lifting capacity required.
  - 2. Each type shall be provided with a threaded cast bronze lift-nut to engage the operating stem.
- B. All weir gates 3 feet wide and larger shall be crank-operated, unless otherwise indicated herein as shown on the Drawings.
- C. All crank-operated weir gates 3 feet wide and larger shall be suitable for operation by a portable gate operator.
- D. Tapered anti-friction roller or ball thrust bearings shall be provided above and below a flange on the operating nut to support both opening and closing thrusts.
- E. Floor stands or bench stands shall operate the gates under the specified operating head with not greater than a 40-pound pull on the crank or handwheel.
  - 1. Gears, where required, shall be steel or cast iron with machine cut teeth designed for smooth operation.
  - 2. The pinion shafts on crank-operated floor stands, either single or double, shall be stainless steel, and supported on tapered roller bearings.
  - 3. All components shall be totally enclosed in a cast iron weather-proof housing with cover.
  - 4. Positive mechanical seals shall be provided on the operating nut and the pinion shafts where they extend from the cast iron case or gear box to retain lubricant and to exclude moisture and dirt.
  - 5. Lubricating fittings and extensions shall be provided for the lubrication of all gears and bearings.

6. The removable crank shall be cast iron with a revolving brass grip.
  7. The removable handwheel shall be fabricated steel or cast iron, designed for rough treatment and minimum weight.
  8. Floor stands shall include a cast iron pedestal designed to position the input shaft or handwheel approximately 36 inches above the operating floor.
    - a. The pedestals shall be of the straight or offset design as specified herein or as shown on the Drawings.
  9. Bench stands shall be provided with a rectangular cast iron base machined and drilled for mounting purposes.
  10. An arrow with the word "open" shall be permanently attached or cast on the floor stand, bench stand, or handwheel indicating the direction of rotation to open the gate.
- F. All gates shall be provided with a clear, butyrate plastic rising stem cover, which shall not discolor or become opaque for a minimum of five (5) years after installation.
1. "Fully Open" and Fully Closed" positions shall be marked on each cover with mylar labels.
  2. Covers shall be graduated in one (1) inch and one (1) foot increments.
  3. The top of the stem cover shall be closed and the bottom shall be mounted in an adapter plate or housing for easy field mounting to the gear housing.

## 2.02 ELECTRIC MOTOR OPERATORS

- A. All motorized valves shall be furnished by the Contractor through the valve manufacturers as a complete package. Motor driven valve operators shall be furnished and installed in accordance with the applicable requirements shown on the process and instrumentation diagrams and electrical elementary diagrams. Operators shall comply with AWWA requirements for electric operators.
- B. Electric operators including the motor, all required gearing, integral continuous duty rated reversing starter, AC line surge suppressors, controls and switches, as manufactured by Limitorque, EIM or AUMA.
- C. Operator capacity shall be adequate to continuously operate the valve under all operating conditions. Unless otherwise indicated, or specified, motor operators shall be furnished complete with motors, limit switch operating mechanisms, travel limit switches, torque switches, transmitters, controllers, starters, lightning and surge suppression, terminal blocks, gear reducers, handwheel, gearing, necessary components, and incidental accessories as follows:
  1. All three phases of the power supply shall be monitored. The Operator shall open, deenergizing the motor upon detection of single phasing.

2. Logic circuits shall be protected against spurious voltage spikes, using opto-isolators in circuits connected to any remote input or output signals.
- D. Enclosure: The starter for 460 volt motor operators and all local devices shall be mounted in a common NEMA 4 cast aluminum enclosure. The enclosure shall be permanently affixed to the valve operator housing. Provide one incoming line main circuit breaker inside the panel.
- E. Valve (or gate) Stops: Valve stops for the operators shall be positive in action. Closing shall be complete, and opening full. Stops shall be filed adjustable to the required settings. The torque switches shall prevent any excessive mechanical stress or electrical overload in any direction of travel.
- F. Limit switches and gearing shall be an integral part of the motorized valve operator. Where required for a 460 volt motor driven operator, the limit switch gearing shall be of the intermittent type, totally enclosed in its own gear case, grease lubricated to prevent dirt and foreign matter from entering the gear train and shall be made of bronze or stainless steel. Limit switches shall be of the adjustable type capable of being adjusted to trip at any point between the normal position (full open, or full closed) and 75 percent of the travel to the opposite position.
- G. Local (Motor) Devices: Local devices shall include, but not be limited to the following:
1. Torque switches, responsive to high torque encountered in either direction of travel shall be provided. A torque switch that has tripped due to mechanical load shall not reset when the operator motor has come to a halt.
  2. LOCAL/OFF/REMOTE selector switch and monitor relay shall be provided with dry contacts for indication that the unit is the LOCAL or OFF or REMOTE position. Contacts shall be dry type rated 10A at 120VAC.
  4. OPEN/STOP/CLOSE switch that operates when in LOCAL mode to allow manual setting of gate position at the operator with full OPEN, full CLOSED, OVERLOAD and POWER status lights. All lights shall be high intensity lights.
  5. The motorized operators for modulating service shall be furnished with an integral position indicator/transmitter/controller. The unit shall be internally powered, factory calibrated and furnished with adjustable zero, span, gain and deadband controls. The position indicator/transmitter shall provide a linear, isolated, 4-20mA, 24 VDC output to remote instrumentation and controls proportional to 0-100 percent travel span. An external DC power source shall not be required. The position controller shall accept a linear 4-20mA, 24 VDC input signal proportional to 0-100 percent travel span and shall generate appropriate outputs to the reversing starter to open/close the valve until the desired position has been reached as determined by the position feedback signal to the position controller. Input signal isolation shall be provided.
  6. Position indicator calibrated to 0-100 percent travel span.
- H. Operating Unit Gearing: The actuator shall be double reaction unit with the capability of quickly changing the output speed with a gear change. Gear combination shall be selected

to provide a minimum travel time of two minutes between the full open and full closed position of the driven valve or gate. The power gearing shall consist of generated spur or helical gears of heat-treated steel, and worm gearing for self-locking. The worm shall be of hardened alloy steel and the worm gear shall be of alloy bronze. All power gearing shall be grease-lubricated. Ball or roller bearings shall be used throughout for 460 volt motor operators. A mechanical dial position indicator to display valve position in percent of valve opening shall be provided. The gearing shall comply with AWWA requirements.

- I. Stem Nut: The actuator for other than quarter turn valves shall have a stem nut of iron per AWWA C 540-93. The nut arrangement, where possible, shall be of the two-piece type to simplify field replacement. The stem nut for rising stem valves must be capable of being removed from the top of the actuator without removing the actuator from the valve, disconnecting the electrical wiring, or disassembling any of the gearing within the actuator.
- J. Manual Operation: A handwheel shall be provided for manual operation. The handwheel shall not relocate during hand operation nor shall a fused motor prevent manual operation.
- K. When in manual operating position, the 460 volt motor driven unit will remain in this position until motor is energized at which time the valve operator will automatically return to electric operation and shall remain in motor position until handwheel operation is desired. This movement from motor operation to handwheel operation shall be accomplished by a positive declutching knob or lever which will disengage the 460 volt motor and motor gearing mechanically but not electrically. Hand operation must be reasonably fast and require no more than 80 pounds of rim effort at the maximum required torque. It shall not be possible for the unit to be simultaneously in manual and motor operation.
- L. 460 Volt Motors: All motors on valves with nominal pipe sizes 3 inches and larger and all gate operators shall be designed for 460 volts 3 phase 60 Hz power and all motors or valves with nominal pipe sizes less than 3 inches shall be designed for 120 VAC. The motor shall be specifically designed for actuator service and shall be of high torque, squirrel cage reversible, totally enclosed, nonventilated (TENV) construction, with motor leads brought into the limit switch compartment without having external piping or conduit box. Motor insulation shall be NEMA Class B with a maximum continuous temperature rating of 120°C (rise + ambient). Motors for intermittent open/close service shall be sized to have a rated running time at the rated running torque of 15 minutes without exceeding the temperature rating of the insulation system. Motors for modulating service shall be sized for continuous full time modulating duty times a 1.5 service factor without exceeding the temperature rating of the insulation system. Running load torque shall be not more than 20 percent of the rated seating/unseating torque and the above duty conditions.
- M. The motors shall conform to applicable parts of Section 16040 entitled "Electric Motors".
- N. Speed-torque curves for the motors and torque calculations for seating, unseating, and running conditions shall be submitted. The maximum valve torque (seating/unseating) shall be less than 50 percent of stall torque or starting torque potential of the motor whichever is greater.
- O. Operator Types:
  - 1. Full open or full close using discrete logic control.

a. Local operation

LOCAL/REMOTE signal selector switch  
OPEN/CLOSE pushbuttons and status lights  
Fault (torque) indication  
0-100% position indication

b. Remote operation

REMOTE and power on status to control system  
Full OPEN status to control system  
Full CLOSED status to control system  
OPEN command (momentary discrete) from control system  
CLOSE command (momentary discrete) from control system  
FAULT (torque) status to control system

c. Operator Schedule:

CG 33201 – Upflow Filter Product Diversion Gate

2. Modulating service using a 4-20 mA analog input

a. Local operation

LOCAL/OFF/REMOTE selector switch  
OPEN/STOP/CLOSE pushbuttons and status lights  
Fault (torque) indication  
0-100% position indication

b. Remote operation

REMOTE/OFF/LOCAL status to control system  
0-100% position to control system  
0-100% position setpoint from control system

c. Operator schedule:

SG 63301 – Oxygenation Train No.1 Flow Control Gate  
SG 63302 – Oxygenation Train No.2 Flow Control Gate  
SG 63303 – Oxygenation Train No.3 Flow Control Gate  
SG 63304 – Oxygenation Train No.4 Flow Control Gate  
SG 63305 – Oxygenation Train No.5 Flow Control Gate

2.03 PORTABLE OPERATOR

- A. Provide a portable electric drill-type operator designed for use with a crank operated bench stands. The operator shall be supported solidly on a fabricated steel tripod, which is adjustable to the height of the input shaft on the bench stand.

- B. The operator shall be a heavy duty 1 1/4-inch electric drill with a maximum output of 2.4 horsepower, a heavy duty, and double pawl trigger and reversing switch. Operator shall be supplied with three-conductor cord and three-plate, grounding type plug suitable for operation on 240 volt 60 hertz single-phase power. Operator shall be designed to supply torque of 50 ft. lbs. operate at a speed of 250 rpm without load and 160 rpm with load. The overload release clutch shall be an adjustable, spring-loaded drive, pawl type, releasing instantly at preset, predetermined torque of 600-inch lbs. The adapter shall fit the pinion shafts of gate hoists. The tripod shall be fabricated of welded steel tubing with fully welded gusset plates and jackscrew with rotating nut for changing the height of the drill support.

### PART 3 -- EXECUTION

#### 3.01 INSTALLATION

- A. Gate operators shall be installed according to the manufacturer's instructions.

#### 3.02 PAINTING

- A. All ferrous metal parts, except stainless steel, of the slide gate operators, shall be painted with a prime coat, one shop coat and one field-applied finish coat, in accordance with the Paint Schedule included in Section 09900, Painting.
- B. Surfaces shall be blast-cleaned in accordance with the Steel Structure Painting Council Specification SP #10 before painting.
- C. A prime coat shall be applied to the castings after cleaning and prior to machining. The shop coat shall be applied after assembly.
- D. All machined iron surfaces, including drilled and tapped holes, shall be coated with a protective grease.
- E. The surfaces of the wall thimbles in contact with concrete shall be remain uncoated.

#### 3.03 TOOLS, SUPPLIES AND SPARE PARTS

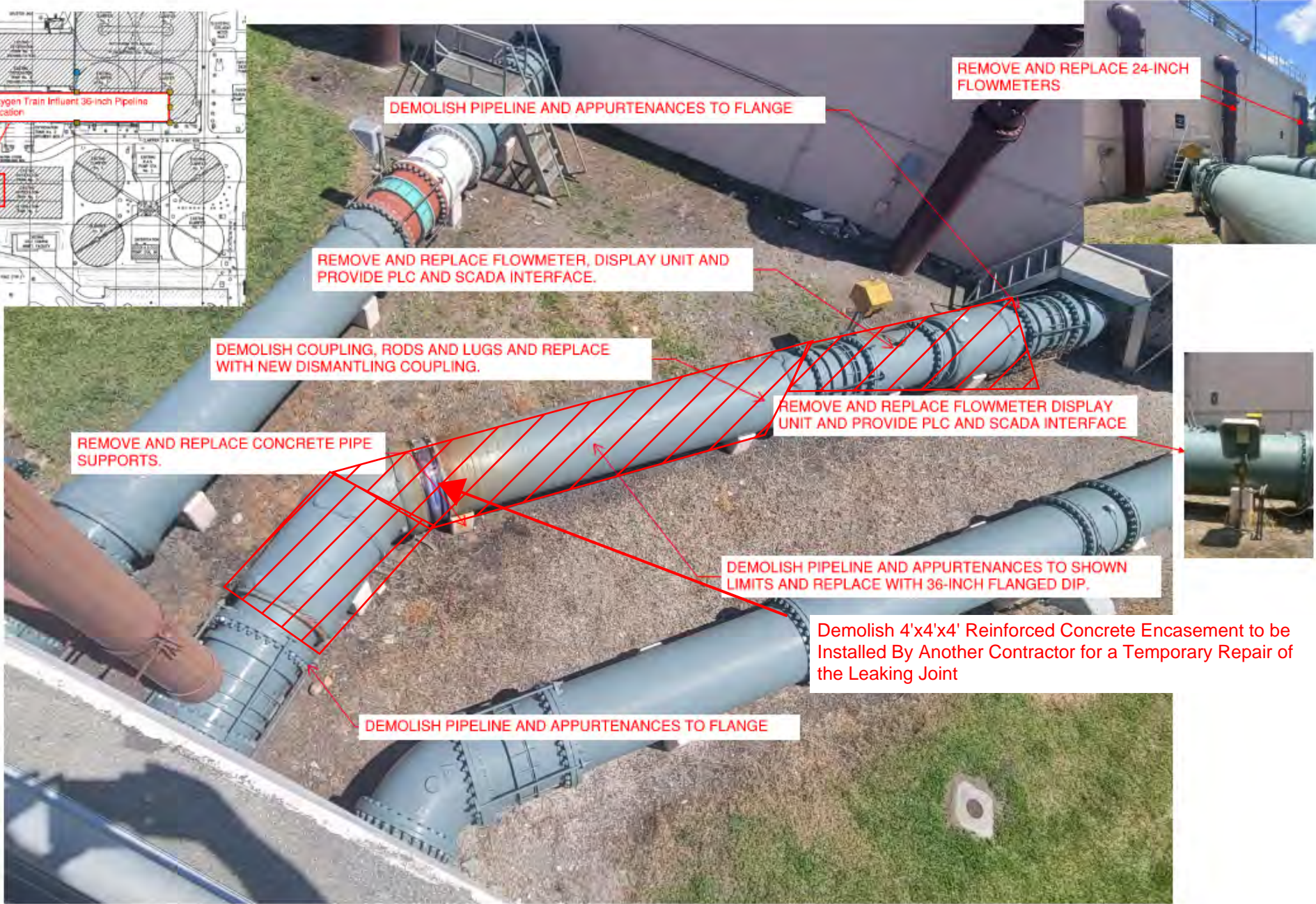
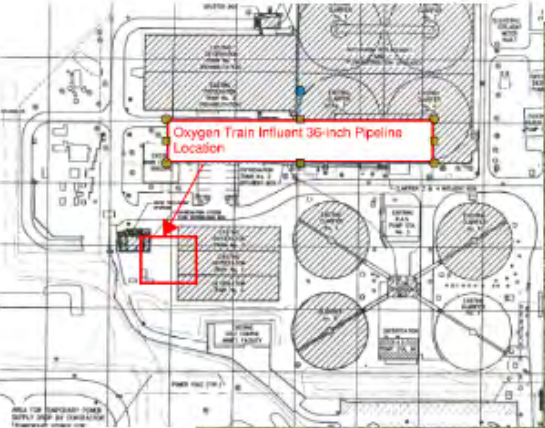
- A. The equipment manufacturer shall furnish all special tools necessary to disassemble, service, repair and adjust the equipment.
- B. One complete set of electric motor operator shall be provided as spare part for all the electric motor operators.<sup>1</sup>**

- END OF SECTION -

---

<sup>1</sup> Addendum No. 1, October 11, 2002

**PACKAGE 4 – OXYGENATION TRAIN INFLUENT PIPING AND FLOW METER REPLACEMENT**



REMOVE AND REPLACE 24-INCH FLOWMETERS

DEMOLISH PIPELINE AND APPURTENANCES TO FLANGE

REMOVE AND REPLACE FLOWMETER, DISPLAY UNIT AND PROVIDE PLC AND SCADA INTERFACE.

DEMOLISH COUPLING, RODS AND LUGS AND REPLACE WITH NEW DISMANTLING COUPLING.

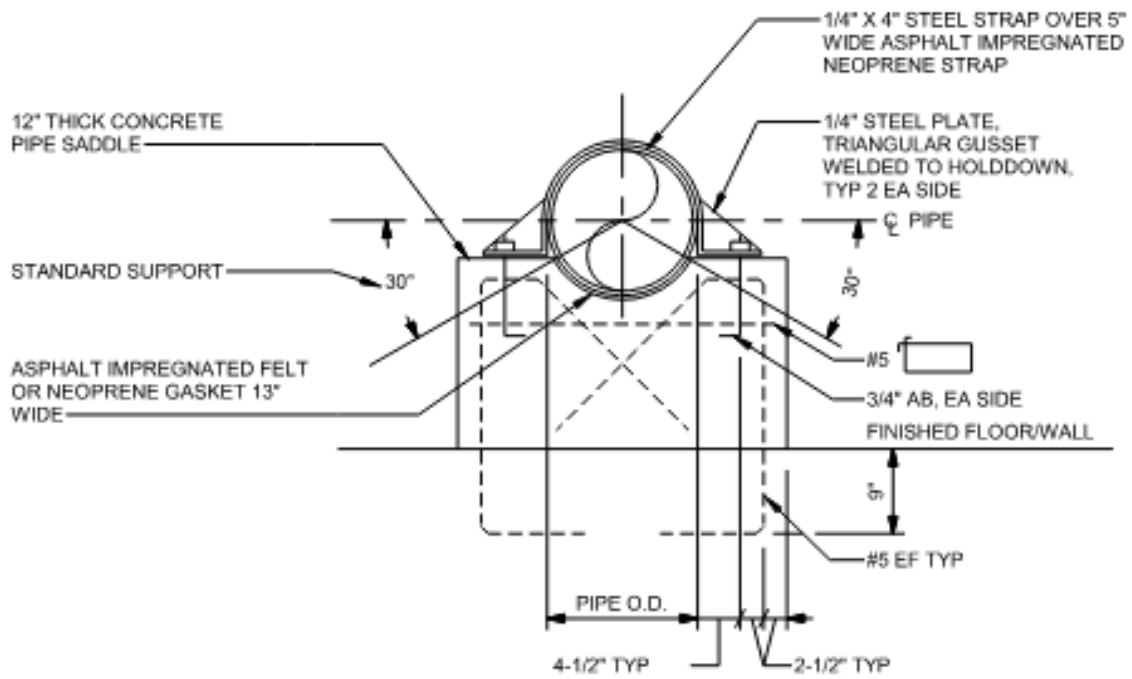
REMOVE AND REPLACE CONCRETE PIPE SUPPORTS.

REMOVE AND REPLACE FLOWMETER DISPLAY UNIT AND PROVIDE PLC AND SCADA INTERFACE

DEMOLISH PIPELINE AND APPURTENANCES TO SHOWN LIMITS AND REPLACE WITH 36-INCH FLANGED DIP.

Demolish 4'x4'x4' Reinforced Concrete Encasement to be Installed By Another Contractor for a Temporary Repair of the Leaking Joint

DEMOLISH PIPELINE AND APPURTENANCES TO FLANGE



**D2124** TYPE 24 CONCRETE SADDLE PIPE SUPPORT  
N.T.S.

**PACKAGE 5 – MISCELLANEOUS FLOW METER REPLACEMENT**

