CITY OF HOLLYWOOD

PROJECT NO. 22-9216A

BAR SCREEN MODIFICATIONS

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Invitation for Bids

IFB-150-24-JJ

SRWWTP BAR SCREEN MODIFICATIONS NO.9216A

FOR THE

CITY OF HOLLYWOOD, FLORIDA (CITY)

IFB Issue Date: November 22, 2023
Questions Due Date: December 7, 2023
Submittal Due Date: December 14, 2023, at 3 p.m. ET

IFB-150-24-JJ
SRWWTP BAR SCREEN MODIFICATIONS
ESSD PROJECT NO.9216A

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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 bar screen modifications 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 **December 14, 2023, by 3:00 PM EST**, and will be opened in a virtual public setting on **December 14, 2023, at 3:00 PM EST** at **https://cohfl.webex.com/**.

Submittals shall be received electronically through OpenGov.

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 (Non-Mandatory)

There will be a non-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 non-mandatory pre-bid conference will be held on:

November 30, 2023, at 2:00 pm
Southern Regional Wastewater Treatment Plant
1621 N. 14th 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 or by phone at (954) 921-3290, or Staci Alli, Office Assistant I at 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 **December 7, 2023, by 5:00 PM EST** in order to receive a response.

Project Manager: Marta P. Alonso, Department of Public Utilities, email at: 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 complete the following project elements at the Southern Regional Wastewater Treatment Plant as specified herein:

- Skylight Replacement
- Gantry Crane Installation
- Bar Screen Replacement
- Concrete Modifications

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 mechanical and electrical installations, structural modifications, and concrete repair in WWTP headworks.

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 $2,000,000 (or larger), bar screen related projects are preferred. 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** 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 proposers' 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 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 not withstanding 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 suppler.

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

SECTION I
REQUIRED BID INFO

CITY OF HOLLYWOOD, FL

SECTION 1

SUBMITTAL CHECKLIST

TLC DIVERSIFIED

FORM 1

SUBMITTAL CHECKLIST FORM

The items below are required components of your solicitation response in order for your bid/proposal/submittal to be consider 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 indicated which required components were provided with your submittal.

Submitted (Yes/No)	Required Bid Components
Yes	This Submittal Checklist Form completed and included as the cover page of your submittal.
Yes	A Table of Contents that clearly identifies each section and page number of your submittal.
Yes	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.
Yes	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
Yes	Certificate(s) of insurance that meet the requirements of Section 2.25
Yes	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.

SECTION II
REQUIRED BID INFO

CITY OF HOLLYWOOD, FL

SECTION 2

TABLE OF CONTENT

TLC DIVERSIFIED

CITY OF HOLLYWOOD BID
SOUTH REGIONAL WWTP (SRWWTP) BAR SCREEN MODIFICATIONS/ IFB-150-24-JJ
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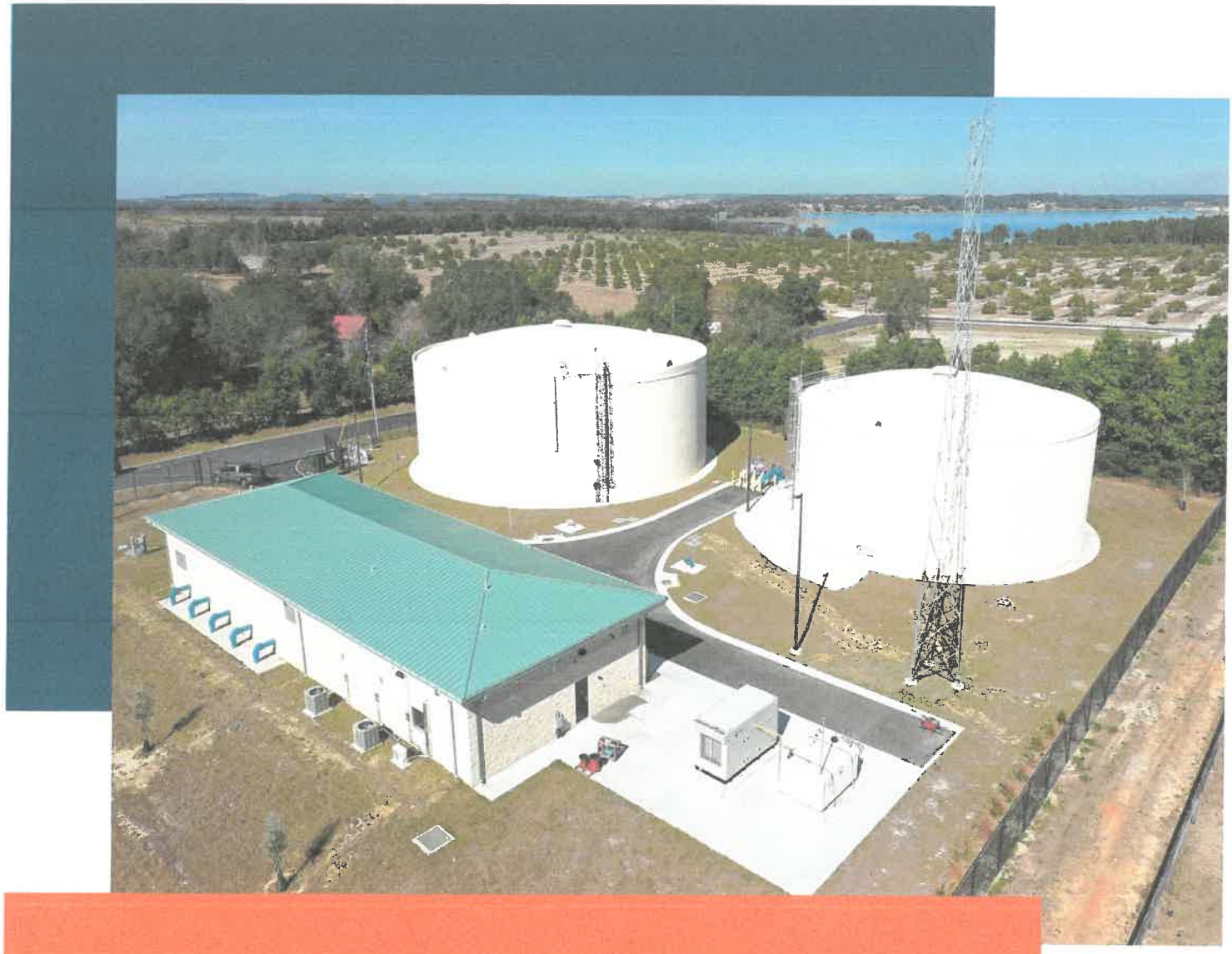

SECTION III
REQUIRED BID DOCS

CITY OF HOLLYWOOD, FL

SECTION 3

SCOPE OF WORK/SERVICES

TLC DIVERSIFIED

Clarifications

1. Skylights:

1.09, A, 2. & 3., Extended warranties are not available for this project as it is considered a wet space application.

2.02, A, 1, g. Solar Heat Gain Coefficient for .53 U-factor, 23% Visible Light Transmission is .26

2.2, 4, a. It is not recommended that Kalwall's thermally broken panels are used for installation in South Florida for the following reason:

Thermally Broken panels are only for cold environments to help reduce condensation forming on the interior side of the face sheet. The Condensation Resistance Factor test (AAMA 1503) that TB panels rely on is performed with a 0-degree temperature on the outside and 70-degree temperature on the inside. This would be a typical winter day in norther parts of the United States, not South Florida. The reverse could occur in South Florida; therefore, we recommend Kalwall's standard aluminum grid for this project.

2. Channel Cleaning:

We assume the gates are self-sealing. If they cannot seal and work is required to seal them, the Owner Contingency will be used to cover the extra costs.

We assume all the material in the channels can be cleaned using a vac truck. If material is encountered that cannot be removed with a vac truck, the Owner Contingency will be used to cover the extra costs.

3. Roof:

1. TLC is only responsible for any roofing repairs caused by our work. Any preexisting repairs are excluded.

2. Per the site visit, we assume the skylights have already been removed.

4. Gantry Crane:

1. Please see attached cut sheet on what is being provided. Only one supplier was willing to quote this project.

2. 10-ton gantry crane as described in the attached drawings - Gantry crane is manual operation

3. 10-ton wire rope hoist as described in the attached - Pendant controlled suspended from hoist

FORM 1
FORMS (COMPLETED)

CITY OF HOLLYWOOD, FL

SECTION 4

SUBMITTTAL CHECKLIST FORM

TLC DIVERSIFIED

FORM 1

SUBMITTAL CHECKLIST FORM

The items below are required components of your solicitation response in order for your bid/proposal/submittal to be consider 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 indicated which required components were provided with your submittal.

Submitted (Yes/No)	Required Bid Components
Yes	This Submittal Checklist Form completed and included as the cover page of your submittal.
Yes	A Table of Contents that clearly identifies each section and page number of your submittal.
Yes	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.
Yes	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
Yes	Certificate(s) of insurance that meet the requirements of Section 2.25
Yes	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): TLC Diversified, Inc.

If Corporation - Date Incorporated/Organized: 04/04/1985 Federal Tax Identification Number: 59-2513308

State Incorporated/Organized: Florida

Company Operating Address: 2719 17th Street East

City: Palmetto State: Florida Zip Code: 34221

Remittance Address (if different from ordering address):

City: **SAME AS ABOVE** State: **SAME AS ABOVE** Zip Code: **SAME AS ABOVE**

Company Contact Person: Dalas Lamberson & Eric Macek Email Address: dlamberson@tlcdiv.com & emacek@tlcdiv.com

Phone Number (include area code): (941) 722-0621 Fax Number (include area code): (941) 722-1382

Company's Internet Web Address: www.tlcdiversified.com

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: X Date: December 14, 2023

Type or Print Name: Eric Macek/VP of Pre-Construction

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 3-6)	1	LS	$21,000.00	$21,000.00
2	Demobilization (Min. 2% of Total Items 3-6)	1	LS	$14,000.00	$14,000.00
Bar Screen Modifications					
3	Skylight Replacement	1	LS	$79,000.00	$79,000.00
4	Gantry Crane Installation	1	LS	$145,000.00	$145,000.00
5	Bar Screen Replacement	1	LS	$343,000.00	$343,000.00
6	Concrete Modifications	1	LS	$175,000.00	$175,000.00
Miscellaneous Work					
7	Field Crew (Superintendent)	80	HR	$175.00	$14,000.00
8	Field Crew (Operator)	200	HR	$100.00	$20,000.00
9	Field Crew (Laborer)	200	HR	$80.00	$16,000.00
10	Field Crew (Electrician)	300	HR	$110.00	$33,000.00
11	Equipment, Excavator, 5 CY	200	HR	$180.00	$36,000.00
12	Equipment, Flat Bed Truck, 12’	300	HR	$50.00	$15,000.00
13	Equipment, Loader	300	HR	$130.00	$39,000.00
General Items / Allowances					
14	Owner Contingency (Please put $100,000.00 in this line)	1	LS	$100,000.00	$100,000.00
15	Indemnification (Please put $10.00 in this line)	1	LS	$10.00	$10.00

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
16	Testing Allowance (Please put $50,000.00 in this line)	1	LS	$50,000.00	$50,000.00
17	Permit and Fees Allowance (Please put $50,000.00 in this line)	1	LS	$50,000.00	$50,000.00
	Total				$1,150,010.00

FORM 4

VENDOR REFERENCE FORM

City of Hollywood Solicitation #: IFB-150-24-JJ/Southern Regional WWTP (SRWWTP) Bar Screen Modifications

Reference for: TLC Diversified, Inc.

Organization/Firm Name providing reference: Kimley-Horn & Associates on behalf of Utilities, Inc. of Florida aka Sunshine Water Services

Organization/Firm Contact Name:	Shelby Hughes, P.E.	**Title:**	PE/PM
Email:	shelby.hughes@kimley-horn.com	**Phone:**	(727) 498-2585
Name of Referenced Project:	Mid-County WWTP Headworks	**Contract No:**	Project No. 140056019
Date Services were provided:	08/2020 - 03/2022	**Project Amount:**	$2,291,899.38

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):
Construction of a new headworks including mechanical fine screening and grit removal system.

Please rate your experience with the Vendor	**Need Improvement**	**Satisfactory**	**Excellent**	**Not Applicable**
Vendor's Quality of Service				
a. **Responsive**	☐	☐	☑	☐
b. **Accuracy**	☐	☐	☑	☐
c. **Deliverables**	☐	☐	☑	☐
Vendor's Organization:				
a. **Staff expertise**	☐	☐	☑	☐
b. **Professionalism**	☐	☐	☑	☐
c. **Staff turnover**	☐	☐	☑	☐
Timeliness/Cost Control of:				
a. **Project**	☐	☐	☑	☐
b. **Deliverables**	☐	☐	☑	☐

Additional Comments (provide additional sheet if necessary):
Vendor was collaborative and cooperative working around other construction projects on-going on the site, helped by providing alternate solutions to avoid material delivery delays, and helped facilitated multiple start-ups.

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	**Email:**	☐	**Verbal:**	☐	**Mail:**	☐
Verified by:	**Name:**				**Title:**	
	Department:				**Date:**	

FORM 4

VENDOR REFERENCE FORM

City of Hollywood Solicitation #: IFB-150-24-JJ/Southern Regional WWTP (SRWWTP) Bar Screen Modifications
Reference for: TLC Diversified, Inc.

Organization/Firm Name providing reference: City of Winter Garden, FL
Organization/Firm Contact Name: Jim Monahan, P.E. **Title:** P.E./P.M.
Email: jmonahan1@cwgdn.com **Phone:** (407) 656-4111 ext. 5463
Name of Referenced Project: Belt Filter Press Installation **Contract No:** RFP # 19-027
Date Services were provided: NOV 2019 – MAY 2020 **Project Amount:** $511,605.28
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): INSTALL A BELT FILTER PRESS & ASSOCIATED ELETRICAL & PIPING AT OUR WASTEWATER TREATMENT FACILITY

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
Vendor's Quality of Service				
a. Responsive	☐	☐	☑	☐
b. Accuracy	☐	☐	☑	☐
c. Deliverables	☐	☐	☑	☐
Vendor's Organization:				
a. Staff expertise	☐	☐	☑	☐
b. Professionalism	☐	☐	☑	☐
c. Staff turnover	☐	☐	☑	☐
Timeliness/Cost Control of:				
a. Project	☐	☐	☑	☐
b. Deliverables	☐	☐	☑	☐

Additional Comments (provide additional sheet if necessary): STAFF TURNOVER WAS MARKED AS EXCELLENT BECAUSE THERE WAS SAME EMPLOYEES FROM START TO FINISH FOR THE ENTIRE PROJECT.

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	**Email:**	☑	**Verbal:**	☑	**Mail:**	☐
Verified by:	**Name:**	JAMES P. MONAHAN			**Title:**	CITY ENGINEER
	Department:	PUBLIC SERVICES			**Date:**	12-13-23

FORM 4

VENDOR REFERENCE FORM

City of Hollywood Solicitation #: IFB-150-24-JJ/Southern Regional WWTP (SRWWTP) Bar Screen Modifications

Reference for: TLC Diversified, Inc.

Organization/Firm Name providing reference: Kimley-Horn & Associates on behalf of Utilities, Inc. of Florida aka Sunshine Water Services

Organization/Firm Contact Name:	Shelby Hughes, P.E.	**Title:**	PE/PM
Email:	shelby.hughes@kimley-horn.com	**Phone:**	(727) 498-2585
Name of Referenced Project:	Mid-County WWTP Headworks	**Contract No:**	Project No. 140056019
Date Services were provided:	08/2020 - 03/2022	**Project Amount:**	$2,291,899.38

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):
Construction of a new headworks including mechanical fine screening and grit removal system.

Please rate your experience with the Vendor	**Need Improvement**	**Satisfactory**	**Excellent**	**Not Applicable**
Vendor's Quality of Service				
a. **Responsive**	☐	☐	☑	☐
b. **Accuracy**	☐	☐	☑	☐
c. **Deliverables**	☐	☐	☑	☐
Vendor's Organization:				
a. **Staff expertise**	☐	☐	☑	☐
b. **Professionalism**	☐	☐	☑	☐
c. **Staff turnover**	☐	☐	☑	☐
Timeliness/Cost Control of:				
a. **Project**	☐	☐	☑	☐
b. **Deliverables**	☐	☐	☑	☐

Additional Comments (provide additional sheet if necessary):
Vendor was collaborative and cooperative working around other construction projects on-going on the site, helped by providing alternate solutions to avoid material delivery delays, and helped facilitated multiple start-ups.

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	**Email:**	☐	**Verbal:**	☐	**Mail:**	☐
Verified by:	**Name:**				**Title:**	
	Department:				**Date:**	

FORM 4

VENDOR REFERENCE FORM

City of Hollywood Solicitation #: IFB-150-24-JJ/Southern Regional WWTP (SRWWTP) Bar Screen Modifications
Reference for: TLC Diversified, Inc.

Organization/Firm Name providing reference: Kimley Horn
Organization/Firm Contact Name: Mike Semago **Title:** P.E.
Email: Mike.Semago@kimley-horn.com **Phone:** 813-943-5274
Name of Referenced Project: SEWRF Reclaimed Pump Back Station & ARC Flash Mitigation **Contract No:** 20-TA003311SAM(IFBC)/Project #6088380
Date Services were provided: Nov. 2020/Aug. 2022 **Project Amount:** $ 11.2 Million/$ 11.4 Million
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): I have seen a copy of the GC's Reference Sheet for our Project and I agree with their description. Please see their attached Reference Sheet for our description.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
Vendor's Quality of Service				
a. Responsive	☐	☐	☒	☐
b. Accuracy	☐	☐	☒	☐
c. Deliverables	☐	☐	☒	☐
Vendor's Organization:				
a. Staff expertise	☐	☐	☒	☐
b. Professionalism	☐	☐	☒	☐
c. Staff turnover	☐	☐	☒	☐
Timeliness/Cost Control of:				
a. Project	☐	☐	☒	☐
b. Deliverables	☐	☐	☒	☐

Additional Comments (provide additional sheet if necessary):

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	**Email:**	☐	**Verbal:**	☐	**Mail:**	☐
Verified by:	**Name:**				**Title:**	
	Department:				**Date:**	

FORM 5

HOLD HARMLESS AND INDEMNITY CLAUSE

TLC Diversified, Inc. / Eric Macek-VP of Pre-Construction

(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.

X

Signature

Eric Macek

Printed Name

TLC Diversified, Inc.

Name of Company

VP of Pre-Construction

Title

FORM 6

NON-COLLUSION AFFIDAVIT

STATE OF: FLORIDA

COUNTY OF: MANATEE, being first duly sworn, deposes and says that: Eric Macek

(1) He/she is VP of Pre-Construction of TLC Diversified, Inc., 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.

X

Signature

Eric Macek

Printed Name

TLC Diversified, Inc.

Name of Company

VP of Pre-Construction

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 Eric Macek/VP of Pre-Construction for TLC Diversified, Inc.
(Print individual's name and title) (Print name of entity submitting sworn statement) whose business address is 2719 17th Street East, Palmetto, FL 34221
and if applicable its Federal Employer Identification Number (FEIN) is 59-2513308 . If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement.
N/A

2. I understand that "public entity crime," as defined in paragraph 287.133(1)(g), Florida Statues, 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 Statues, 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.)

__X__ 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.

X _____
(Signature) Eric Macek/
VP of Pre-Construction

Sworn to and subscribed before me this 14th day of December, 2023.

Personally known Eric Macek/VP of Pre-Construction

Or produced identification N/A Notary Public-State of Florida

N/A my commission expires March 20, 2024
(Type of identification)

LINDA KAY MOORE
Notary Public - State of Florida
Commission # GG 963661
My Comm. Expires Mar 20, 2024
Bonded through National Notary Assn.

Linda Kay Moore
(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:

TLC Diversified, Inc.

2719 17th Street East

Palmetto, FL 34221

Application Number and/or Project Name:

IFB-150-24-JJ / City of Hollywood Southern Regional WWTP (SRWWTP) Bar Screen Modifications

Applicant IRS/Vendor Number: 59-2513308

X

Signature

Eric Macek

Printed Name

TLC Diversified, Inc.

Name of Company

VP of Pre-Construction

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.

X _____	Eric Macek
Signature	Printed Name
TLC Diversified, Inc.	VP of Pre-Construction
Name of Company	Title

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.

X	Eric Macek
Signature	Printed Name
TLC Diversified, Inc.	VP of Pre-Construction
Name of Company	Title

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

TLC Diversified, Inc.

2 Business name/disregarded entity name, if different from above

N/A

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

2719 17th Street East

Requester's name and address (optional)

6 City, state, and ZIP code

Palmetto, FL 34221

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

5	9	–	2	5	1	3	3	0	8

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here | **Signature of U.S. person** ▶ Dalas Lamberson/President | **Date** ▶ December 08, 2023

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

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
Trench Box	1 Lump Sum	Total $ 1,000.00

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."

X _____	X _____
Witness Signature	Contractor's Signature
DeAnna Justus	Eric Macek
Witness Printed Name	Printed Name
Secretary	VP of Pre-Construction
Witness Address	Title
December 14, 2023	December 14, 2023
Date	Date

- END OF SECTION -

Form 13

Bid Guaranty Form

(Construction)

STATE OF FLORIDA

KNOW ALL MEN BY THESE PRESENTS:
That we TLC Diversified, Inc., as Principal, and Westfield Insurance Co. as Surety, are held and firmly bound unto the City of Hollywood in the sum of _____ Five Percent Dollars ($ 5%) 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 December 14, 2023 for

SRWWTP BAR SCREEN MODIFICATIONS
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.

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 14th day of December ,2023. 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: n/a

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:

x _____
Secretary / DeAnna Justus

TLC Diversified, Inc.
Name of Corporation

2719 17th Street East
Business Address

Palmetto, FL 34221

By: X _____
(Affix Corporate Seal)

Eric Macek
Printed Name

VP of Pre-Construction
Official Title

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, DeAnna Justus, certify that I am the secretary of the Corporation named as Principal in the attached bond; that Eric Macek who signed the said bond on behalf of the Principal, was then VP of Pre-Construction 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.

x _____ (SEAL)
Secretary / DeAnna Justus

Approved SOLICITATION Bond

TO BE EXECUTED BY CORPORATE SURETY:

Attest:

see attached power of attorney
Secretary

Westfield Insurance Company
Corporate Surety
P. O. Box 5001
Business Address
Westfield Center, OH 44251

BY: X
(Affix Corporate Seal)

Don Bramlage, Attorney-In-Fact &
Florida Resident Agent - Inquiries: 407-330-3990
Attorney-in-Fact
Nielson, Mosholder & Associates
4380 St. Johns Pkwy, Ste. 110
Business Address
Sanford, Florida 32771

Name of Local Agency

STATE OF FLORIDA
COUNTY OF MANATEE

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared, Don Bramlage to me well known, who being by me first duly sworn upon oath says that he is the attorney-in-fact for the Westfield Insurance Company and that the has been authorized by Westfield 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 14th day of December, 2023.

Notary Public, State of Florida
Linda Kay Moore

My Commission Expires: March 24, 2024

- END OF SECTION-

LINDA KAY MOORE
Notary Public - State of Florida
Commission # GG 963661
My Comm. Expires Mar 20, 2024
Bonded through National Notary Assn.

LINDA KAY MOORE
Notary Public - State of Florida
Commission # GG 963661
My Comm. Expires Mar 20, 2024
Bonded through National Notary Assn.

General
Power
of Attorney

CERTIFIED COPY

POWER NO. **0994592 00**

Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.

Westfield Center, Ohio

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint
DON BRAMLAGE, LAURA D. MOSHOLDER, EDWARD M. CLARK, JOINTLY OR SEVERALLY

of **SANFORD** and State of **FL** its true and lawful Attorney(s)-In-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship**- -.

LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.
and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"*Be It Resolved,* that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact. may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"*Be it Further Resolved,* that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their **National Surety Leader** and **Senior Executive** and their corporate seals to be hereto affixed this **20th** day of **FEBRUARY** A.D., **2020** .

Corporate
Seals
Affixed

WESTFIELD INSURANCE COMPANY SEAL — WESTFIELD NATIONAL INSURANCE CO. SEAL — OHIO FARMERS INSURANCE COMPANY CHARTERED 1848

State of Ohio
County of Medina ss.:

WESTFIELD INSURANCE COMPANY
WESTFIELD NATIONAL INSURANCE COMPANY
OHIO FARMERS INSURANCE COMPANY

By: **Gary W. Stumper,** *National Surety Leader* and
Senior Executive

On this **20th** day of **FEBRUARY** A.D., **2020** , before me personally came **Gary W. Stumper** to me known, who, being by me duly sworn, did depose and say, that he resides in **Hartford, CT;** that he is **National Surety Leader and Senior Executive** of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial
Seal
Affixed

NOTARIAL SEAL — STATE OF OHIO

State of Ohio
County of Medina ss.:

David A. Kotnik, Attorney at Law, *Notary Public*
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

I, **Frank A. Carrino,** Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this **14th** day of **December** A.D., **2023** .

WESTFIELD INSURANCE COMPANY SEAL — WESTFIELD NATIONAL INSURANCE CO. SEAL — OHIO FARMERS INSURANCE COMPANY CHARTERED 1848

Frank A. Carrino Secretary

Frank A. Carrino, *Secretary*

BPOAC2 (combined) (06-02)

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.

	Work to be Performed	**Subcontractor's Name / Address**
1.	Electrical	Loveland Electric/1344 S. Killian Drive Lake Park, FL 33403
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: TLC Diversified, Inc.
   2719 17th Street East
   Palmetto, FL 34221

2. Contractor's Telephone Number: (941) 722-0621
   and e-mail address: dlamberson@tlcdiv.com AND emacek@tlcdiv.com

3. Contractor's License (attach copy): CGC041816/CUC053963/CGC1534995/CUC1225581
   Primary Classification: Certified General Contractor/Certified Underground Utility&Excavation Contractor
   Broward County License Number (attach copy): Receipt No. 180-207090

4. Number of years as a Contractor in construction work of the type involved in this Contract: 38 Years

5. List the names and titles of all officers of Contractor's firm:
   Dalas Lamberson/President — Mark Selph/VP of Operations
   Eric Macek/VP of Pre-Construction — DeAnna Justus/Secretary
   Thurston Lamberson/Treasurer-CFO — Robert LaChance/Constriction Manager

6. Name of person who inspected site or proposed work for your firm:
   Name: Orlando Rivera
   Date of Inspection: Noverber 02, 2023

7. What is the last project of this nature you have completed?
   See Attached

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

N/A

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

Al Martini / Hillsborough County, FL / 813-209-3069 / martinia@hillsboroughcounty.org

Tom Menke / Pinellas County, FL / 727-464-8908 / tmenke@co.pinellas.fl.us

Duane Palumbo / Palm Beach County, FL / 561-493-6087 / dpalumbo@pbcwater,com

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
See Attached				

(Continue list on inset sheet, if necessary)

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

See Attached

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

We will purchase as necessary.

13. List at least three (3) similar projects completed within the last five (5) years by the bidder. For purposes of this requirement, 'similar' projects shall be considered to include experience with mechanical and electrical installations,

structural modifications, and concrete repair in WWTP headworks. 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.

See Attached Reference Sheets

(Add sheets as requested.)

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

Ralph Cosme/See Attached 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.

	Work to be Performed	**Subcontractor's Name / Address**
1.	N/A	N/A
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

NOTE: Attach additional sheets if required.

END OF SECTION

FORM 16

PROPOSAL

TO THE MAYOR AND COMMISSIONERS
CITY OF HOLLYWOOD, FLORIDA

SUBMITTED December 14, 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 30 days with final completion within 45 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 following addenda:

No. 1 Dated December 13, 2023
No. _____ Dated _____
No. _____ Dated _____

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

N/A Bank of N/A

or approved Bid Bond for the sum of

Five Percent Dollars ($ 5%) 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:

N/A
(Signature of Individual)

N/A
(Printed Name of Individual)

N/A
(Address)

****

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

N/A
(Name of Firm)

N/A
(Address)

N/A (SEAL)
(Signature of Individual)

****

WHEN THE BIDDER IS A PARTNERSHIP:

N/A
(Name of Firm) A Partnership

N/A
(Address)

By: N/A
(SEAL)
(Partner)

Name and Address of all Partners:

N/A

N/A

****

WHEN THE BIDDER IS A JOINT VENTURE:

N/A
(Correct Name of Corporation)

By: N/A (SEAL)
(Address)

N/A
(Official Title)

As Joint Venture
(Corporate Seal)

Organized under the laws of the State of N/A, 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:

TLC Diversified, Inc.
(Correct Name of Corporation)

By: X
(SEAL)

Eric Macek/VP of Pre-Construction

(Official Title)

2719 17th Street East, Palmetto, FL 34221
(Address of Corporation) State of Incorporation is Florida.

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

TLC Diversified, Inc.
(Name of Corporation)

RESOLVED that Eric Macek
(Person Authorized to Sign)

VP of Pre-Construction of TLC Diversified, Inc. of
(Title) (Name of Corporation)

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

SRWWTP BAR SCREEN MODIFICATIONS
ESSD Project No.9216A
Bid No. IFB-150-24-JJ

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

TLC Diversified, Inc. at a meeting of its Board of
(Name of Corporation)

Directors held on the 5th day of February, 2022.

By: X

Title: DeAnna Justus/Secretary

(SEAL)

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

- END OF SECTION -

GENERAL INFORMATION

CITY OF HOLLYWOOD, FL

FORM 15

QUESTION NO. 7

TLC DIVERSIFIED

MANATEE SEWRF PUMP BACK STATION & ARC FLASH MITIGATION

SEWRF RECLAIM WATER PUMP BACK STATION & ARC FLASH MITIGATION

MANATEE COUNTY, FL | TLC PROJECT 201501

This project scope involved the construction of a poured- in-place reclaimed pump back station with an overall depth of 40 feet shored by tight-sheeted pit; wellpoint dewatering system; three new 125 HP submersible pumps; 5,000 lineal feet of 24" & 36" lake intake piping (open cut), 560 feet of 36" Permalok steel pipe installed via microtunnel method w/ wet recovery of the MTBM; reshaping and grading of 9,000 lineal feet of existing lake shoreline / berm, importation, placement and compaction of 80,000 yards of fill, installation of two new lake intake screens; implementation of ARC flash improvements at existing plant.

PROJECT DATA

- Original Cost: $11.2 Million
- Total Cost: $11.4 Million
- Notice to Proceed: Nov. 16, 2020
- Completion: August, 2022

CONTACT

- Chris Collins, P.E.
- Manatee – W/WW Plant Super
- 941.792.8811 Ext. 8025
- chris.collins@mymanatee.org

SUBCONTRACTORS INVOLVED IN CONSTRUCTION

Firm Name	Firm Location	Role
Huxted Tunnelling	Palmetto, FL	Microtunnel
Reliable Electric	Tampa, FL	Electrical
Revere Controls	Birmingham, AL	I&C

GENERAL INFORMATION

CITY OF HOLLYWOOD, FL

FORM 15

QUESTION NO. 10

TLC DIVERSIFIED

WORK ON HAND

TLC DIVERSIFIED

PROJECT NAME	OWNER	LOCATION	CONTACT NAME	CONTACT NUMBER	CONTRACT AMOUNT	% COMPLETE	FINISH DATE
South Oslo Road WTP	Indian River County	Vero Beach, FL	Nick Black	(561) 421-1979	$10,498,777	90%	February 2024
Kermit Lewin RO Facility	FKAA	Stock Island, FL	David Hackworth	(502) 541-5385	$41,876,777	55%	August 2024
SWRF Transformer	Orange County Utilities	Orlando, FL	Terra Reffitt	(407) 254-9555	$2,455,000	35%	July 2024
ECR Headworks & Aeration	City of West Palm Beach	West Palm Beach, FL	Paul Bassar	(561) 822-2100	$24,167,777	42%	September 2024
WTP #3	City of Belleview	Belleview, FL	Bob Titterington	(352) 233-2110	$4,578,891	95%	December 2023
SWRF Building	Orange County Utilities	Orlando, FL	Terra Reffitt	(407) 254-9555	$5,097,194	52%	February 2024
Lift Station 5133 Conversion	Palm Beach County Utilities	West Palm Beach, FL	Duane Palumbo	(561) 493-6087	$4,438,000	48%	April 2024
Lift Station #42 Replacement	City of St. Petersburg	St. Pete, FL	Adam Williams	(727) 551-3186	$2,587,000	71%	January 2024
Bayshore Yacht Basin Lit Station	Manatee County Utilities	Bradenton, FL	Brett Gocka	(941) 708-7450	$5,419,106	27%	June 2024
Missionary Village Lift Station	Manatee County Utilities	Bradenton, FL	Brett Gocka	(941) 708-7450	$4,958,112	12%	June 2024
Rustic Road Knights Trail Lift Station	Meritage Homes of Florida, Inc.	Venice, FL	Chris Gonzales	(480) 515-7941	$4,058,000	5%	August 2024
Lift Stations 1M, 12A, 13A Electrical	Manatee County Utilities	Bradenton, FL	Brett Gocka	(941) 708-7450	$7,098,784	2%	December 2024
Lift Station #16 Replacement	City of Clearwater	Clearwater, FL	Todd Kuhnel	(727) 224-6702	$7,933,000	2%	September 2024
Lift Station #63 Rehab	City of St. Petersburg	St. Pete, FL	Adam Williams	(727) 551-3186	$6,491,000	2%	July 2024

WORK ON HAND

Master Pump Station #100	City of Cape Coral	Cape Coral, FL	David Wilcox	(813) 636-2198	$11,896,000	3%	December 2024
Charlotte & Village Irrigation Pump Stations	Kitson & Partners	Babcock Ranch, FL	Tiffany Taylor	(239) 449-2404	$11,030,000	1%	November 2024
CHWA Reverse Osmosis WTP Expansion	Charlotte Harbor Water Association	Punta Gorda, FL	Christian Colarusso	(239) 777-4299	$12,755,922	1%	November 2024

GENERAL INFORMATION

CITY OF HOLLYWOOD, FL

FORM 15

QUESTION NO. 11

TLC DIVERSIFIED

TLC DIVERSIFIED EQUIPMENT INVENTORY LIST

Unit Number	Make	Item description	Office Location	Condition	Serial No.	Model
44	Thompson	Trash Pump	West Palm Beach	Good	9405121A1	3SA-GHC-8
58	Ford	Truck Crane 18 Ton	Palmetto	Good	1FDZU82A9KVA58254	L8000
64	Multiquip	Mudhog Pump 3"	Palmetto	Fair	P982560	MOD306H
66	Multiquip	Mudhog Pump 3"	Palmetto	Good	P982426	MOD306H
67	Case	Rubber Tire Backhoe	Palmetto	Good	JJG0273463	580SL-2
78	Dri-Eaz	Blower Fan	West Palm Beach	Good	1632	Vortex F174
91	Link-Belt	40 Ton Crawler Crane	Palmetto	Good	B3RH8-106A	LS-98C
92	GMC	Utility Bed Pick-Up Truck	West Palm Beach	Good	1GTGC24U51Z272247	2500 Sierra
94	GMC	Utility Bed Pick-Up Truck	Palmetto	Fair	1GTGC24U62Z130037	2500 Sierra
100	Allegro	Blower Fan	Palmetto	Good	9513-6153	9543-25
104	Anderson	20 Ton Trailer	Palmetto	Good	4YNBN25263C016487	TA8250T
106	DeVilbiss	Air Compressor & Tank	Orlando	Good	2216076393	919.16551
108	JCB	Rubber Tire Backhoe	Orlando	Good	SLP214TC2U0901832	214E
112	Dragon	12" Road Crossing Bypass Manifold	Palmetto	Good	N/A	N/A
114	Ozito	Concrete Vibrator	West Palm Beach	Good	N46246	2-4SS

121	Aqua Tap	Wet Tapping Drill Kit	West Palm Beach	Good	60326	315-269290
132	Biosystem, Inc	Gas Detector	Orlando	Excellent	17656	PhD Ultra
147	Hydromatic	4" Non-Clog Submersible Bypass Pump	Palmetto	Good	S63936	S4M1500M3-4
148	Honda	3" Centrifical Gas Pump	Palmetto	Good	3Y8Z001083	GX-200
149	Honda	3" Centrifical Gas Pump	West Palm Beach	Good	3Y8Z001126	GX-200
150	Hydromatic	6" Non-Clog Submersible Bypass Pump	West Palm Beach	Good	P66213	60RP
151	Diamond	Hydraulic Core Drill	Palmetto	Fair		Weka DK-12
152	Partner	Hydraulic Cut Saw	Palmetto	Good		K3600
155	Honda	3" Centrifical Gas Pump	West Palm Beach	Good	3Y8Z001174	WP30X
158	Friamat	Electro-Fusion Machine	West Palm Beach	Good	FR04-30-069	Friamat II
161	JCB	Skid-Steer Robot	Palmetto	Fair	SLP111TS4E0889006	1110
172	GMC	Utility Bed Pick-Up Truck	Palmetto	Good	1GDHC24U75E278077	2500 Sierra
173	GMC	Utility Bed Pick-Up Truck	West Palm Beach	Fair	1GDHC24U76E278077	2500 Sierra
174	Continental	Cargo Trailer	Palmetto	Good	5NHUFE0125U316048	GAFEX585A
175	Continental	Cargo Trailer	West Palm Beach	Fair	5NHUFE0125U316724	GAFEX585A
176	Continental	Cargo Trailer	West Palm Beach	Good	5NHUFE0125U316725	GAFEX585A
178	Honda	3" Centrifical Gas Pump	Palmetto	Good	3Y8Z001055	GX-200
179	Honda	3" Centrifical Gas Pump	Orlando	Good	3Y8Z001186	GX-200
182	Dri-Eaz	Blower Fan	Orlando	Good	6934	Vortex F174
183	Sterling	Truck Crane 26 Ton	Palmetto	Good	2FZHAWAK83AL98718	LT8500
187	Dri-Eaz	Blower Fan	Palmetto	Good	1683	Vortex F174
188	Trailblazer	Portable Welder	West Palm Beach	Good	GO4102501017	270
189	Biosystem, Inc	Gas Detector	West Palm Beach	Excellent		PhD Ultra
191	Hilti	Electric Core Drill	Palmetto	Good		DD200
192	Case	Rubber Tire Backhoe	Palmetto	Good	N5C384734	580 Super M

193	Cat	Rubber Tire Backhoe	Orlando	Good	CAT0420DTFDP23896	420D
196	Coleman	Generator 5000kW	Palmetto	Good	96091202	PM0525
197	Coleman	Generator 5000kW	Orlando	Fair	96091208	PM0525
198	Coleman	Generator 5000kW	West Palm Beach	Good	96811953	PM0525
203	GMC	Cargo Van	Orlando	Fair	1GTHG35U761191253	Savannah 3500
205	GMC	Utility Bed Pick-Up Truck	West Palm Beach	Good	1GTHC24U56E106622	Sierra 2500
209	JCB	Rubber Tire Backhoe	Palmetto	Good	SLP214TC5U0905240	214
210	Hydromatic	4" Non-Clog Submersible Bypass Pump	West Palm Beach	Fair	S15941	S4M750M3.4
211	Coleman	Generator 7500kW	Orlando	Good	D29712957	PM011600
218	JCB	Rubber Tire Backhoe	Palmetto	Excellent	SLP214TC6U0907476	214
222	Spectrum	Plasma Cutter	Palmetto	Good	LG380251P	375 X-Treme
223	Industry	Gas Detector	Orlando	Excellent	0612200-055	M40
224	Industry	Gas Detector	West Palm Beach	Excellent	0611111-125	M40
229	Cat	Rubber Tire Backhoe	Palmetto	Excellent	CAT0416EASHA00834	416E
230	Cat	Rough Terrain 6K Forklift	Palmetto	Good	31AO1766	RC 60
231	Mack	Tri-Axle Dump Truck	Palmetto	Good	1M2AG11C77M044817	CV713
232	John Deere	Steel Track Excavator	Palmetto	Good	FF330CX082228	330 CLC
241	National	Truck Crane 20 Ton	West Palm Beach	Good	2FZHATDC26AU04083	LT7500
242	GMC	Utility Bed Pick-Up Truck	Orlando	Good	1GDHC24U97E162298	Sierra 2500
245	John Deere	Rubber Track Mini-Excavator	Orlando	Good	FF050DX245451	50D
246	Multiquip	Reversible Plate Compactor	Orlando	Excellent	K7210	MVH304GH
249	Smalline	4" Double Diaphram Pump	West Palm Beach	Excellent	KG4801202	SL4DDPKE
250	Allegro	Blower Fan	West Palm Beach	Good		9543-25
253	Sumitomo	Steel Track Clam Bucket Excavator	Palmetto	Good	200P2-5300	S280
254	General	Blower Fan	Palmetto	Excellent	32067	EP-8

269	Cat	Forklift 9K	West Palm Beach	Good	3CM12064	DPL40
272	Briggs & Stratton	Generator 5500kW	West Palm Beach	Good	1016075433	30424
281	Precision	Laser Level	Palmetto	Excellent	14391	LL100
282	GMC	Utility Bed Pick-Up Truck	Palmetto	Excellent	1GD01ZCG5BF221325	Sierra 2500
285	Grove	55 Ton Rough Terrain Crane	Palmetto	Excellent	84699	RT855B
287	Oztec	Concrete Vibrator	Palmetto	Good	AB195212	
292	Ford	Pick-Up Truck	West Palm Beach	Good	1FTNF1CT0CKE08930	F-150
293	Rice	Hydrostatic Test Pump	Palmetto	Excellent	36177802	
294	Ford	Pick-Up Truck	Palmetto	Excellent	1FTNF1CT1DKE66773	F-150
295	Chevrolet	Utility Bed Pick-Up Truck	West Palm Beach	Excellent	1GB0CVCG3DF111193	Silverado 2500
296	Chevrolet	Utility Bed Pick-Up Truck	Palmetto	Excellent	1GB0CVCG6DF128764	Silverado 2500
297	Wacker	Generator 6kW	Orlando	Good	5836898	GV5600A
298	Tsrumi	Generator 6kW	West Palm Beach	Good	1003175	
299	Chevrolet	Utility Bed Pick-Up Truck	Palmetto	Excellent	1GB0CVCG6DF128666	Silverado 2500
300	Chevrolet	Utility Bed Pick-Up Truck	West Palm Beach	Excellent	1GB0CVCG7DF226735	Silverado 2500
303	Rice	Hydrostatic Test Pump	Palmetto	Excellent	34263323	
306	Volvo	Tri-Axle Dump Truck	West Palm Beach	Excellent	4V5KC9GH47N484705	VHD64B200
308	Chevrolet	Utility Bed Pick-Up Truck	Palmetto	Excellent	1GC1CZCGXEF188782	Silverado 3500
309	Multiquip	Reversible Plate Compactor	Palmetto	Excellent	Y9596	MVH306GH
310	Multiquip	Reversible Plate Compactor	Orlando	Excellent	V7854	MVH306GH
311	Multiquip	Jumping Jack	Palmetto	Excellent	W2740	MTX70
312	Chevrolet	Utility Bed Pick-Up Truck	Palmetto	Excellent	1GC1CYEG3FF126875	Silverado 3500
313	Volvo	Steel Track Excavator	Palmetto	Excellent	VCEC240CH0011887	EC240CL
314	JCB	Rubber Tire Backhoe	West Palm Beach	Excellent	2267290	3CX-14
315	JCB	Rubber Tire Backhoe	Palmetto	Excellent	2267528	3CX-14

316	Chevrolet	Utility Bed Pick-Up Truck	Palmetto	Excellent	1GB1CYEG3FF582069	Silverado 3500
317	Chevrolet	Utility Bed Pick-Up Truck	Orlando	Excellent	1GB1CYEG2FF580944	Silverado 3500
319	Allegro	Blower Fan	Palmetto	Excellent	43-00205	9543
320	Allegro	Blower Fan	Orlando	Excellent	43-00362	9543
323	Leica	Digital Theodolite	Palmetto	Excellent	839722	LDT-05
324	Magnum Pro	3" Diaphram Pump	Orlando	Excellent	1031670	MCP5537
325	Wacker	3" Diaphram Pump	Palmetto	Good	20010545	PDT 3A

GENERAL INFORMATION

CITY OF HOLLYWOOD, FL

FORM 15

QUESTION NO. 13

TLC DIVERSIFIED

WRF BELT FILTER PRESS INSTALLATION

WRF BELT FILTER PRESS INSTALLATION

WINTER GARDEN, FL | PROJECT 1906

This project involved the installation of an owner furnished 2-meter belt filter press along with all associated ductile iron piping, concrete supports, belt press feed pumps, sludge pump, sludge lines, sludge cake transfer pump, polymer skid pump system, VFDs for sludge feed pump and sludge cake pump.

SUBCONTRACTORS INVOLVED IN CONSTRUCTION		
Firm Name	**Firm Location**	**Role**
Shine & Company	High Springs, FL	Electrical
Rocha Controls	Tampa, FL	I&C

PROJECT DATA

- Engineer: Mead & Hunt
- Original Contract Amount: $493,000.00
- Net Change by Change Orders: $49,300
- Final Contract Amount: $542,300.00
- Notice to Proceed Date: October 1st, 2019
- Final Completion Date: April 28th, 2020

CONTACT

- Jim Monahan, P.E.
- Project Manager, City of Winter Garden
- 300 W Plant Street, Winter Garden, FL 34787
- 407.656.4111 ext. 5463
- jmonahan@cwgdn.com

MID-COUNTY WWTP HEADWORKS

SUNSHINE WATER SERVICES MID-COUNTY WWTP HEADWORKS

DUNEDIN, FL | PROJECT 201701

This project scope involved the construction of a new headworks facility at an existing WWTP. We furnished and installed two new Huber mechanical screen systems, Hydro International grit separator and classifiers, along with all new electrical upgrades, coatings, metal stairs, odor control system and site concrete.

PROJECT DATA

- Original Cost: $2.3 Million
- Total Cost: $2.3 Million
- Notice to Proceed: Jan. 05, 2021
- Completion: Jan. 18th, 2022

CONTACT

- Shelby Hughes, P.E.
- Kimley-Horn & Assoc.
- 727.498.2585
- Shelby.hughes@kimley-horn.com

SUBCONTRACTORS INVOLVED IN CONSTRUCTION

Firm Name	Firm Location	Role
Exceletech Coatings	Clermont, FL	Specialty Coatings
BL Smith Electric	Dundee, FL	Electrical
Ellis Automated	New Port Richey, FL	I&C

MANATEE SEWRF PUMP BACK STATION & ARC FLASH MITIGATION

SEWRF RECLAIM WATER PUMP BACK STATION & ARC FLASH MITIGATION

MANATEE COUNTY, FL | TLC PROJECT 201501

This project scope involved the construction of a poured- in-place reclaimed pump back station with an overall depth of 40 feet shored by tight-sheeted pit; wellpoint dewatering system; three new 125 HP submersible pumps; 5,000 lineal feet of 24" & 36" lake intake piping (open cut), 560 feet of 36" Permalok steel pipe installed via microtunnel method w/ wet recovery of the MTBM; reshaping and grading of 9,000 lineal feet of existing lake shoreline / berm, importation, placement and compaction of 80,000 yards of fill, installation of two new lake intake screens; implementation of ARC flash improvements at existing plant.

PROJECT DATA

- Original Cost: $11.2 Million
- Total Cost: $11.4 Million
- Notice to Proceed: Nov. 16, 2020
- Completion: August, 2022

CONTACT

- Chris Collins, P.E.
- Manatee – W/WW Plant Super
- 941.792.8811 Ext. 8025
- chris.collins@mymanatee.org

SUBCONTRACTORS INVOLVED IN CONSTRUCTION

Firm Name	Firm Location	Role
Huxted Tunnelling	Palmetto, FL	Microtunnel
Reliable Electric	Tampa, FL	Electrical
Revere Controls	Birmingham, AL	I&C

GENERAL INFORMATION

CITY OF HOLLYWOOD, FL

FORM 15

QUESTION NO. 14

TLC DIVERSIFIED

RALPH COSME

Project Manager

Ralph brings over 10+ years of experience in the design-bid-build market of the water/wastewater industry. He has extensive experience in the areas of project management and strives to execute capital improvement projects on time and on budget. He understands the Importance of teamwork and works closely with our South Florida Area Manager, Superintendents, Owners and Engineers. From multi-million-dollar green-field projects to complicated water infrastructure rehabs and rebuilds, Ralph's diverse knowledge and skillset brings to the team a valuable understanding of the challenges and critical actions needing to be in place for a project to succeed.

AREAS OF EXPERTISE

- Construction Technology
- Construction Management
- Multiple Utility Systems
- Profit & Loss Accountability
- Budget Planning & Management

REGISTRATIONS/ CERTIFICATIONS

- ORACLE P6 Certified
- OSHA 30 Certified

PRIMARY LOCATION

7233 Southern Blvd., Suite B-1
West Palm Beach, FL 33413

EXPERIENCE

Similar and Representative Project Experience as Assistant Project Manager

- City of Boca Raton GST Cleaning - $3.2M
- City of Boca Raton Digester Cleaning - $1M
- City of Boca Raton Primary Clarifier Improvements - $5.2M
- City of Boca Raton Pressure Vessel Rehabilitation - $2.3M
- City of Boca Raton Low Lift Pump Station and Electrical Improvements - $2.9M
- City of Boca Raton WTP Chemical System Improvements - $1.6M
- Collier County Utilities Golden Gate WWTP High Level Disinfection - $3.4M
- City Marco Island Headworks Replacement - $5.3M
- North Miami Beach Backwash Recovery & Chemical System - $3.02M
- North Miami Beach WTP Online Instrumentation and Caustic Feed - $647K
- Orange County SWRF FOG and Septage Receiving Station - $2.8M
- City of Palm Bay WTP Expansion from 4 to 8 MGD - $8.9M
- Seminole Tribe of Florida Big Cypress Chemical System Improvements - $9.8M
- City of Sunrise Springtree WTP Water Stabilization and Solids Handling $4.3M
- Village of Wellington HPP NO. 8 and Degasification System - $1.3M

UNANIMOUS CONSENT OF SHAREHOLDERS AND DIRECTORS OF TLC DIVERSIFIED INC.

February 5, 2022

The undersigned, being the sole shareholder and director of the TLC Diversified Inc., a Florida corporation (the "Company"), hereby consent to the adoption of the following resolutions, effective as of the date hereof, by written consent in lieu of a meeting:

WHEREAS, the undersigned desire to have the Company continue to bid on projects from time to time and further desire to designate which of its officers have the authority to execute and deliver such bids;

NOW, THEREFORE, BE IT RESOLVED, that the following officers (the "Authorized Officers") be and each hereby is authorized, empowered and directed, in the name and on behalf of Company, to: (i) to execute and deliver bids for construction projects from time to time and (ii) negotiate, finalize and enter into, execute and deliver such bids and contracts related thereto, with such additions, deletions or other modifications deemed by such Authorized Officer to be necessary, advisable or appropriate:

Name of Officer	Offices
Dalas Lamberson	Chief Executive Officer and President
Deanna Justus	Secretary
Eric Macek	Vice President of Pre-Construction
Robert LaChance	Construction Manager
Mark Selph	Vice President of Operations

FURTHER RESOLVED, that each such Authorized Officer be and hereby is authorized, empowered and directed, in the name and on behalf of the Company, to undertake any other action deemed by such Authorized Officer to be necessary, advisable or appropriate in furtherance of the Company's objectives in connection with the foregoing resolution, and that any such action taken or any agreement, certificate, notice, letter or other document executed and delivered by such Authorized Officer in connection with any such action shall be conclusive evidence of such Authorized Officer's authority to take, execute and deliver the same;

FURTHER RESOLVED, that all actions heretofore taken by such Authorized Officer or any other manager, director, officer, member, representative or agent of the Company, or any of their affiliates in connection with the foregoing resolutions and the matters or Transaction described therein be and hereby are ratified, confirmed and approved in all respects as the act and deed of the Company;

FURTHER RESOLVED, that these resolutions may be executed (i) via facsimile, e-mail or other means of electronic transmission, which shall be deemed an original and (ii) in any number of separate counterparts (by original or electronic means), each of which shall be an original, and all of which taken together shall be deemed to constitute one and the same instrument.

IN WITNESS WHEREOF, the undersigned have authorized, approved and adopted the forgoing resolutions effective as of the date first above written.

SHAREHOLDER:

Dalas Lamberson

DIRECTOR:

Dalas Lamberson

Sworn to and subscribed before me, Dalas Lamberson, whom is Personally Known to Me, this 5th Day of February, 2022

LAUREN MCGOVERN
Notary Public
State of Florida
Comm# HH202764
Expires 11/29/2025

Date: 2/5/2022
Notary Public: Lauren McGovern

UNANIMOUS CONSENT OF THE SOLE SHAREHOLDER AND DIRECTOR OF TLC DIVERSIFIED, INC.

February 4, 2022

The undersigned, being the sole shareholder and sole the director of the **TLC DIVERSIFIED, INC.**, a Florida corporation (the "**Company**"), hereby consents to the adoption of the following resolutions, effective as of the date hereof, by written consent in lieu of a meeting:

WHEREAS, the undersigned shareholder acquired 100% of the capital stock of the Company as of the date hereof and desires to appoint new directors to serve on the Company's Board of Directors (the "**Board**") and the undersigned newly appointed directors desire to appoint new officers to serve as the Company's officers;

NOW, THEREFORE, BE IT RESOLVED, that the undersigned sole shareholder of the Company hereby elects and appoints the following individuals as sole new directors of the Corporation, to serve as directors until their successors are duly elected and qualified:

Dalas Lamberson

FURTHER RESOLVED, that undersigned newly appointed director hereby appoints the following persons to the office set forth opposite their names, to serve in those capacities until the Board duly elects their successors, or until their earlier resignation, removal or death:

Name of Officer	Offices
Dalas Lamberson	Chief Executive Officer and President
Thurston Lamberson	Chief Financial Officer and Treasurer
Deanna Justus	Secretary
Eric Macek	Vice President of Pre-Construction
Robert LaChance	Construction Manager
Mark Selph	Vice President of Operations

FURTHER RESOLVED, that these resolutions may be executed (i) via facsimile, e-mail or other means of electronic transmission, which shall be deemed an original and (ii) in any number of separate counterparts (by original or electronic means), each of which shall be an original, and all of which taken together shall be deemed to constitute one and the same instrument.

IN WITNESS WHEREOF, the undersigned have authorized, approved and adopted the forgoing resolutions effective as of the date first above written.

SHAREHOLDER:

Dalas Lamberson

DIRECTOR:

Dalas Lamberson

Sworn to and subscribed before me, Dalas Lamberson, whom is Personally Known to Me, this 4th Day of February, 2022

LAUREN MCGOVERN
Notary Public
State of Florida
Comm# HH202764
Expires 11/29/2025

Date: 2/4/2022
Notary Public: Lauren McGovern

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-357-4829

VALID OCTOBER 1, 2023 THROUGH SEPTEMBER 30, 2024

Business Name: T L C DIVERSIFIED INC

Receipt #: 180-207090
Business Type: GENERAL CONTRACTOR (GENERAL CONTRACTOR)

Owner Name: LAMBERSON THURSTON
Business Location: 7233 SOUTHERN BLVD B1
PALM BEACH COUNTY
Business Phone: 407-478-2025

Business Opened: 09/29/1992
State/County/Cert/Reg: CGC041816
Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		10		

For Vending Business Only — Number of Machines: — Vending Type:

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
27.00	0.00	0.00	0.00	0.00	0.00	27.00

Receipt Fee 27.00
Packing/Processing/Canning Employees 0.00

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT

WHEN VALIDATED

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:

LAMBERSON THURSTON
2719 17 ST EAST
PALMETTO, FL 34221-0000

Receipt #WWW-22-00274939
Paid 09/12/2023 27.00

2023 - 2024

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-357-4829

VALID OCTOBER 1, 2023 THROUGH SEPTEMBER 30, 2024

Business Name: T L C DIVERSIFIED INC

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PALM BEACH COUNTY
Business Phone: 407-478-2025

Business Opened: 09/29/1992
State/County/Cert/Reg: CGC041816
Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		10		

Signature

For Vending Business Only — Number of Machines: — Vending Type:

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
27.00	0.00	0.00	0.00	0.00	0.00	27.00

Receipt #WWW-22-00274939
Paid 09/12/2023 27.00

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

LAMBERSON, THURSTON

TLC DIVERSIFIED INC
2719 17TH STREET EAST
PALMETTO FL 34221

LICENSE NUMBER: CGC041816

EXPIRATION DATE: AUGUST 31, 2024

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

09

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE UNDERGROUND UTILITY & EXCAVATION CO HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

LAMBERSON, THURSTON

TLC DIVERSIFIED INC
2719 17TH STREET EAST
PALMETTO FL 34221

LICENSE NUMBER: CUC053963

EXPIRATION DATE: AUGUST 31, 2024

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

LAMBERSON, DALAS HAMPTON

TLC DIVERSIFIED, INC.
2719 17TH ST EAST
PALMETTO FL 34221

LICENSE NUMBER: CGC1534995

EXPIRATION DATE: AUGUST 31, 2024

Always verify licenses online at MyFloridaLicense.com

ISSUED: 11/20/2023

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE UNDERGROUND UTILITY & EXCAVATION CO HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

MACEK, ERIC

TLG DIVERSIFIED, INC.
2719 17TH STREET EAST
PALMETTO FL 34221

LICENSE NUMBER: CUC1225581

EXPIRATION DATE: AUGUST 31, 2024

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

Information Required for the E-Verify Program **Information relating to your Company:**	
Company Name	TLC Diversified, Inc.
Company Facility Address	2719 17th St E Palmetto, FL 34221
Company Alternate Address	2719 17th St E Palmetto, FL 34221
County or Parish	Manatee
Employer Identification Number	59-2513308
North American Industry Classification Systems Code	Construction Of Buildings (236)
Parent Company	
Number of Employees	20 to 99
Number of Sites Verified for	1

Are you verifying for more than 1 site? If yes, please provide the number of sites verified for in each State:

Florida	1

Information relating to the Program Administrator(s) for your Company on policy questions or operational problems:

Name	Lauren McGovern
Phone Number	(941) 722-0621
Fax Number	
Email Address	lmcgovern@tlcdiv.com

State of Florida
Department of State

I certify from the records of this office that TLC DIVERSIFIED, INC. is a corporation organized under the laws of the State of Florida, filed on April 4, 1985.

The document number of this corporation is H51364.

I further certify that said corporation has paid all fees due this office through December 31, 2023, that its most recent annual report/uniform business report was filed on April 17, 2023, and that its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Seventeenth day of April, 2023

Secretary of State

Tracking Number: 6440105647CC

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

FORM 1
INSURANCE CERTIFICATE

CITY OF HOLLYWOOD, FL

SECTION 5

SUBMITTAL CHECKLIST FORM

TLC DIVERSIFIED

Client#: 2300303 569TLCDI

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 3/31/2023

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 any rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Theresa Cerf
McGriff Insurance Services 12485 28th Street N 3rd Floor St Petersburg, FL 33716 727 823-5551	PHONE (A/C, No, Ext): 727 823-5551 FAX (A/C, No): 727-894-3339 E-MAIL ADDRESS: Theresa.Cerf@mcgriff.com

INSURED	INSURER(S) AFFORDING COVERAGE	NAIC #
TLC Diversified, Inc. 2719 17th St E Palmetto, FL 34221	INSURER A : National Fire Insurance Co of Hartford	20478
	INSURER B : The Continental Insurance Company	35289
	INSURER C : AXA XL America	02423
	INSURER D : Bridgefield Employers Insurance Company	10701
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **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 INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC OTHER:	X	X	7036909933	04/01/2023	04/01/2024	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000 $100,000 $15,000 $1,000,000 $2,000,000 $2,000,000
B	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY	X	X	7036910080	04/01/2023	04/01/2024	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000 $ $ $
B	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION $10,000	X	X	7036910497	04/01/2023	04/01/2024	EACH OCCURRENCE AGGREGATE	$5,000,000 $5,000,000
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	X	83057104	04/01/2023	04/01/2024	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000
C	Profess/Pollution			PEC006077801	04/01/2023	04/01/2024	$1,000,000 / $5,000,000	
B	Rented/Leased Equ			7037100866	04/01/2023	04/01/2024	$500,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Blanket Additional Insured on General Liability and Auto Liability on a Primary-Noncontributory basis. Blanket Waiver of Subrogation on General Liability, Auto Liability and Workers Compensation. Umbrella follows form. 30 Days' Notice of Cancellation will be endorsed when required by written contract.

CERTIFICATE HOLDER

****FOR BIDDING PURPOSES****

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Kyle Helms

TJCER

FORM 1
SUNBIZ REGISTRATION

CITY OF HOLLYWOOD, FL

SECTION 6

SUBMITTAL CHECKLIST FORM

TLC DIVERSIFIED

DIVISION OF CORPORATIONS

Department of State / Division of Corporations / Search Records / Search by FEI/EIN Number /

Detail by FEI/EIN Number

Florida Profit Corporation
TLC DIVERSIFIED, INC.

Filing Information

Document Number	H51364
FEI/EIN Number	59-2513308
Date Filed	04/04/1985
State	FL
Status	ACTIVE
Last Event	AMENDMENT AND NAME CHANGE
Event Date Filed	08/23/2017
Event Effective Date	NONE

Principal Address

2719 17TH STREET EAST
PALMETTO, FL 34221

Changed: 04/25/2001

Mailing Address

2719 17TH STREET EAST
PALMETTO, FL 34221

Changed: 04/25/2001

Registered Agent Name & Address

Lamberson, Dalas
303 Ocala Rd
Belleair, FL 33756

Name Changed: 02/18/2022

Address Changed: 02/21/2022

Officer/Director Detail

Name & Address

Title DP

Lamberson, Dalas
2719 17TH STREET EAST
PALMETTO, FL 34221

Title CFO

LAMBERSON, THURSTON
2719 17TH STREET EAST
PALMETTO, FL 34221

Title Secretary

Justus, Deanna
2719 17TH STREET EAST
PALMETTO, FL 34221

Annual Reports

Report Year	Filed Date
2022	02/18/2022
2022	02/21/2022
2023	04/17/2023

Document Images

04/17/2023 -- ANNUAL REPORT	View image in PDF format
02/21/2022 -- AMENDED ANNUAL REPORT	View image in PDF format
02/18/2022 -- ANNUAL REPORT	View image in PDF format
01/11/2021 -- ANNUAL REPORT	View image in PDF format
01/23/2020 -- ANNUAL REPORT	View image in PDF format
01/29/2019 -- ANNUAL REPORT	View image in PDF format
02/12/2018 -- ANNUAL REPORT	View image in PDF format
08/23/2017 -- Amendment and Name Change	View image in PDF format
01/09/2017 -- ANNUAL REPORT	View image in PDF format
02/24/2016 -- ANNUAL REPORT	View image in PDF format
01/12/2015 -- ANNUAL REPORT	View image in PDF format
01/14/2014 -- ANNUAL REPORT	View image in PDF format
01/28/2013 -- ANNUAL REPORT	View image in PDF format
01/25/2012 -- ANNUAL REPORT	View image in PDF format
02/02/2011 -- ANNUAL REPORT	View image in PDF format
02/08/2010 -- ANNUAL REPORT	View image in PDF format
02/05/2009 -- ANNUAL REPORT	View image in PDF format
03/28/2008 -- ANNUAL REPORT	View image in PDF format
01/16/2007 -- ANNUAL REPORT	View image in PDF format
03/13/2006 -- ANNUAL REPORT	View image in PDF format
02/05/2005 -- ANNUAL REPORT	View image in PDF format
02/20/2004 -- ANNUAL REPORT	View image in PDF format
02/28/2003 -- ANNUAL REPORT	View image in PDF format
02/19/2002 -- ANNUAL REPORT	View image in PDF format

02/13/2001 -- ANNUAL REPORT	View image in PDF format
02/01/2000 -- ANNUAL REPORT	View image in PDF format
04/20/1999 -- ANNUAL REPORT	View image in PDF format
02/10/1998 -- ANNUAL REPORT	View image in PDF format
02/18/1997 -- ANNUAL REPORT	View image in PDF format
01/29/1996 -- ANNUAL REPORT	View image in PDF format
01/19/1995 -- ANNUAL REPORT	View image in PDF format

ATTACHMENT A
CONTRACT

THIS AGREEMENT, made and entered into, this ____ day of _____, A.D., ____, 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

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:

SRWWTP Bar Screen Modifications
Project No. 9216A

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

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 my 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 initial term of this contract shall be for a period of nine (9) months 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

ATTEST:

_____
PATRICIA A. CERNY, MMC
City Clerk

****

CONTRACTOR
Party of the Second Part

WHEN THE CONTRACTOR IS AN INDIVIDUAL:

Signed, sealed and delivered in the presence of:

_____	_____ (SEAL)
(Witness)	(Signature of Individual)
_____	_____
(Witness)	(Signature of Individual)

****

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

Signed, sealed and delivered in the presence of:

_____	_____
(Witness)	(Name of Firm)
_____	_____ (SEAL)
(Witness)	(Signature of Individual)

****

WHEN THE CONTRACTOR IS A PARTNERSHIP:

_____	_____
(Witness)	(Name of Firm) a Partnership
_____	BY: _____ (SEAL)
(Witness)	(Partner)

****

WHEN THE CONTRACTOR IS A CORPORATION:

Attest:

_____
Secretary

_____
(Correct Name of Corporation)

BY: _____ (SEAL)
President

****

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_____, a corporation under the laws of the State of _____, was held on _____, 20__, and the following resolution was duly passed and adopted:

> "RESOLVED, that _____ as _____ 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 _____ day of _____, 20__.

_____
Secretary

- END OF SECTION -

ATTACHMENT A
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
Name Address Tel. No.

As Principal and _____
Name Address Tel. No.

as Surety, are held and firmly bound to the CITY OF HOLLYWOOD, FLORIDA herein called the City, in the sum of _____

_____ Dollars ($ _____) 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 **SRWWTP Bar Screen Modifications** project.

Which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

THE CONDITION of this bond is that if Principal promptly makes payments to all claimants defined in Section 255.05 (1), F.S., supplying Principal with labor, materials or supplies used directly or indirectly by principal in the prosecution of the work provided for in the Contract, then this bond shall be null and void and of no further force and effect; otherwise, to remain in full force and effect.

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 any other changes in or under contract documents and compliance or noncompliance with any formalities connected with the contract does not affect Surety's obligation under this bond and Surety waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or any other changes, compliance, or noncompliance to the terms of the Contract or to the Work or to the Specifications.

This bond is furnished pursuant to the statutory requirements for bond on public works projects being Florida Statute 255.05. Claimants are hereby notified that the Statute 255.05(2) specifically requires that notice be given to Contractor within 45 days after beginning to furnish labor, materials or supplies for the prosecution of the work that claimants intends to look to the bond for protection. Further notice is hereby given claimants that written notice of nonpayment within ninety (90) days after performance of the labor or after complete delivery of the materials or supplies must be delivered to the Contractor and to the Surety. Further notice is hereby given that no action for labor, materials or supplies may be instituted against the Contractor or the Surety on the bond after one year for the performance of the labor or completion of delivery of the materials or supplies.

Without modifying the foregoing, this bond shall be construed as requiring of the principal and surety no more and no less than is specified in F.S. 255.050.

SIGNED AND SEALED, this _____ day of _____, 20___.

PRINCIPAL:

ATTEST:

_____ _____
(Signature)

_____ _____
(Title)

(SEAL)

SURETY:

_____
(Surety)

ATTEST:

_____ _____
(Signature)

_____ _____
(Attorney-in-Fact)

****

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY
for the use and reliance of the
City of Hollywood, Florida only:

By _____
Douglas R. Gonzales
City Attorney

APPROVED AS TO FINANCE:

By _____
David E. Keller
Financial Services Director

- END OF SECTION -

ATTACHMENT A
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:
That we _____,
Name Address Tel. No.
as Principal, and _____
Name Address Tel. No.
as Surety, are held and firmly bound unto the City of Hollywood in the sum of _____ Dollars ($_____), 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 **SRWWTP Bar Screen Modifications, Project No. 9216A.**

A copy of said Contract, **No.9216A** 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)

_____ By: _____
(Seal)
(Address) (Signature of Individual)

_____
(Witness)

_____
Address

****

WHEN THE PRINCIPAL IS A PARTNERSHIP:

Signed, sealed and delivered in the presence of:

_____	_____
(Witness)	(Name of Partnership)
_____	By: _____ (Seal)
(Address)	(Partner)
_____	_____
(Witness)	(Printed Name of Partner)
_____	
Address	

****

WHEN THE PRINCIPAL IS A CORPORATION:

Attest:

_____	_____
(Secretary)	(Name of Corporation)
	By: _____ (Seal)
	(Affix Corporate Seal)
	_____
	(Printed Name)
	_____
	(Official Title)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the Secretary of the corporation named as Principal in the within bond; that _____, who signed the said bond on behalf of the Principal was then _____ 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.

_____ (SEAL)
Secretary

TO BE EXECUTED BY CORPORATE SURETY

Attest:

_____ _____
(Secretary) (Corporate Surety)

_____
(Business Address)
_____

By: _____
(Affix Corporate Seal)

_____
(Attorney-In-Fact)

_____
(Name of Local Agency)

_____
(Business Address)

_____

STATE OF FLORIDA

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared, _____ to me well known, who being by me first duly sworn upon oath, says that he is the attorney-in-fact for the _____ and that he has been authorized by _____ 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 _____ day of _____, 20_____.

_____

Notary Public, State of Florida
My Commission Expires:

****

APPROVED AS TO FORM AND LEGAL SUFFICIENCY
for the use and reliance of the City of Hollywood, Florida only:

By _____
Douglas R. Gonzales
City Attorney

APPROVED AS TO FINANCE:

By _____
David E. Keller
Financial Services Director

- END OF SECTION -

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, expediters, 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 CONSUL T ANT 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, templets, 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

INDEX TO ARTICLES

1.	Project Schedule	2
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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)
Phase I – East Bar Screen and Hydraulic Lift Installation and Testing	**90**
Substantial Completion	**240 (150 Additional After Phase I)**
Project Closeout	**30**

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.

(1) 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.

(2)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:

Major Milestones	Completion Time (calendar days)	Liquidated Damages (Per Day)
1. Phase 1 – East Bar Screen and Hydraulic Lift Installation and Testing	**90**	**$2,000.00**
2. Substantial Completion	**240 (150 Additional After Phase 1)**	**$1,000.00**
3. Project Closeout	**30**	**$1,000.00**

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 of 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

ENGINEER **BY** **DATE**

CONTRACTOR **BY** **DATE**

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).

BY **DATE**

- END OF SECTION -

CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES

SRWWTP BAR SCREEN MODIFICATIONS

BID PACKAGE CONTENTS AND REQUIREMENTS

SECTION	TITLE
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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CITY OF HOLLYWOOD

DEPARTMENT OF PUBLIC UTILITIES

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SECTION 01 10 00

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 shall be performed, furnished, and installed by the CONTRACTOR as though originally so specified or shown, at no increase in cost to the CITY.

B. Prior to construction, the CONTRACTOR shall verify existing utilities identified on the Drawings and locate other potential utilities in their working area may not shown on the Drawings. The utility verifications, if applicable, consist of excavation to verify tie-in points and to locate potential conflicts that may affect the work as shown on the Contract Drawings. 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. 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 reasonably be assumed as necessary to accomplish this end, should be supplied whether or not specifically shown on the plans or described herein. The following components comprise the major project elements:

1. Huber to repair the existing east bar screen with a new frame and accessories supplied by the City. Contractor shall install a new lift system with associated electrical and instrumentation and control components procured by the City. After the new lift system is installed, the contractor shall re-install the existing east bar screen. Huber to provide technical assistance. This screen shall be completed first with all modifications necessary as listed in the contractor drawings.

~~A.~~2. Removal of the existing west bar screen and installation of a new lift system with associated electrical and instrumentation and control components procured by the City. After the new lift system is installed, the Contractor shall re-install the existing west bar screen. Huber to provide technical assistance.

~~1. Installation of a lift system on the new bar screens. Structural, electrical, mechanical, and instrumentation and control elements are associated with this lift system. The bar screen equipment shall be installed by the Contractor as prescribed by the manufacturer. The City will procure two new bar screens as well as the associated lift mechanisms.~~

~~2.~~3. Concrete modifications inside the existing bar screen building to support the new lift system. New concrete systems shall be coated as required. Removal of grit inside the channels is required.

~~3.~~4. Electrical modifications for the new lift system for the bar screen.

~~4.~~5. Procurement and installation with new skylights as specified in the contract drawings.

~~5.~~6. Procurement and installation of a new gantry system as specified in the contract documents.

~~6.~~7. Preparation of As-built drawings.

~~7.~~8. Commissioning of installed systems. Proper functioning of the bar screen and lifting mechanisms shall be demonstrated by the Contractor to Engineer and CITY.

1.03 SUGGESTED WORK SEQUENCE

A. A suggested work sequence shall be provided by the CONTRACTOR which will abide by constraints outlined in specification section 01 52 00.

B. A detailed sequence of construction shall be submitted by the CONTRACTOR and accepted by the CITY and ENGINEER prior to the commencement of any work. The CITY reserves the right to make changes to the sequence as necessary to facilitate the Work or to minimize any operations conflict with no cost impact from the CONTRACTOR.

1.04 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 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 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.

1.05 LOCATION OF THE PROJECT

A. The project is located at the City of Hollywood's Southern Regional Wastewater Treatment Plant at 1621 North 14th Avenue, Hollywood, Florida.

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. Procedures and additional requirements regarding manufacturer's experience and substitutions are included in Section 01 33 00 - Submittals.

1.07 DRAWINGS OF EXISTING FACILITIES

A. Drawings of the existing facilities may be inspected at the City's Engineering and Construction 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 State 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 DRAWINGS

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 noted in the Specifications and be provided by the CONTRACTOR in accordance with the Specification on the Drawings.

1.09 FIELD LAYOUT OF WORK

A. All work under this Contract shall be constructed in accordance with the 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 ENGINEER for interpretation or correction.

B. All survey work for construction control purposes shall be made by the CONTRACTOR at CONTRACTOR'S 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 CONTRACTOR'S 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 bench marks, 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 ENGINEER. All computations necessary to establish the exact position of the work shall be made and preserved by the CONTRACTOR.

F. The ENGINEER may check all or any portion of the work, and the CONTRACTOR shall afford all necessary assistance to the ENGINEER 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 CONTRACTOR'S work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION**

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SECTION 01 20 00

PROJECT MEETINGS

PART 1 GENERAL

1.01 PRECONSTRUCTION

A. A mandatory preconstruction meeting will be held to acquaint representatives of the Department and various other agencies with those in responsible charge of the CONTRACTOR's activities for the project. Unless otherwise directed by the Department, no construction activities relating to this contract shall commence until after the pre-construction meeting has been adjourned, and until any pending business from the meeting has been addressed by the CONTRACTOR to the satisfaction of the Department and ENGINEER. The meeting will cover such subjects as the following:

1. Insurance certificates
2. Permits and licenses
3. Affirmative action employment
4. Construction schedules
5. Cost breakdown and applications for payment
6. Material deliveries, storage and payments
7. Shop drawings and submittals
8. Job-site inspection by the ENGINEER
9. Safety and emergency action procedures
10. Operations of the existing utilities
11. Field offices, security and other housekeeping procedures
12. List of subcontractors
13. Liquidated damages
14. Communications
15. Coordinating
16. All other appropriate matters.

1.02 PROGRESS

A. A progress meeting shall be held on a once-per-week basis for the purpose of coordinating and expediting the work. The CONTRACTOR, as a part of his obligations under the Contract, shall attend in person or by an authorized representative to attend and to act on his behalf. The ENGINEER will conduct such meetings and as necessary, with the CONTRACTOR's input, issue an agenda.

B. In addition, the ENGINEER or CONTRACTOR may call for special job site meetings for the purpose of resolving unforeseen problems or conflicts which may impede the construction schedule. The ENGINEER will prepare a brief summary report of the decisions or understandings concerning each of the items discussed at the meeting.

C. At weekly progress meetings, the CONTRACTOR shall submit to the ENGINEER for review a current three (3) week progress schedule. This schedule submission shall include a two

week look ahead schedule and reflect status of the work performed during the preceding week.

PART 2 PRODUCTS (**NOT USED**)

PART 3 EXECUTION (**NOT USED**)

**** END OF SECTION ****

SECTION 01 25 00

BASIS OF PAYMENT

PART 1 GENERAL

1.01 GENERAL

A. Payments to the CONTRACTOR shall be made on the basis of the bid items listed on the Proposal Bid Form 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, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the CITY.

B. The prices stated in the proposal 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, furnishing and repairing small tools and ordinary equipment, mobilization, home office expenses and general supervision, bond, insurance, 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 Drawings and specified herein. In addition, the CONTRACTOR shall include the actual cost of social security taxes, unemployment insurance, worker's compensation, fringe benefits, inclusive of life and health insurance, union dues, pension, pension Drawings, vacations, and insurance and CONTRACTOR's public liability and property damage insurance involved in the work based on the actual wages paid to such labor and all other general costs and profits, prorated to each Item.

C. 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.

D. The Basis of Payment for an item at the price shown in the Proposal shall be in accordance with its description of the item in this Section and as related to the work specified and as shown on the Drawings. Unit prices, where used, will be applied to the actual quantities furnished and installed in conformance with the Contract Documents.

E. The 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 Drawings or stated herein. Should the CONTRACTOR feel that the cost of any item of work has not been established by the Proposal Bid Form, he shall include the cost for that work in the Bid Item 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.

F. The CONTRACTOR shall submit, with each Payment Request, a list of MBE/WBE SUBCONTRACTOR's, that he is or will be utilizing for his contract. For each MBE/WBE SUBCONTRACTOR, the following information shall be provided:
   1. Total sub-contract dollar amount.
   2. Amount paid to date.

1.02 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 Proposal Bid Form as described in Section 00 30 10, unless otherwise specified. A representative of the CONTRACTOR shall witness all field measurements.

1.03 PAYMENT ITEMS

A. Base Bid Items
   1. Bid 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 6.

   2. Bid 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. 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 6.

   3. Bid Item No. 3 – Skylight Replacement: The lump sum price for this item shall be full payment for all labor, equipment, materials, delivery, and testing for all work necessary and required to furnish and replace two skylights at the bar screen facility, as defined in the Contract Drawings. This includes but is not limited to the demolition of existing wood blockings from top of roof beam, installation of two new skylights and appurtenances procured by the CONTRACTOR, and high concrete curbs at the

perimeter of the proposed skylight opening, and repair and alternations to the existing roof structure. The work shall also include the preparation of submittals, shop drawings, as-builts, and record drawings.

4. Bid Item No. 4 – Gantry Crane Installation: The lump sum price for this item shall be full payment for all labor, equipment, materials, delivery, and testing. for all work necessary and required to furnish and install a portable gantry crane at the bar screen facility, as defined in the Contract Drawings. This includes but is not limited to the installation of one portable gantry crane and Vendor Control Panel (VCP), a NEMA 7 explosion-proof disconnect switch, and all other associated electrical appurtenances and conduits. The work shall also include the preparation of submittals, shop drawings, as-builts, and record drawings.

5. Bid Item No. 5 – Bar Screen ~~Replacement~~ Modification: ~~The lump sum price for this item shall be full payment for all labor, equipment, materials, and testing for all work necessary and required to replace two bar screens and two Local Control Panels (LCP) which are procured by the CITY, and two new hydraulic lifts procured by the CITY at the bar screen facility, as defined in the Contract Drawings. This includes but is not limited to the removal of existing bar screens, and the installation of new bar screens, LCPs, hydraulic lifts, and all other associated appurtenances. The work shall also include the preparation of submittals, shop drawings, as-builts, and record drawings.~~ The lump sum price for this item shall be full payment for all labor, equipment, materials, and testing for all work necessary and required to remove the existing west bar screen and reinstall the existing west bar screen and the repaired existing east bar screen with two new Local Control Panels (LCP) which are procured by the CITY, and two new hydraulic lifts procured by the CITY at the bar screen facility, as defined in the Contract Drawings. This includes but is not limited to the removal of the existing west bar screens, and the installation of the existing west bar screen and the repaired east bar screens, LCPs, hydraulic lifts, and all other associated appurtenances. The work shall also include the preparation of submittals, shop drawings, as-builts, and record drawings.

6. Bid Item No. 6 – Concrete Modifications: The lump sum price for this item shall be full payment for all labor, equipment, materials, delivery, and testing for all work necessary and required to perform concrete modifications at each bar screen location, as defined in the Contract Drawings. This includes but is not limited to the demolition of existing concrete systems, installation of new concrete systems, and coating of new concrete systems. The work shall also include the removal, hauling, and disposal of grit and debris located in the bar screen channel and the preparation of submittals, shop drawings, as-builts, and record drawings.

7. Bid Items No. 7 through 13 - Miscellaneous 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 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.

8. Bid Item No. 14 - Owner 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.

9. Bid Item No. 15 – 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.

10. Bid Item No.16 – 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.

11. Bid Item No.17 – 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.

B. The price bid for each item shall be stated in both words figures in the appropriate places in the Proposal Bid Form. All blank spaces for bid prices must be filled in with ink, or with

a typewriter. The Bidder is further directed that any and all alterations, changes, corrections and modifications, made to the Proposal Bid Form prior to submission of the bids, must be initialed by the Bidder. Non-compliance by the Bidder of this directive may be grounds for rejection of his bid.

C. In the event that there is a discrepancy between the price written in words and the price written in numbers, the price written in words shall govern except where the number of units multiplied by the unit price shown in numbers equals the total price for that bid item. In such case, the unit price shown in numbers shall govern over the unit price shown in words.

D. Where an error is made in the calculation of the total bid price of an item, the unit price shall govern.

E. If the bidder makes an error in his addition of the total bid prices of the applicable items in the Quotation, the correct sum of its' applicable bid item totals shall be the Total Bid.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00

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:

Copies to Engineer	Type of Submittal
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 electronic copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.03 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 shown 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, not withstanding 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) electronic 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) electronic copies will be returned stamped "Revise and Resubmit" and a new submittal is required (4 electronic 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):

1. Submittal Numbering System
    a. Package ID: The package number will reflect the CSI (specification) section number as it appears in the specifications.
    b. 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

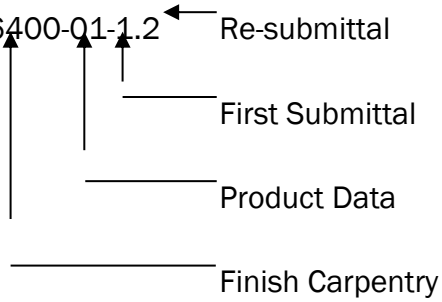
        07 - O&M

        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:

Package	Submittal	Description
03300	03300-01-1.1	Concrete Admixture A, First Submittal
06400	06400-01-1.2	Re-submittal



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 subconstractor's, 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 CITY 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 the 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:

   1. “I HEREBY NOTIFY THE CITY 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-builts 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 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 ****

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SECTION 01 40 00

TESTING AND INSPECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. All testing and inspection will be in accordance with Article 12 of the General Conditions.

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)

** END OF SECTION **

SECTION 01 41 00

CONTRACTOR'S HEALTH AND SAFETY PLAN

PART 1 - GENERAL

1.01 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.

1.02 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

1.03 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

2.01 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.

2.02 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.

B. 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 he reviewed and updated as necessary to reflect the current status of Site operations.

C. 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.

D. The SSHP shall include procedures that will be used to ensure safe waste handling during the excavating, handling, loading, and transporting activities.

2.03 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.

2.04 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 01 45 00

CONTRACTOR QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements for quality control services, field inspections and field testing of civil and structural constructs required for this project.

B. The Contractor is responsible for the quality assurance and quality control of their respective work for the construction of this project in accordance with the Contract Documents.

1.02 RELATED SECTIONS

A. This section contains specific references to the following related section. Additional related sections may apply that are not specifically listed below.

1. Section 01 40 00 Testing and Inspection Services

1.03 DEFINITIONS

A. Quality Control System (QCS): The quality control, assurance, and inspection system established and carried out to ensure compliance with the Plans and specifications.

B. QCS Supervisor: That person in responsible charge of the work occurring, as designated by the Contractor in the QCS Plan.

C. QCS Inspector: Responsible, certified personnel inspecting the various constructs at specified milestones and during the project overall and designated by the Construction Manager.

D. Factory Test: Tests made on various materials, products and component parts prior to shipment to the job site.

E. Field Tests: Tests and analyses made at or in the vicinity of the job site in connection with the actual construction.

F. Certified Inspection Report: Reports signed by approved inspectors attesting that the items inspected meet the specification requirements other than any exceptions included in the report.

G. Certificate of Compliance: Certificate from the manufacturer of the material or equipment identifying said manufacturer, product and stating that the material or equipment meet specified standards, and shall be signed by a designated officer of the manufacturer.

H. Standard Compliance: Condition whereby specified materials or equipment must conform to the standards of organizations such as the American National Standard Institute (ANSI), American Society for Testing and Materials (ASTM), Underwriters Laboratories (UL) or similar organization.

I. Quality Assurance: The day-to-day, in-process supervisory observations of work and materials conducted by the Contractor to assure that the proper methods and materials are being used and installed by tradesmen.

J. Source Quality Control: The in-process testing and inspections conducted by the QCS Inspector(s) to verify that the materials, equipment; workmanship and shop manufactured constructs are in compliance with the Contract Documents, applicable Codes and standards.

K. Field Quality Control: The testing and inspections conducted by the QCS Inspector(s) in the field during and at the completion of each construct to verify that the in-process and completed construction is in compliance with the Contract Documents, applicable Codes and standards.

L. Special Inspector – A qualified individual employed or retained by an approved agency and approved by the local governing authorities having jurisdiction (AHJ) as having the competency necessary to inspect a particular type of construction requiring special inspection.

1.04 SUBMITTALS

A. Action Submittals:

1. Procedures: Section 01 33 00.
2. A copy of this specification section with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.
3. Check-marks (✓) denote full compliance with a paragraph as a whole. Deviations shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined signify compliance with the specification. Include a detailed, written justification for each deviation. Failure to include a copy of this marked-up specification section, along with justification(s) for requested deviations, with the submittal, is cause for rejection of the entire submittal with no further consideration.
4. Written description of Contractor's proposed QCS plan in sufficient detail to illustrate adequate measures for verification and conformance to defined requirements. The QCS plan and submittal shall include a log showing anticipated inspections, QCS Inspectors, Special Inspections, and source and field Quality Assurance procedures. Submittal of the QCS plan shall be made prior to commencing field work.
5. Contractor's proposed QCS Supervisor and QCS Inspectors (other than the Special Inspectors provided by City), including qualifications, responsibilities, and if requested, references.
6. Complete structural system information describing Contractor designed structural systems, including sealed calculations, shop and erection drawings, product literature for the various components, International Code Council (ICC) Evaluation Reports for structural components, and a discussion of risk issues associated with the proposed system which could adversely impact overall project completion.
7. If requested by the Construction Manager during the work, manufacturer's field services and reports.

A. Informational Submittals:

1. Procedures: Section 01 33 00.
2. Manufacturers' field services and reports unless requested by Construction Manager to be submitted for review.
3. Special Inspection reports, unless otherwise directed in each technical specification Section.

1.05 REGULATORY REQUIREMENTS

A. GENERAL: Comply with all Federal, State, and local Codes as referenced herein. Such regulations apply to activities including, but not limited to, site work and zoning, building practices and quality, on and offsite disposal, safety, sanitation, nuisance, and environmental quality.

B. SPECIAL INSPECTION: Special Inspection shall be performed by the Special Inspector under contract with the City or registered design professional in responsible charge acting as the City 's agent in conformance with the IBC. Special Inspection is in addition to, but not replacing, other inspections and quality control requirements herein. Where sampling and testing required herein conforms to Special Inspection standards, such sampling and testing need not be duplicated.

C. STRUCTURAL OBSERVATION: Registered Design Professional shall make visual inspections of the work to assess general conformance with the Contract Documents at significant construction stages and at completion of the structural system in accordance with IBC 1704.6 Structural Observations requirements.

1.06 CONTRACTOR'S RESPONSIBILITIES

A. Monitor quality assurance over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Coordinate with, schedule specified inspections by, and provide normal and customary assistance to the QCS Inspectors and City provided Special Inspectors.

C. Coordinate with, schedule specified structural observations by Engineer, and provide normal and customary assistance to Engineer performing structural observations.

D. Comply fully with manufacturers' instructions, including each step in sequence.

E. Should manufacturers' instructions conflict with Contract Documents, request clarification before proceeding from Construction Manager.

F. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

G. The Contractor shall retain the services of a licensed land surveyor, registered in the State of Florida, to perform survey work including but not limited to establishing line and grade, in advance of the construction; and to perform other surveying services for the work included under the Contract. The surveyor to be retained by the Contractor shall not be the same surveyor engaged for the Engineer's use. The surveyor shall be subject

to the approval of the Engineer. Survey drawings shall be submitted to the Engineer for approval.

H. The Contractor shall take all necessary measurements in the field to verify pertinent data and dimensions shown on the Drawings or to determine the exact dimensions of the Work.

1.07 FIELD SAMPLE PROCEDURES

A. When field samples are specified in a unit of work, construct each field sample to include work of all trades required to complete the field sample prior to starting related field work. Field samples may be incorporated into the project after acceptance by Construction Manager. Remove unacceptable field samples when directed by Construction Manager. Acceptable samples represent a quality level for the work.

1.08 CONTRACTOR DESIGNED STRUCTURAL SYSTEMS

A. DESIGN ENGINEERING: Contractor shall employ and pay for engineering services from a Professional Engineer registered in the State of Florida for structural design of Contractor designed structural systems including but not limited to temporary shoring and bracing, formwork support, interior wall and ceiling systems, and support systems for fire sprinkler, plumbing, mechanical, and electrical systems and equipment.

B. TESTS AND INSPECTIONS OF CONTRACTOR DESIGNED STRUCTURAL SYSTEMS: Contractor shall pay for preliminary testing of concrete, grout, and mortar mix designs where required by Code or these specifications prior to start of work. Contractor shall pay for required shop and site inspection of Contractor designed structural systems where required by Code or these specifications.

1.09 JOB SITE CONDITIONS

A. Schedule to ensure all preparatory work has been accomplished prior to proceeding with current work. Proceeding with the work constitutes acceptance of conditions. Allow adequate time for materials susceptible to temperature and humidity to “stabilize” prior to installation. Establish and maintain environmental conditions (i.e., temperature, humidity, lighting) as recommended by the various material manufacturers for the duration of the work.

PART 2 - PRODUCTS

2.01 SOURCE QUALITY CONTROL

A. CONTRACTOR RESPONSIBILITIES: Provide source quality control according to the reviewed and accepted QCS plan and paragraph 1.06 herein. Coordinate with Construction Manager to facilitate the work of the Testing Laboratory specified in Section 01 45 23 and Special Inspector. Provide ready access to sampling and inspection locations and incidental labor customary in such sampling and inspections. Timely prepare and submit submittals, and revise as indicated by review comments. Comply with technical requirements in each specification Section that applies to the work.

B. CONSTRUCTION MANAGER RESPONSIBILITIES: Review Contractor’s tracking of QCS activities at [monthly] meetings. Facilitate completion of submittal review per Section 01

33 00. Assist Contractor to ensure that Special Inspection occurs where and when specified.

C. ACCEPTANCE CRITERIA: Acceptable characteristics and quality of a particular item or construct is defined in that item's or construct's specification Section.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

A. Field quality control responsibilities of the Contractor and Construction Manager are substantially the same as described in paragraph 2.01, with the exception that this work occurs primarily on the jobsite as the work progresses, and Special Inspection will occur more often than at the source.

B. Acceptable characteristics and quality of a particular item or construct is defined in that item's or construct's specification Section.

3.02 REGULATORY COMPLIANCE – SPECIAL INSPECTIONS

A. The types of work requiring Special Inspection are specified in the Construction Documents and required to obtain regulatory approval by State or required by local governing authorities having jurisdiction over the building permit of the project.

B. Section 01 45 23 describes Testing Laboratory sampling, testing and reporting.

C. Contractor designed structural systems are subject to the same Special Inspection requirements as all other work.

3.03 CORRECTION OF DEFECTIVE WORK

A. Any defective or imperfect Work, equipment, or materials furnished by the Contractor which is discovered before the Final Acceptance of the Work, or during a warranty period, shall be removed immediately even though it may have been overlooked by the Engineer and approved for payment. The Contractor shall repair such defect, without compensation, in a manner satisfactory to the Engineer.

B. Unsuitable materials and equipment may be rejected, notwithstanding that such defective Work, materials and equipment may have been previously overlooked by the Engineer and accepted or approved for payment.

C. If any workmanship, materials or equipment shall be rejected by the Engineer as unsuitable or not in conformity with the Specifications or Drawings, the Contractor shall promptly replace such materials and equipment with acceptable materials and equipment at no additional cost to City . Equipment or materials rejected by the Engineer shall be tagged as such and shall be immediately removed from the site.

D. The Engineer may order tests of imperfect or damaged Work equipment, or materials to determine the required functional capability for possible acceptance, if there is no other reason for rejection. The cost of such tests shall be borne by the Contractor, and the nature, tester, extent and supervision of the tests will be as determined by the Engineer. If the results of the tests indicate that the required functional capability of the Work,

equipment, or material was not impaired, the Work, equipment or materials may be deemed acceptable, in the discretion of the Engineer. If the results of such tests reveal that the required functional capability of the questionable Work, equipment or materials has been impaired, then such Work, equipment or materials shall be deemed imperfect and shall be replaced. The Contractor may elect to replace the imperfect Work, equipment or material in lieu of performing the tests.

**** END OF SECTION ****

SECTION 01 52 00

MAINTENANCE OF FACILITIES AND SEQUENCE OF CONSTRUCTION

PART 1 - GENERAL

1.01 GENERAL

A. The CONTRACTOR shall ensure the continuous operation of The City of Hollywood's Southern Regional Wastewater Treatment Plant during construction. Portions of the existing Injection Well system will be removed from service to accomplish the work as specified herein. In performing the work shown and specified, the CONTRACTOR shall plan and schedule CONTRACTOR'S work as outlined in this Section.

1.02 CONSTRUCTION SCHEDULE

A. The Construction Schedule shall be submitted by the CONTRACTOR in accordance with Section 01 33 00 of these Specifications

1.03 USE OF FACILITIES BEFORE COMPLETION

A. The CITY reserves the right to enter and use any portion of the constructed facilities before final completion of the whole work to be done under this Contract in accordance with Article 14-2, Partial Utilization of the General Conditions.

1.04 CONNECTION OF EXISTING SYSTEMS

A. All connections to existing systems shall be performed in such a manner that no damage and minimal interruption is caused to the existing installation. On completion of its installation, the CONTRACTOR shall complete the connection to the existing systems in a proper manner. Any damage caused to existing installations shall be repaired or replaced by the responsible CONTRACTOR at no additional cost to the CITY.

B. The CONTRACTOR shall note that some of the work in this contract will require the CONTRACTOR to connect to existing pipelines and structures. The CONTRACTOR shall be responsible for the proper containment and disposal of wastewater or other materials drained from existing pipelines and structures during construction, unless otherwise specifically noted to be performed by the CITY.

1.05 COORDINATION WITH UTILITIES PERSONNEL

A. Before commencing work involving removing or placing in operation existing or new facilities or tie-ins to existing facilities, the CONTRACTOR shall notify the CITY at least ten (10) business days in advance in writing. The CITY shall be responsible for removing facilities from operation as deemed necessary.

B. The CONTRACTOR shall, under no circumstances, interfere with wastewater treatment plant and existing potable water, sewer and stormwater facilities without the CITY's authorization, in writing, and supervision. The CONTRACTOR shall notify the CITY's representative in writing a minimum of three work days prior to each scheduled service request. This notification shall be provided on the CITY's standard form, or on an approved equivalent form completed in full by the CONTRACTOR.

1.06 GENERAL SEQUENCE OF CONSTRUCTION AND OPERATION REQUIREMENTS

A. Work under the Contract shall be scheduled and performed in such a manner as to result in the least possible disruption to the operation of the treatment plant public's use of roadways, driveways, parking areas, and utilities. Utilities shall include but not be limited to water, sewerage, irrigation, drainage structures, gas, electrical service, cable TV services, fiber optic cables, and telephone. Prior to commencing with the WORK, CONTRACTOR shall perform a location investigation of all existing underground and above ground utilities and facilities in accordance with Section 01 53 00 entitled "Protection of Existing Facilities". Utilities that present potential conflict with the proposed piping shall be field verified with soft digging.

B. The outlined sequence of construction does not include all items necessary to complete the work, but is intended to identify the sequence of critical events necessary to minimize any disruptions and to avoid any impact to continued collection system service. It shall be understood by the CONTRACTOR that the critical events identified are not all inclusive and that additional items of work not shown may be required. The sequence of construction is a precedence requirement and does not attempt to schedule the CONTRACTOR' work. It is intended only to indicate which activities must precede other activities in order to minimize interference's and disruptions.

C. All work by the CONTRACTOR that disrupts the normal treatment plant operations shall be shown on the Construction Schedule specified in Section 01 33 00 and specifically scheduled with the CITY. Schedule notification shall consist of a written notice defining the work to be accomplished, the normal treatment plant that will be interrupted, the duration of the interruption, and the mitigating effort to be performed by the CONTRACTOR. The written notice shall be submitted to the CITY ten days in advance of the proposed work and the CITY will respond to the CONTRACTOR in writing within five days of receipt of the notice regarding the acceptability of the proposed plan.

D. At no time, the CONTRACTOR shall undertake closing off any pipelines, or opening valves, or take any other action which would affect the operation of the existing system, except as specifically required by the drawings and specifications, and until authorization is granted by the CITY or ENGINEER and after proper notification.

E. Temporary installations required to complete a particular aspect of the work during the allowed time period shall be determined by the CONTRACTOR and implemented by the CONTRACTOR at no additional cost to the CITY. All such temporary installations shall be subject to the review and acceptance of the ENGINEER.

F. The Contractor shall be responsible for supporting and protecting existing underground and above ground pipes, ductbanks, conduits and other utilities as required to complete the Work.

G. Backfilling and compaction shall in be kept up with the rate of pipe laying. Backfill consisting of the specified material shall be placed and properly compacted, to the degree specified hereinafter. Unless otherwise ordered or approved by the Engineer, in writing, no temporary fill, refill, or uncompacted fill shall be installed. Under no circumstances shall backfill material other than that specified or an Approved Equal be installed. Backfill shall be placed and compacted immediately after installation of piping

H. The CONTRACTOR shall fully comply with all requirements of the Permits, at no additional cost to the CITY. Working hours noted in permits or the Specifications are subject to change. In the event that changed working hours affect the Contractor's work, the Contractor's sole remedy shall be a non-compensable time extension. Said extension to be full compensation for all direct and indirect costs, including but not limited to loss of efficiency, loss of opportunity, increased bond or insurance premiums, or home office or extended overhead, incurred by the Contractor as a result of such change, and no additional compensation shall be considered. Night work may be required as a part of the construction

I. Sequence of certain major events and identification of time constraints for removing existing facilities from active service and installation of new facilities are described below in paragraph 1.07. No phase of work (or tasks within a phase) shall preclude or be performed in parallel with a subsequent phase unless specifically defined so in these documents. In all cases, work in each phase shall be checked out and accepted for satisfactory use, subject to the ENGINEER's approval, prior to the CONTRACTOR proceeding to the next phase of construction.

1.07 DETAILED SEQUENCE OF CONSTRUCTION AND OPERATION REQUIREMENTS

A. General Initial Steps - Mobilization / Site Preparation: Mobilize for work – Video working areas, set up staging and storage areas, obtain permits, develop and submit construction schedule, submit shop drawing schedule, survey, locate existing utilities and elevations with soft digging, verify existing fittings to be connected, shop drawing submittals, and procure materials.

B. Repair of existing east bar screen performed by Huber.

C. Existing east bar screen concrete modifications and the installation of a new lift system.

D. Re-installation of existing east bar screen, complete.

E. Removal of existing west bar screen.

F. Existing west bar screen concrete modifications and the installation of a new lift system.

~~A.~~G. Re-installation of the existing west bar screen, complete.

~~B. Installation of bar screen lift and re-installation of the existing screens, complete.~~

~~C.~~H. ~~Removal of existing skylights and i~~ Installation of new skylights, complete.

~~D.~~I. Installation of new gantry system, complete.

~~E.~~J. Final Sitework and Closeout: Final pavement and asphalt overlay of the affected road sections, final restoration, final grading, sodding, miscellaneous work, demobilization and related closeout activities as described in Section 01 70 00 - Project Closeout.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 COORDINATION WITH EXISTING UTILITIES AND OTHER AGENCIES

A. The CONTRACTOR shall coordinate with Sunshine One-Call Notification at 1-800-432-4770 a minimum of 48 business hours prior to any excavation for location of existing underground facilities.

B. CONSTRUCTION DEWATERING

1. All dewatering equipment such as pumps, air compressors, generators, etc. proposed for use during construction in residential areas shall be provided with noise enclosures suitable to meet the requirements of the City of Hollywood Noise Ordinance and/or Broward County Noise Ordinance, whichever is more stringent.
2. There is no dewatering permit for this project. If the CONTRACTOR considers that as part of its means and methods of construction, a dewatering permit is required, it is the responsibility of the CONTRACTOR to secure the required permit in order to proceed with the execution of the construction.

3.02 COOPERATION

A. The CONTRACTOR shall allow the CITY or its agents, and other project contractors or their agents, to enter facilities being constructed under this Contract for the purpose of constructing, installing, operating, maintaining, removing, repairing, altering or replacing such equipment pipes, sewers, conduits, manholes, wires, or other structures and appliances which may be required to be installed at or in the work. The CONTRACTOR shall cooperate with all the aforesaid parties and shall allow reasonable provisions for the prosecution of any other work by the CITY, or others, to be done in connection with CONTRACTOR'S work, or in connection with normal use of the facilities.

**** END OF SECTION ****

SECTION 01 53 00

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 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 ENGINEER.

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.

D. 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.

E. 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.

1.03 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.

1.04 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

A. If any tree removal or relocation is required, the CONTRACTOR needs to coordinate with the ENGINEER, accordingly. All required permits related to tree removal are the responsibility of the CONTRACTOR.

B. Appendix D shows the Tree Survey provided for this project. The CONTRACTOR shall familiarize him/herself with this document to determine the location of existing protected vegetative species within the project site.

C. Trimming or removal of existing protected vegetative species shall be coordinated with ENGINEER. The CONTRACTOR shall be responsible for permits needed to trim or remove this vegetation with Broward County and the City of Hollywood Building Department.

D. Refer to Section 01 74 00 for permits obtained for this project. The CONTRACTOR shall abide by the General License issued by Broward County for protection of protected vegetative species.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION ****

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SECTION 01 70 00

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 is 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 standards of drafting, shall be neat, legible and on mylar or other reproducible material acceptable to the ENGINEER.
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 CONTRACTOR'S surety shall be liable to the CITY for the cost thereof.

1.06 TOUCH-UP AND REPAIR

A. The CONTRACTOR shall touch-up and repair damage to all field painted and factory finished equipment. Touch-up of equipment panels, etc., shall match as nearly as possible the original finish. If in the opinion of the ENGINEER the touch-up work is not satisfactory, the CONTRACTOR shall repaint the item.

1.07 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 **

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SECTION 01 73 24

DESIGN REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS AND NON-BUILDING STRUCTURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes: Minimum structural requirements for the design, anchorage, and bracing of non-structural components such as architectural/mechanical/HVAC/electrical components, equipment, or systems, and non-building structures such as tanks.

B. The requirements of this section apply to design of the structural elements and features of equipment and to platforms/walkways that are provided with equipment or non-building structures.

C. This section applies to non-building structures and non-structural components that are permanently attached to structures as defined below and in ASCE 7.

D. Design and conform to criteria and design codes listed within this section. Engineering design is not required for attachments, anchorage, or bracing detailed on the Drawings or where the size of attachments, anchorage, or bracing is defined in specific technical specification sections.

E. The following non-structural components are exempt from seismic design loading requirements of this section.
   1. Components in Seismic Design Category A.

1.02 RELATED SECTIONS

A. This section contains specific references to the following related section. Additional related sections may apply that are not specifically listed below.
   1. Section 05 05 20 Anchor Bolts
   2. Section 05 50 00 Metal Fabrications

1.03 REFERENCES

A. The references listed below are a part of this section. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
Aluminum Design Manual	Aluminum Association, Aluminum Design Manual with Specifications and Guidelines for Aluminum Structures
AAMA	American Architectural Manufacturer's Association
ACI 318	Building Code Requirements for Structural Concrete
ACI 350	Code Requirements for Environmental Engineering Concrete Structures
ACI 350.3	Seismic Design of Liquid-Containing Concrete Structures

Reference	Title
ACI 360	Specification for Structural Steel Buildings
ASCE 7	Minimum Design Loads for Buildings and Other Structures
ASTM C635	Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
ASTM C636	Installation for Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
AWS D1.1	Structural Welding Code – Steel
AWS D1.2	Structural Welding Code - Aluminum
AWS D1.6	Structural Welding Code – Stainless Steel
AWS D1.8	Structural Welding Code – Seismic Supplement
FBC	Florida Building Code with local amendments
NFPA-13	Installation of Sprinkler Systems
OSHA	U.S. Dept. of Labor, Occupational Safety and Health Administration

1.04 DEFINITIONS

A. Structure: The structural elements of a building that resist gravity, wind, and other types of loads. Structural components include columns, posts, beams, girders, joists, bracing, floor or roof sheathing, slabs or decking, load-bearing walls, and foundations.

B. Non-structural Components: Non-structural portions of a building include every part of the building and all its contents, except the structural portions, that carry gravity loads and that may also be required to resist effects of wind, impact, and temperature loads. Non-structural components include, but are not limited to, ceilings, partitions, windows, equipment, piping, ductwork, furnishings, lights, etc.

C. Non-building Structures: Self-supporting structures that carry gravity loads and that may also be required to resist the effects of wind, impact, and temperature loads. Non-building structures include, but are not limited to, pipe racks, storage racks, stacks, tanks, vessels and structural towers that support tanks and vessels.

1.05 SUBMITTALS

A. Action Submittals:
   1. Procedures: Section 01 33 00.
   2. A copy of this specification section with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.
   3. Check-marks (✓) shall denote full compliance with a paragraph as a whole. Deviations shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications. Include a detailed, written justification for each deviation. Failure to include a copy of the marked-up specification sections, along with justification(s) for requested deviations to specification requirements, with the submittal is sufficient cause for rejection of the entire submittal with no further consideration.
   4. For structural elements of non-structural components and non-building structures required to be designed per this section, provide Drawings and design calculations

stamped by a Florida licensed professional engineer qualified to perform structural engineering.

5. List of non-structural components and non-building structures requiring wind design and anchorage.
6. Shop drawings showing details of complete wind and seismic bracing and anchorage attachment assemblies including connection hardware, and embedment into concrete.
7. Shop drawings showing plans, elevations, sections and details of equipment support structures and non-building structures, including anchor bolts, structural members, platforms, stairs, ladders, and related attachments.
8. Identify interface points with supporting structures or foundations, as well as size, location, and grip of required attachments and anchor bolts. Clearly indicate who will be providing each type of attachment/anchor bolt. Equipment vendor shall design anchor bolts, including embedment into concrete, and submit stamped calculations.
9. Calculations for supports, bracing, and attachments shall clearly indicate design criteria applied. Coordinate concrete embedment calculations with thickness and strength of concrete members. Submit a tabulation of the magnitude of unfactored (service level) equipment loads at each support point, broken down by type of loading (dead, live, wind, etc.). Indicate impact factors applied to these loads in design calculations.

1.06 QUALITY ASSURANCE

A. Quality Control By City:
   1. Special Inspection of non-structural components and non-building structures, and their anchorages shall be performed by the Special Inspector under contract with the City and in conformance with FBC Chapter 17. Special Inspector(s) and laboratory shall be acceptable to the City in their sole discretion. Special Inspection is in addition to, but not replacing, other inspections and quality control requirements. Where sampling and testing required conforms to Special Inspection standards, such sampling and testing need not be duplicated.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide materials in conformance with information shown on the Drawings and in other technical specification sections. See individual component and equipment specifications for additional requirements.

2.02 DESIGN CRITERIA

A. Design Codes

Design	Code
Buildings/Structures:	Florida Building Code 2020 and ASCE 7-16
Reinforced concrete:	ACI 350-06 and ACI 350.3-06 for Concrete Liquid Containing Structures, ACI 318-14 for all other reinforced concrete

Design	Code
Structural steel:	AISC 360-10
Aluminum:	Aluminum Design Manual, Latest Edition
Welding:	AWS Welding Codes, Latest Edition
Occupational health and safety requirements:	OSHA

Note: When conflicting requirements occur, the most stringent requirements will govern the design.

B. Design Loads

1. Design non-structural components and non-building structures for the following minimum loads: (Do not apply wind loads to non-structural components and non-building structures that are located inside buildings.)
2. Dead Loads:
   a. Add an additional allowance for piping and conduit when supported and hung from the underside of equipment and platforms.
   b. Typical allowance for piping and conduit: 20 psf
3. Uniform Live Loads:

Elevated grating floors:	100 psf
Columns:	No column live load reduction allowed
Exitways, stairs and landings:	100 psf
Equipment platforms, walkways/catwalks (other than exitways):	100 psf
Utility bridges:	75 psf per level

4. Snow Loads:

Code:	FBC 2020 & ASCE 7
Risk Category:	IV
Ground Snow Load (p_g):	0 psf

5. Wind Loads:

Code:	FBC 2020 & ASCE 7-16
Risk Category:	IV
Basic Wind Speed (Ultimate, 3-second gust) for Risk Category Shown Above:	185 mph
Exposure:	C
Topographic Factor (K_{zt})	1.0

Note:

1. *Design exterior non-structural components and non-building structures, unless located in a pit or basin, to withstand design wind loads without consideration of shielding effects by other structures.*
2. *Facility is in a wind-borne debris region.*
3. *Facility is in a high-velocity hurricane zone.*

6. Seismic Loads:

Code:	FBC 2020 & ASCE 7-16
Risk Category:	IV

0.2 Sec. Mapped Spectral Response, S_S:	0.042 g
1.0 Sec. Mapped Spectral Response, S_1:	0.021 g
Site Class:	C
0.2 Sec. Design Spectral Response, S_{DS}:	0.034 g
1.0 Sec. Design Spectral Response, S_{D1}:	0.024 g
Importance Factor (I_e):	1.25
Component Importance Factor (I_p):	1.0, except I_p=1.5 for components identified in Section 13.1.3 of ASCE 7
Seismic Design Category	A

7. Impact Loads:
   a. Consider impact loads in design of support systems.
   b. Use the following impact load factors unless recommendations of the equipment manufacturer will cause a more severe load case:

Rotating machinery:	20% of moving load
Reciprocating machinery:	50% of moving load
Monorail Hoists:	
• Vertical	25% of lifted load
• Longitudinal	10% of lifted load
Hangers supporting floors and platforms:	33% of live and dead load

8. Temperature:
   a. Include effects of temperature in design where non-structural components and non-building structures are exposed to differential climatic conditions. See climatic conditions below for temperature extremes.

C. Load Combinations
   1. Design non-structural components and non-building structures to withstand load combinations as specified in the governing building code. Where the exclusion of live load or impact load would cause a more severe load condition for the member under investigation, ignore the load when evaluating that member.

D. Design Considerations
   1. Design non-structural components and non-building structures for the following conditions:
   2. Climatic Conditions:

Maximum design temperature:	100	degrees Fahrenheit
Minimum design temperature:	50	degrees Fahrenheit

E. Column Base Fixity
   1. Design column bases as pinned connections. No moments shall be assumed to be transferred to foundations.
   2. Where significant shear loads (greater than 5,000 lb. per anchor bolt) are transferred at column base plates, provide a shear key designed to transfer shear load.

F. Deflection
   1. Maximum beam deflection as a fraction of span for walkways and platforms: L/240 for total load and L/360 for live load.
   2. Maximum total load deflection for equipment support: L/450.

PART 3 - EXECUTION

3.01 GENERAL

A. Make attachments and braces in such a manner that component force is transferred to the lateral force-resisting system of the structure. Base attachment requirements and size and number of braces per calculations submitted by Contractor.

B. Anchorage of equipment is specified to be made by cast-in anchor bolts in concrete elements unless specifically noted otherwise on the Drawings or other specification sections. Contractor is responsible for remedial work or strengthening if anchor bolts are improperly installed or omitted due to lack of submittal review or improper placement for any reason, at no additional cost to City.

C. Provide anchor bolts in accordance with Section 05 05 20. Base size of anchor bolts and embedment on submitted calculations.

D. Submit details of and calculations for anchorages prior to placement of concrete or erection of other structural supporting members. Submittals received after structural supports are in place will be rejected if proposed anchorage method would create an overstressed condition of the supporting member. Contractor is responsible for revisions to anchorages and/or strengthening of structural support so that there is no overstress condition, at no additional cost to City.

**** END OF SECTION ****

SECTION 01 77 50

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 SUMMARY

A. Scope

1. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including standard warranties on products and special warranties required of the Contractor and Suppliers.

1.02 RELATED WORK

A. Refer to the General Requirements for additional requirements relating to warranties and bonds.

B. General closeout requirements are included in Section 01 70 00 – Contract Closeout.

C. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Sections.

D. Certifications and other commitments and agreements for continuing services to City are specified elsewhere in the Contract Documents.

1.03 SUBMITTALS

A. The following minimum submittals shall be submitted in accordance with Section 01 33 00 - Submittals.

1. A copy of this Section, with addendum updates included, and all referenced and applicable Sections, with addendum updates included, with each paragraph check-marked to indicate Specification compliance or marked to indicate requested deviations from Specification requirements or those parts which are to be provided by the Contractor or others shall be provided. Check marks (✓) shall denote full compliance with a paragraph as a whole.

   If deviations from the Specifications are indicated, and therefore requested, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Engineer shall be the final authority for determining acceptability of requested deviations.
2. Warranty information, including standard and special warranties, shall be provided with the submittals for the equipment and materials included in the Work and as specified in the Technical Specifications.
3. Warranty information, including standard and special warranties, shall also be provided with the O&M Manual submittals for equipment included in the Work in accordance with Section 01 77 30 – Operating and Maintenance Instructions.
4. A compiled set of warranty information with the warranty commencement date fixed, including standard and special warranties, shall be provided 15 days prior to the date fixed as Substantial Completion by the Engineer as follows:

a. Submit two copies of each warranty and bond, properly executed by the Contractor, or Subcontractor, Supplier, or Manufacturer in two 3-ring binders (one set of warranties and bonds per binder). Organize the warranty documents into an orderly sequence based on the sequential number of the related Technical Specification.
b. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents and sized to receive 8-1/2-in by 11-in paper.
c. Provide a Table of Contents neatly typed, in the sequence of the Table of Contents of the Technical Specifications, with each item identified with the number and title of the Section in which specified and the name of the product or Work item
d. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address and telephone number of the installer, supplier and manufacturer.
e. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the project title or name and the name, address and telephone number of the Contractor and equipment supplier(s).

5. If partial Substantial Completions are defined in Section 01 01 00 – Summary of Work, then specified warranties and bonds for all equipment and scope of supply which are part of the partial Substantial Completion shall be compiled and submitted in accordance with the requirements noted for overall project Substantial Completion.

1.04 FORMAT OF WARRANTIES

A. Warranties shall be provided on standard 8-1/2 by 11 paper, portrait landscaped.

B. When a special warranty is required, a written document that contains the appropriate terms and identification, ready for execution by the required parties shall be provided.

C. Refer to individual Sections for specific content requirements, and particular requirements for submittal of special warranties.

1.05 SCHEDULE OF SPECIAL WARRANTIES

A. Special warranties shall be provided as specified in the specific equipment Section.

1.06 WARRANTY REQUIREMENTS

A. All equipment and Work whether or not specified in the relevant equipment or Work sections shall have a minimum warranty of one (1) year from the date of the Notice of Substantial Completion certificate issued for the Work and shall at a minimum conform to the requirements of this Section. Additional warranty time or special warranties requirements may be required in the Technical Specifications.

B. Note that if partial Substantial Completions are allowed for certain areas of the Work, these are noted in Section 01 01 00 – Summary of Work.

C. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

D. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

E. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the City has benefited from use of the Work through a portion of its anticipated useful service life.

F. City's Recourse: Written warranties made to the City are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the City can enforce such other duties, obligations, rights, or remedies.

G. Rejection of Warranties: The City reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

H. The City reserves the right to refuse to accept Work for the project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

I. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers and subcontractors required to countersign special warranties with the Contractor.

J. Separate Prime Contracts: Each Prime Contractor is responsible for warranties related to its own Contract.

1.07 MANUFACTURERS CERTIFICATIONS

A. Where required, the Contractor shall supply evidence, satisfactory to the Engineer, that the Contractor can obtain manufacturers' certifications as to the Contractor's installation of equipment.

1.08 DEFINITIONS

A. Standard warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the Manufacturer to the City.

B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the City.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

** END OF SECTION **

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 SCOPE

A. Operation and maintenance (O&M) instructions shall be provided in accordance with this section and as required in the technical sections of this project manual. O&M information shall be provided for each maintainable piece of equipment, equipment assembly or subassembly, and material provided or modified under this contract.

B. O&M instructions must be submitted and accepted before on-site training may start.

1.02 TYPES OF INFORMATION REQUIRED

A. General:
   1. O&M information shall contain the names, addresses, and telephone numbers of the manufacturer, the nearest representative of the manufacturer, and the nearest supplier of the manufacturer's equipment and parts. In addition, one or more of the following items of information shall be provided as applicable.

B. Operating Instructions:
   1. Specific instructions, procedures, and illustrations shall be provided for the following phases of operations:
      a. Safety Precautions: List personnel hazards for equipment and list safety precautions for all operating conditions.
      b. Operator Prestart: Provide requirements to set up and prepare each system for use.
      c. Start-Up, Shutdown, And Post shutdown Procedures: Provide a control sequence for each of these operations.
      d. Normal Operations: Provide control diagrams with data to explain operation and control of systems and specific equipment.
      e. Emergency Operations: Provide emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.
      f. Operator Service Requirements: Provide instructions for services to be performed by the operator such as lubrication, adjustments, and inspection.
      g. Environmental Conditions: Provide a list of environmental conditions (temperature, humidity, and other relevant data) which are best suited for each product or piece of equipment and describe conditions under which equipment should not be allowed to run.

C. Preventive Maintenance:
   1. The following information shall be provided for preventive and scheduled maintenance to minimize corrective maintenance and repair:

a. Lubrication Data: Provide lubrication data, other than instructions for lubrication in accordance with paragraph 1.02 Operator Service Requirements.
    1) A table showing recommended lubricants for specific temperature ranges and applications;
    2) Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities; and
    3) A lubrication schedule showing service interval frequency.
b. Preventive Maintenance Plan And Schedule: Provide manufacturer's schedule for routine preventive maintenance, inspections, tests, and adjustments required to ensure proper and economical operation and to minimize corrective maintenance and repair. Provide manufacturer's projection of preventive maintenance man-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft.

D. Corrective Maintenance:
1. Manufacturer's recommendations shall be provided on procedures and instructions for correcting problems and making repairs.
    a. Troubleshooting Guides And Diagnostic Techniques: Provide step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.
    b. Wiring Diagrams And Control Diagrams: Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job-specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type identically to actual installation numbering.
    c. Maintenance And Repair Procedures: Provide instructions and list tools required to restore product or equipment to proper condition or operating standards.
    d. Removal And Replacement Instructions: Provide step-by-step procedures and list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings, and adjustments required. Instructions shall include a combination of test and illustrations.
    e. Spare Parts And Supply Lists: Provide lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonably delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead time to obtain.
    f. Corrective Maintenance Manhours: Provide manufacturer's projection of corrective maintenance man-hours including craft requirements by type of craft. Corrective maintenance that requires participation of the equipment manufacturer shall be identified and tabulated separately.

E. Appendices:
1. The following information shall be provided; include information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment.

a. Parts Identification: Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number which will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies.

b. Warranty Information: List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force.

c. Personnel Training Requirements: Provide information available from the manufacturers to use in training designated personnel to operate and maintain the equipment and systems properly.

d. Testing Equipment And Special Tool Information: Provide information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

1.03 TRANSMITTAL PROCEDURE

A. Unless otherwise specified, O&M manuals, information, and data shall be transmitted in accordance with Section 01 33 00 accompanied by Transmittal Form 01 78 23-A and Equipment Record Forms 01 78 23-B and/or 01 78 23-C, as appropriate, all as specified in Section 01 99 90. The transmittal form shall be used as a checklist to ensure the manual is complete. Only complete sets of O&M instructions will be reviewed for acceptance.

B. 3 copies of the specified O&M information shall be provided after approval. For ease of identification, each manufacturer's brochure and manual shall be appropriately labeled with the equipment name and equipment number as it appears in the project manual. The information shall be organized in the binders in numerical order by the equipment numbers assigned in the project manual. The binders shall be provided with a table of contents and tab sheets to permit easy location of desired information. Binders shall be locking three-ring/"D"-ring type. Three-ring binders shall be riveted to back cover include plastic sheet lifter (page guard) at front of each volume.

C. If manufacturers' standard brochures and manuals are used to describe O&M procedures, such brochures and manuals shall be modified to reflect only the model or series of equipment used on this project. Extraneous material shall be crossed out neatly or otherwise annotated or eliminated.

1.04 PAYMENT

A. Acceptable O&M information for the project must be delivered to the Construction Manager prior to the project being 65 percent complete. Progress payments for work in excess of 65 percent completion will not be made until the specified acceptable O&M information has been delivered to the Construction Manager.

1.05 FIELD CHANGES

A. Following the acceptable installation and operation of an equipment item, the item's instructions and procedures shall be modified and supplemented by the Contractor to reflect any field changes or information requiring field data.

PART 2 - PARTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

** END OF SECTION **

SECTION 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section contains requirements for training the City's personnel, by persons retained by the Contractor specifically for the purpose, in the proper operation and maintenance of the equipment and systems installed under this contract.

1.02 QUALITY ASSURANCE

A. Where required by the detailed specifications, the Contractor shall provide on-the-job training of the City's personnel. The training sessions shall be conducted by qualified, experienced, factory-trained representatives of the various equipment manufacturers. Training shall include instruction in both operation and maintenance of the subject equipment.

1.03 SUBMITTALS

A. The following information shall be submitted to the Construction Manager in accordance with the provisions of Section 01 33 00. The material shall be reviewed and accepted by the Construction Manager as a condition precedent to receiving progress payments in excess of 50 percent of the contract amount and not less than 3 weeks prior to the provision of training.
   1. Lessons plans for each training session to be conducted by the manufacturer's representatives. In addition, training manuals, handouts, visual aids, and other reference materials shall be included.
   2. Subject of each training session, identity and qualifications of individuals to be conducting the training, and tentative date and time of each training session.

PART 2 - PRODUCTS

2.01 GENERAL

A. Where specified, the Contractor shall conduct training sessions for the City's personnel to instruct the staff on the proper operation, care, and maintenance of the equipment and systems installed under this contract. Training shall take place at the site of the work and under the conditions specified in the following paragraphs. Approved operation and maintenance manuals shall be available at least 30 days prior to the date scheduled for the individual training session.

2.02 LOCATION

A. Training sessions shall take place at the site of the work. Training sessions requiring hands-on lessons shall be located on the respective equipment.

2.03 LESSON PLANS

A. Formal written lesson plans shall be prepared for each training session. Lesson plans shall contain an outline of the material to be presented along with a description of visual aids to be utilized during the session. Each plan shall contain a time allocation for each subject.

B. One complete set of originals of the lesson plans, training manuals, handouts, visual aids, and reference material shall be the property of the City and shall be suitably bound for proper organization and easy reproduction. The Contractor shall furnish ten copies of necessary training manuals, handouts, visual aids, and reference materials at least 1 week prior to each training session.

2.04 FORMAT AND CONTENT

A. Each training session shall be comprised of time spent both in the classroom and at the specific location of the subject equipment or system. As a minimum, training session shall cover the following subjects for each item of equipment or system:
   1. Familiarization
      a. Review catalog, parts lists, drawings, etc., which have been previously provided for the plant files and operation and maintenance manuals.
      b. Check out the installation of the specific equipment items.
      c. Demonstrate the unit and indicate how all parts of the specifications are met.
      d. Answer questions.
   2. Safety
      a. Using material previously provided, review safety references.
      b. Discuss proper precautions around equipment.
   3. Operation
      a. Using material previously provided, review reference literature.
      b. Explain all modes of operation (including emergency).
      c. Check out City 's personnel on proper use of the equipment.
   4. Preventive Maintenance
      a. Using material previously provided, review preventive maintenance (PM) lists including:
         1) Reference material.
         2) Daily, weekly, monthly, quarterly, semiannual, and annual jobs.
      b. Show how to perform PM jobs.
      c. Show City 's personnel what to look for as indicators of equipment problems.
   5. Corrective Maintenance
      a. List possible problems.
      b. Discuss repairs--point out special problems.
      c. Open up equipment and demonstrate procedures, where practical.
   6. Parts
      a. Show how to use previously provided parts list and order parts.
      b. Check over spare parts on hand. Make recommendations regarding additional parts that should be available.

7. Local Representatives
    a. Where to order parts: name, address, telephone.
    b. Service problems:
        1) Who to call.
        2) How to get emergency help.
8. Operation and Maintenance Manuals
    a. Review any other material submitted.
    b. Update material, as required.

2.05 VIDEO RECORDING:

A. The Contractor will provide videos and copy of the videos for each training session. After taping, the material will be edited and supplemented with professionally produced graphics to provide a permanent record. The Contractor shall advise all manufacturers providing training sessions that the material will be videotaped and shall make available to the City's video taping contractor such utility services and accommodation as may be required to facilitate the production of the videotape record.

PART 3 - EXECUTION

3.01 SUMMARY

A. Training shall be conducted in conjunction with the operational testing and commissioning periods. Classes shall be scheduled such that classroom sessions are interspersed with field instruction in logical sequence. The Contractor shall arrange to have the training conducted on consecutive days, with no more than 6 hours of classes scheduled for any one day. Concurrent classes shall not be allowed. Training shall be certified on Form 43 05 11-B specified in Section 01 99 90.

B. Acceptable operation and maintenance manuals for the specific equipment shall be provided to the City prior to the start of any training. Video taping shall take place concurrently with all training sessions.

C. The following services shall be provided for each item of equipment or system as required in individual specification sections. Additional services shall be provided, where specifically required in individual specification sections.
    1. As a minimum classroom equipment training for operations personnel will include:
        a. Using slides and drawings, discuss the equipment's specific location in the plant and an operational overview.
        b. Purpose and plant function of the equipment.
        c. A working knowledge of the operating theory of the equipment.
        d. Start-up, shutdown, normal operation, and emergency operating procedures, including a discussion on system integration and electrical interlocks, if any.
        e. Identify and discuss safety items and procedures.
        f. Routine preventative maintenance, including specific details on lubrication and maintenance of corrosion protection of the equipment and ancillary components.
        g. Operator detection, without test instruments, of specific equipment trouble symptoms.

h. Required equipment exercise procedures and intervals.
i. Routine disassembly and assembly of equipment if applicable (as judged by the City on a case-by-case basis) for purposes such as operator inspection of equipment.

2. As a minimum, hands-on equipment training for operations personnel will include:
   a. Identify location of equipment and review the purpose.
   b. Identifying piping and flow options.
   c. Identifying valves and their purpose.
   d. Identifying instrumentation:
      1) Location of primary element.
      2) Location of instrument readout.
      3) Discuss purpose, basic operation, and information interpretation.
   e. Discuss, demonstrate, and perform standard operating procedures and round checks.
   f. Discuss and perform the preventative maintenance activities.
   g. Discuss and perform start-up and shutdown procedures.
   h. Perform the required equipment exercise procedures.
   i. Perform routine disassembly and assembly of equipment if applicable.
   j. Identify and review safety items and perform safety procedures, if feasible.
3. Classroom equipment training for the maintenance and repair personnel will include:
   a. Theory of operation.
   b. Description and function of equipment.
   c. Start-up and shutdown procedures.
   d. Normal and major repair procedures.
   e. Equipment inspection and troubleshooting procedures including the use of applicable test instruments and the "pass" and "no pass" test instrument readings.
   f. Routine and long-term calibration procedures.
   g. Safety procedures.
   h. Preventative maintenance such as lubrication; normal maintenance such as belt, seal, and bearing replacement; and up to major repairs such as replacement of major equipment part(s) with the use of special tools, bridge cranes, welding jigs, etc.
4. Hands-on equipment training for maintenance and repair personnel shall include:
   a. Locate and identify equipment components.
   b. Review the equipment function and theory of operation.
   c. Review normal repair procedures.
   d. Perform start-up and shutdown procedures.

e. Review and perform the safety procedures.

f. Perform City approved practice maintenance and repair job(s), including mechanical and electrical adjustments and calibration and troubleshooting equipment problems.

**** END OF SECTION ****

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Cast-in-place concrete, which consists of providing material, mixing, transporting equipment, and labor for the proportioning, mixing, transporting, placing, consolidating, finishing, curing, and protection of concrete in the structure.

1.02 RELATED SECTIONS

A. This section contains specific references to the following related specification sections. Additional related sections may apply that are not specifically listed below.
   1. Section 03 60 00 Grouting
   2. Section 03 70 00 Mass Concrete
   3. Section 05 50 00 Metal Fabrications
   4. Section 07 91 26 Joint Fillers
   5. Section 07 92 00 Joint Sealants
   6. Section 09 90 00 Painting and Coating

1.03 REFERENCES

A. The references listed below are a part of this section. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ACI 117	Specification for Tolerances for Concrete Construction and Materials
ACI 211.1	Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete
ACI 214R	Guide to Evaluation of Strength Test Results in Concrete
ACI 301	Specifications for Structural Concrete
ACI 305.1	Specification for Hot Weather Concreting
ACI 306.1	Standard Specification for Cold Weather Concreting
ACI 318	Building Code Requirements for Structural Concrete
ACI 350	Code Requirements for Environmental Engineering Concrete Structures
ACI 350.1	Specification for Tightness Testing of Environmental Engineering Concrete Containment Structures
ACI 503.7	Specification for Crack Repair by Epoxy Injection
ASTM A126	Gray Iron Castings for Valves, Flanges, and Pipe Fittings
ASTM C31	Making and Curing Concrete Test Specimens in the Field
ASTM C33	Concrete Aggregates
ASTM C39	Compressive Strength of Cylindrical Concrete Specimens
ASTM C42	Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C94	Ready-Mixed Concrete

Reference	Title
ASTM C117	Materials Finer Than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Sieve Analysis of Fine and Coarse Aggregates
ASTM C143	Slump of Hydraulic Cement Concrete
ASTM C150	Portland Cement
ASTM C157	Length Change of Hardened Hyraulic-Cement Mortar and Concrete
ASTM C172	Sampling Freshly Mixed Concrete
ASTM C192	Making and Curing Concrete Test Specimens in the Laboratory
ASTM C231	Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Air-Entraining Admixtures for Concrete
ASTM C309	Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C494	Chemical Admixtures for Concrete
ASTM C511	Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes
ASTM C595	Blended Hydraulic Cements
ASTM C618	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C881	Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C989	Slag Cement for use in Concrete and Mortars
ASTM C1059	Latex Agents for Bonding Fresh to Hardened Concrete
ASTM C1077	Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1240	Silica Fume Used in Cementitious Mixtures
ASTM C1260	Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1293	Determination of Length Change of Concrete Due to Alkali-Silica Reaction
ASTM C1315	Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
ASTM C1567	Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602	Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D75	Sampling Aggregates
ASTM D2419	Sand Equivalent Value of Soils and Fine Aggregate
ASTM E329	Agencies Engaged in Construction Inspection, Testing, or Special Inspection
CRD-C572	U.S. Corps of Engineer's Specifications for Polyvinylchloride Waterstop
FBC	Florida Building Code with local amendments

1.04 SUBMITTALS

A. Action Submittals:

1. Procedures: Section 01 33 00.
2. A copy of this specification section with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.
3. Check-marks (✓) denote full compliance with a paragraph as a whole. Deviations shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined signify compliance with the specification. Include a detailed, written justification for each

deviation. Failure to include a copy of this marked-up specification section, along with justification(s) for requested deviations, with the submittal, is cause for rejection of the entire submittal with no further consideration.

4. Each proposed mix design showing:
   a. Expected strength at 7 and 28-days
   b. Slump, before and after introduction of high-range water-reducing admixture
   c. Water/cement ratio
   d. Weights and test results, certifications, and mill reports of the ingredients
   e. Chemical analysis report and report of other specified test analyses for supplementary cementitious material
   f. Aggregate gradation and documentation of test results classifying aggregate as non-potentially reactive
   g. Test results of mix design prepared by an independent testing laboratory
   h. Shrinkage test results for liquid containing structures
   i. Other physical properties necessary to review each mix design for conformance with these specifications
5. Mix designer shall be certified as NRMCA Concrete Technologist Level 2 or DOT certified mix designer in jurisdiction of Work.
6. Product literature and technical data for aggregates, cement, and pozzolan.
7. Product literature, technical data, and dosage of proposed admixtures including, but not limited to, air entraining, water reducing, retarding, shrinkage reducing, crystalline waterproofing, etc.
8. Anticipated average delivery time from batch plant to site. If this time exceeds the limit specified in Part 3, include proposed method to extend set time without deleterious effects on final product. Owner's Representative reserves the right to accept or reject such proposed methods.
9. Lift Drawings: Submit shop drawings for concrete placements on the project before on-site construction begins. The drawings shall be organized by structure and submitted as a complete set for the Engineer's review. The drawings shall be drawn to scale and show dimensions, forming details, and placement volumes. Show location of construction joints, details of surface preparation, scheduled finish, embedments (including conduits, inserts, and anchor bolts), penetrations (including pipe sleeves), openings, keyways, blockouts, bulkheads, etc. The drawings shall clearly show the placement sequence and will be accompanied by a schedule that shows the schedule dates for forming, placement, and stripping for each section of concrete placed within each structure.
10. Curing program description in sufficient detail to demonstrate that the Contractor will provide acceptable strength, finish, and crack control within the completed structure. Detailed plan for curing and protection of concrete in cold and hot weather.
11. Product literature and technical data for waterstops, curing and sealing compounds, bonding compounds, surface hardeners, epoxy and chemical grout for crack injection, retardant, bearing pads, and trench drains.
12. Sample panels at least 12-inches by 12-inches by three inches thick to demonstrate formed wall surface finishes as specified in Part 3.
13. Samples of concrete floor and slab for each finish specified in Part 3 approximately four feet square and a minimum of four inches thick, with one construction joint and one expansion joint, if used.

14. Concrete delivery truck tickets showing the information listed in ASTM C94, section 14.
15. Neoprene bearing pad sample, 4 inches x 4 inches; material data sheets verifying conformance with specification; shop drawing of each bearing pad showing splice locations, if any, and description of manufacturing and splice procedure.
16. Product data for prefabricated trench drains: material properties, cover, dimensions, and manufacturer's installation instructions
17. Product data for floor type pressure relief valves

1.05 QUALITY ASSURANCE

A. Quality Control By Owner
   1. Special Inspection of concrete work shall be performed by the Special Inspector under contract with the Owner and in conformance with the IBC Chapter 17. Special Inspection of concrete is in addition to, not replacing, other inspections and quality control requirements specified herein. Where sampling and testing specified herein conforms to Special Inspection standards, such sampling and testing need not be duplicated.
   2. All structural concrete work shall receive Special Inspection in accordance with IBC Chapter 17. Structural concrete includes elements which resist code-defined loads and whose failure would impact life safety. Non-structural site work concrete does not require Special Inspection. Anchor bolts and anchors installed in hardened concrete require Special Inspection.
   3. Refer to Section 01 45 20 Testing and Inspection Services for Owner provided testing.

B. Quality Control By Contractor
   1. Where required to demonstrate conformance with the specified requirements for cast-in-place concrete, the Contractor shall provide the services of an independent testing laboratory which complies with the requirements of ASTM E329 and ASTM C1077. The testing laboratory shall sample and test concrete materials as specified in this section. Costs of testing laboratory services shall be borne by the Contractor.
   2. Concrete testing laboratory personnel shall be certified in accordance with the ACI Concrete Laboratory Testing Technician – Level 1 Certification Program or the ACI Concrete Strength Testing Technician Certification Program, or an equivalent program.
   3. Refer to Section 01 45 00 Contractor Quality Control.

C. Basis For Quality
   1. Cast-in-place concrete shall conform to the requirements of ACI 301, except as modified herein.

D. Concrete Conference
   1. Contractor shall schedule and conduct a meeting to review the specification requirements and the proposed concrete design mixes, including procedures for producing proper concrete construction. Hold the meeting no later than 28 days after the Notice to Proceed.
   2. All parties involved in the concrete work shall be included to attend the conference, including the following: Contractor's representative, testing laboratory, concrete

subcontractor, concrete supplier, reinforcing steel subcontractor, Owner's Representative, and Engineer.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cement
   1. Portland cement shall be ASTM C150, Type II or Type V, low alkali, containing less than 0.60 percent alkalis. In addition to standard requirements, cement shall satisfy optional chemical and physical requirements of ASTM C150, Tables 2 and 4, respectively.
   2. If low alkali portland cement is not available, test results shall be submitted showing aggregates meet the alkali-silica reactivity criteria in 2.01.D.1.b below
   3. Portland-pozzolan cement shall be ASTM C595, Type IP (MS), interground, low alkali.
   4. Portland blast-furnace slag cement shall be ASTM C595, Type IS (MS), interground, low alkali.
   5. Use cementitious materials that are of the same brand and type and from the same plant of manufacture as the cementitious materials used in the concrete represented by the submitted field test records or used in the trial mixtures. See Change of Materials paragraph below.

B. Ground granulated blast-furnace slag (GGBFS), if used in conjunction with portland cement, shall be per ASTM C989, Grade 100 or Grade 120, limited to 50 percent of the weight of cementitious materials. If GGBFS is combined with pozzolans and/or silica fume, the total weight of GGBFS, pozzolans, and silica fume shall not exceed 50 percent of the weight of cementitious materials.

C. Silica fume, if used in conjunction with portland cement, shall be per ASTM C1240, limited to 10 percent of the weight of cementitious materials. Silica fume shall be used with a high-range water-reducing admixture.

D. Aggregates
   1. General
      a. Except as modified herein, fine and coarse aggregates shall conform to ASTM C33. Fine and coarse aggregates are regarded as separate ingredients. Aggregates shall be non-reactive and washed before use.
      b. Check aggregates for alkali-silica reactivity to meet the following criteria. Aggregates or combinations of cementitious materials and aggregates shall have less than 0.10% expansion at 16 days when tested in accordance with ASTM C1260 or ASTM C1567. Alternatively, aggregate tested independently in accordance with ASTM C1293 shall have less than 0.04% expansion at one-year, or combinations of aggregate and cementitious materials tested in accordance with ASTM C1293 shall have less than 0.04% expansion at two years. Test results shall be no older than two years.
      c. Tests for size and grading of fine and coarse aggregates shall be in accordance with ASTM C136. Combined aggregates shall be well and uniformly graded from coarse to fine sizes to produce a concrete that has optimum workability and consolidation characteristics. Establish the final combined aggregate gradation during mix design.

d. Aggregates used in the project production concrete shall be obtained from the same sources and have the same size ranges as the aggregates used in the concrete represented by the submitted historical data or trial mixtures. See Change of Materials paragraph below.

2. Fine Aggregate

a. Fine aggregate shall be hard, dense, durable particles of either sand or crushed stone regularly graded from coarse to fine. Gradation shall conform to ASTM C33. For classes of concrete which will be used in liquid retaining structures, fine aggregate shall not exceed 40 percent by weight of combined aggregate total, except for concrete with coarse aggregate of less than maximum size 1/2 inch.

b. Variations from the specified gradations in individual tests will be acceptable if the average of three consecutive tests is within the specified limits and the variation is within the permissible variation listed below:

U.S. standard sieve size	Permissible variation in individual tests, percent
30 and coarser	2
50 and finer	0.5

c. Other tests shall be in accordance with the following specifications:

Test	Test method	Requirements
Amount of material	ASTM C117	3 percent passing No. 200 sieve maximum by weight
Sand equivalent	ASTM D2419	Minimum 70 percent

3. Coarse Aggregate

a. Coarse aggregate shall be hard, dense and durable gravel or crushed rock free from injurious amounts of soft and friable particles, alkali, and organic matter. Other deleterious substances shall not exceed the limits listed in ASTM C33, Table 4 for Class Designation 4S. Gradation of each coarse aggregate size specified shall conform to ASTM C33, Table 3.

b. Variations from the specified gradations will be acceptable in individual tests if the average of three consecutive tests is within the specified limits.

E. Pozzolan

1. Pozzolan shall be Class N, natural pozzolan, or Class F fly ash conforming to ASTM C618. Class C fly ash is not allowed. Pozzolan supplied during the life of the project shall have been formed at the same single source. See Change of Materials paragraph below.
2. The pozzolan color shall not substantially alter the resulting concrete from the normal gray color and appearance.
3. Use pozzolan materials that are of the same brand and type and from the same plant of manufacture as the materials used in the concrete represented by the submitted field test records or used in the trial mixtures.
4. The loss on ingnition shall be a maximum of four percent.
5. The maximum percent of sulfur trioxide (SO3) shall be 4.0

F. Admixtures

1. General

a. Admixtures shall be compatible with the concrete and with each other. Calcium chloride or admixtures containing calcium chloride are not acceptable. Use admixtures in accordance with the manufacturer's recommendations and add separately to the concrete mix. Water reducing retarders and admixtures shall reduce the water required by at least 11 percent for a given concrete consistency and shall comply with the water/cement ratio standards of ACI 211.1. Retarder dosage shall result in set time consistent with requirements specified in Part 3.

2. Water Reducing Admixtures
   a. Conform to ASTM C494, Type A. Acceptable products include: BASF Corporation "MasterPozzolith Series"; SIKA Chemical Corp. "Plastocrete 161"; Euclid Chemical Co. "Eucon WR 91"; or approved equal.
3. Water Reducing and Retarding Admixtures
   a. Conform to ASTM C494, Type D. Acceptable products include: BASF Corporation "MasterSet R Series"; Sika Chemical Corp. "Plastiment"; Euclid Chemical Co. "Eucon Retarder 75"; or approved equal.
4. High Range Water Reducing (Superplasticizing) Admixtures
   a. Conform to ASTM C494, Type F. Acceptable products include: BASF Corporation "MasterGlenium" Series; Sika Chemical Corp. "Viscocrete 2100" or "Viscocrete 2110" (Hot Weather) or "Viscocrete 6100" (Cold Weather); Euclid Chemical Co. "Eucon 37"; GCP Applied Technologies "ADVA 195"; or approved equal.
5. High Range Water Reducing And Retarding Admixtures
   a. Conform to ASTM C494, Type G. Acceptable products include: GCP Applied Technologies "Daracem 100"; Sika Chemical Corp. "Sikaplast 200" ; Euclid Chemical Co. "Eucon 537"; or approved equal.
6. Air Entraining Agent
   a. Conform to ASTM C260 and produce air entrained concrete as specified in the Mix Proportioning table below. Acceptable products include: BASF Corporation "MasterAir Series"; Sika Chemical Corp. "Sika AEA-14" or "Sika AIR" ; Euclid Chemical Co. "Eucon AEA-92"; or approved equal.
7. Shrinkage Reducing Admixture
   a. Select admixture for compatibility with air entrainment admixture and other ingredients in the concrete mix. Acceptable products include: BASF Corporation "MasterLife SRA Series"; GCP Applied Technologies "Eclipse 4500"; or approved equal.
8. [Crystalline Waterproofing Admixture:
   a. Select admixture for compatibility with other ingredients in the concrete mix. Acceptable products include: Penetron International "PENETRON ADMIX SB", Xypex "Admix C-Series", Kryton "Krystol Internal Membrane (KIM)", BASF Corporation "MasterLife 300D", or approved equal.]
9. Corrosion Inhibiting Admixture
   a. Select admixture for compatibility with other ingredients in the concrete mix. Acceptable products include: BASF "MasterLife CI 222", GCP Applied Technologies "DCI S", Sika "CNI"or approved equal.

G. Water
   1. For washing aggregate, mixing, and for curing shall be free from oil and deleterious amounts of acids, alkalis, and organic materials; comply with the requirements of

ASTM C1602. Additionally, water used for curing shall not contain an amount of impurities sufficient to discolor the concrete.

H. Change of Materials

1. After each concrete mix design is approved, no changes of any sort or source will be allowed without prior written approval from the Engineer. When brand, type, size, or source of cementitious materials, aggregates, water, ice, or admixtures are proposed to be changed, new field data, data from new trial mixtures, or evidence that indicates that the change will not affect adversely the relevant properties of the concrete shall be submitted for approval by the Engineer before use in concrete.

2.02 CONCRETE CHARACTERISTICS

A. Mix Proportioning

1. Concrete shall be normal weight concrete composed of cement, pozzolan, admixtures, aggregates, and water; proportioned and mixed to produce a workable, strong, dense, and impermeable concrete. It is acceptable to substitute interground Portland-pozzolan cement conforming to ASTM C595, containing the specified amount of pozzolan in lieu of Portland cement and pozzolan. Water-cementitious material (w/cm) ratio is based on the combined contents of cement and pozzolan.
2. [Add crystalline waterproofing admixture to Class C-1 concrete used for liquid containing structures and below-grade walls and slabs which are common with rooms, tunnels, and galleries to be occupied by equipment, piping, conduit, or personnel. Dosage rates in accordance with manufacturer's recommendations.]
3. Add corrosion inhibiting admixture to Class A, C-1, and C-2 mixes.
4. Provide concrete mix designs in accordance with the following guidelines:

Concrete class	Minimum[a] 28-day compressive strength, psi	ASTM coarse aggregate size	Maximum water-cementitious materials (w/cm) ratio	Minimum cementitious materials content (pounds/CY)	Pozzolan, percent by weight of cementitious materials	Air content (percent)	Slump range[f] (inches)
C-1[a]	4500	57 or 67	0.40	560	15-25	4-6	3-5

[a] *Use approximately 5 gallon/cu.yard of corrosion inhibiting additives for all concrete. Quantity of corrosion inhibiting additives shown are approximate and subject to manuf. Recommendation .*

B. Use

C. Use

1. Provide concrete by class for the uses listed below.

Concrete class	Type of use
C-1	Typical cast-in-place structural concrete

[a] *Contractor's option to use the same concrete mix for pipe encasement as the concrete slab above.*

D. Control Tests

1. General

a. Select and adjust proportions of ingredients in accordance with ACI 211.1. Verification of mix characteristics for submittal may be achieved using either the Trial Mix Design method or Field Experience Data method. Do not place concrete prior to submittal and acceptance of proposed mix.

2. Trial Mix Design
   a. Mixes verified by this method shall have the samples produced for testing, manufactured at the batch plant which will supply concrete to the project, using materials proposed for the Work and material combinations listed above. Testing, data, and reporting shall conform to ACI 318 and the following:
      1) Required compressive strength used as the basis for selecting concrete proportions (f'cr) shall be the specified concrete strength (f'c) + 1000 psi for specified concrete strengths less than 3,000 psi and f'c + 1200 psi for specified concrete strengths between 3000 psi and 5000 psi.
      2) Make at least three different trial mixtures for each class of concrete qualified by the Trial Mix Design. Each trial mixture shall have a different w/cm ratio or different cementitious materials content that will produce a range of compressive strengths encompassing f'cr.
      3) Design trial mixtures to produce a slump within ¾ inch of the maximum specified and an air content within 0.5 percent of the maximum specified.
      4) For each w/cm ratio or cementitious materials content, cast and cure at least twelve standard test cylinders in accordance with ASTM C192. Four cylinders from each batch tested at age 7-days, 14-days, and 28-days or as required to comply with ACI 318.
      5) From results of the cylinder tests, plot a curve showing the relationship between w/cm ratio and compressive strength.
      6) From the curve of w/cm ratio versus compressive strength, select the w/cm ratio that will produce f'cr. This is the maximum w/cm ratio to be used unless a lower w/cm ratio is specified above.

3. Field Experience Data:
   a. When sufficient test data for a particular mix design is available which is identical or substantially similar to that proposed for use, Contractor may substitute use of this data in lieu of a trial mix design. Field data, reports, and analysis shall conform to ACI 318, except as modified herein.
      1) Historical mix design proportions for which data are submitted may vary from the specified mix within the following limits:
         a) f'c as specified or up to 500 psi above
         b) w/cm ratio as specified or lower
         c) pozzolan content within 5 percent of that specified
         d) maximum coarse aggregate size may not vary smaller, but gradation of coarse aggregate may vary
         e) slump after introduction of admixtures +0/-1 inch.
   b. Use of historical Field Experience Data does not allow modification of the project mix specifications herein without review and acceptance by the Engineer.

4. Shrinkage:
   a. Liquid containing structures using Class C-1 concrete mix are intended to be watertight. Provide test results for Class C-1 concrete mix meeting the following requirement: drying shrinkage limit of 0.038 percent in the laboratory at 35-days

(7-days moist cure and 28-days drying) as tested in accordance with ASTM C157 and the following modifications:

1) Wet cure specimens for a period of 7-days (including the period of time the specimens are in the mold). Wet cure may be achieved either through storage in a moist cabinet or room in accordance with ASTM C 511, or through storage in lime saturated water.
2) Slump of concrete for testing shall match job requirements and need not be limited to restrictions as stated in ASTM C 157 section 8.4.
3) Report results in accordance with ASTM C 157 at 0, 7, 14 & 28-days of drying.

b. Concrete shall not be placed in the field prior to acceptance of the concrete mix. To meet the drying shrinkage limit, it is recommended that a shrinkage reducing admixture be considered for use in concrete for liquid containing structures.

2.03 WATERSTOPS

A. Polyvinyl Chloride (PVC):
   1. Manufacture PVC waterstops from virgin polyvinyl chloride conforming to the Corps of Engineers Specification No. CRD-C572.
   2. Use 6-inch by 3/8-inch ribbed flat ribbed with center bulb waterstop in construction joints. Acceptable products include: Greenstreak Group, Inc. “Model 705”; Vinylex Waterstops and Accessories “Model RB6-38; or approved equal.
   3. Use molded crosses, tees, and other shapes for changes of direction, intersections, and transitions or cut and splice as recommended by manufacturer.

B. Thermoplastic:
   1. Acceptable products include: Greenstreak Group, Inc. “Westec Envirostop TPE-R”; Vinylex Waterstops and Accessories “Petro Stop”; or approved equal of similar profiles to above specified PVC waterstops in chemical containment areas.

C. Retro-Fit
   1. Use “Tee” or “L” shape as indicated with epoxy adhesive, stainless steel batten strips, and stainless steel adhesive anchors. Acceptable products include: Greenstreak Group, Inc Model “667” or approved equal.

D. Expanding (Hydrophilic) Waterstops
   1. Bentonite-free, made from unvulcanized rubber. Acceptable products include: Adeka Corporation “Ultra Seal MC-2010MN with P-201 adhesive/sealant”; Greenstreak Group, Inc. “Hydrotite CJ-1020-2K with Leakmaster LV-1 adhesive/sealant”; or approved equal. These are allowable for use only where indicated on the drawings or accepted in writing by Engineer. Provide adhesive/sealant approved by manufacturer plus concrete nails and fender washers to secure waterstop material in-place during concrete placement. The waterstop MUST be placed [between two mats or curtains of steel reinforcement][with minimum 3-inches concrete cover.
   2. For limited cover applications or where only one mat or curtain of reinforcement is present, use Adeka Corporation “Ultra Seal KBA-1510FP”or approved equal.

E. Non-expanding Waterstops

1. Acceptable products include: Henry Company “SF302 Synko-Flex Waterstop with primer” or approved equal.

2.04 SEALANTS AND JOINT FILLERS

A. Sealants and preformed joint fillers are specified in Sections 07 92 00 and 07 91 26.

2.05 BONDING COMPOUNDS

A. Epoxy resin bonding compounds for use in wet areas shall conform to ASTM C881 Types IV or V, Class A, B, or C depending on temperature at use. Acceptable products include: BASF Corporation “MasterEmaco ADH 327RS”; Sika Chemical Corporation “Sikadur 32”; or approved equal.

B. Non-epoxy bonding compounds for use in dry areas for non-structural bonding or as noted on the drawings shall conform to ASTM C1059 Type II. Acceptable products include: Penetron Specialty Products “Acrylic Bondcrete”; ChemMasters “Cretelox”; or approved equal.

C. Apply bonding compounds in accordance with the manufacturer’s instructions.

2.06 EPOXY FOR CRACK INJECTION

A. Use a two-component, moisture insensitive, high modulus, injection grade, 100 percent solids, epoxy-resin blend. Consistency as required to achieve complete penetration into cracks. Material shall conform to ASTM C881 Type 1 Grade 1. Acceptable products include: Sika Corporation “Sikadur 52”; Adhesives Technology Corporation “Crackbond SLV302”; or approved equal.

B. Use epoxy injection for structural crack repairs except as noted below for non-structural cracks in liquid-containing concrete structures. The Engineer shall determine whether a crack is classified as structural or non-structural.

2.07 CHEMICAL GROUT FOR CRACK INJECTION

A. Use hydrophobic polyurethane grout at the Engineer's discretion as an alternative for sealing non-structural cracks in concrete structures intended to be watertight. Acceptable products for sealing hairline cracks include: GCP Applied Technologies "DE NEEF Flex SLV PURe” (must be used with DE NEEF Flex Cat PURe); or Sika Corporation “SikaFix HH LV” as appropriate for crack width; or approved equal. Coordinate with product supplier to verify and select appropriate product for crack widths to be injected.

2.08 SURFACE RETARDANT

A. Retardant for exposing aggregate for unformed surfaces in construction joints shall be Sika Corporation“Rugasol-S”; GCP Applied Technologies “Top-Cast”; or approved equal.

B. Apply retardant in accordance with manufacturer’s instructions sufficient to assure a minimum penetration of 1/4 inch.

2.09 POST APPLIED CONCRETE HARDENER AS SPECIFIED ON ARCHITECTURAL DRAWINGS AND SPECIFICATION. CURING AND SEALING COMPOUNDS

A. Acceptable products include: BASF Corporation “MasterKure CC 250SB”; Dayton Superior “Cure & Seal 25% J22UV”; or approved equal, conforming to ASTM C1315.

B. Compound shall be clear and applied in accordance with the manufacturer’s instructions.

C. Curing and sealing compound shall be certified compliant with final finish system if applicable, including compatibility with floor hardeners in areas where floor hardeners are specified to be used.

D. Compound shall be clear and applied in accordance with the manufacturer’s instructions.

E. Curing compounds shall be certified compliant with final finish system if applicable, including compatibility with floor hardeners in areas where floor hardeners are specified to be used.

2.10 TRENCH DRAINS

A. Use either field formed and cast with grate and frame, or utilize a pre-engineered manufactured trench drain system that conforms to the design load requirements of AASHTO H-20 in traffic areas or 300 pounds per square foot elsewhere. Include the following minimum requirements:
   1. A round or V-bottom channel, sloped to a minimum of 1/16-inch per foot. See drawings for channel cross section or size. If not shown, use 12 inches wide and deep (nominal) and confirm with Owner’s Representative.
   2. Aluminum grating frame with anchors at 45 degrees into the surrounding concrete. Coat aluminum to prevent direct concrete contact.
   3. Aluminum grate conforming to Federal Specification RR-F-621C.
   4. A locking device which directly connects the grate to the frame.

B. Candidate manufacturers include: MultiDrain Systems, Atlanta, Georgia; ABT, Inc., Troutman, North Carolina; or approved equal.

2.11 NEOPRENE BEARING, SEAL PADS, AND RODS

A. Use 100 percent chloroprene (neoprene), 50 Durometer A, conforming to AASHTO Standard Specifications for Highway Bridges. Pads and rods shall conform to geometry as shown on the drawings. Products shall be one-piece as manufactured, or factory spliced; using a process proven gas-tight in repeated similar applications. Do not use glues and adhesives to bond pieces together.

B. Deliver to job site in protective containers or packaging and maintain the integrity of the pad/rod through construction.

PART 3 EXECUTION

3.01 GENERAL

A. Use only truck-mixed, ready-mixed concrete conforming to ASTM C94. Proportion materials by weighing.

B. Introduce pozzolan into the mixer with cement and other components of the concrete mix; do not introduce pozzolan into a wet mixer ahead of other materials or with mixing water.

C. Introduce water at the time of charging the mixer; additional water may be introduced within 45 minutes from charging the mixer, provided the specified w/c ration and slump is not exceeded and the maximum total water per the approved mix design is not exceeded.

D. Arrange with the testing laboratory for inspection as required to comply with these specifications.

E. Deliver concrete to the site and complete discharge within 90 minutes after introduction of water to the mixture. Extension of allowable time beyond this limit requires a Contractor proposed remedial action plan to be reviewed and accepted by the Owner's Representative.

3.02 CONVEYING AND PLACING CONCRETE

A. Convey concrete from the mixer to the forms in accordance with ACI 301. Remove concrete that has segregated in conveying from the site of the work.

B. Placing Concrete:
   1. General:
      a. Place concrete in accordance with ACI 301. Do not permit concrete to drop freely more than 4-ft (6-ft when superplasticizer is used).
   2. Placing Concrete By Pumping:
      a. Concrete placed by pumping is at Contractor's discretion and shall not be the cause to change or relax specified mix design characteristics. Concrete shall possess the specified characteristics at the point of placement.
      b. Measure slump at the hose discharge, except as follows: Initial slump testing in each placement shall occur at both the pumping unit inlet hopper and hose discharge. Slump loss in pumping, measured between the inlet hopper and the hose discharge, shall not exceed 1 inch. After these criteria have been satisfied, slump may be measured at the inlet hopper with allowable slump increased by the earlier measured difference, not to exceed 1 inch.
      c. Measure air content at the hose discharge, except as follows: Initial air content testing shall occur at both the pumping unit inlet hopper and the hose discharge. Loss of air content shall be measured between the inlet hopper and the hose discharge. Increase the air content of the delivered concrete at the inlet hopper to provide the specified air content at the hose discharge. After these criteria have been satisfied, air content may be measured at the inlet hopper.
      d. Before starting each pumping operation, prime the pump and line with a cement slurry to lubricate the system. Waste cement slurry outside the forms. Equip hose

tip with a safety chain for recovery in case of hose blowout during pumping. Hose or accessories shall not remain in the freshly placed concrete.

e. Use tremie placing techniques and equipment for pump placed concrete. Pump discharge system shall remain full of concrete from pump to discharge point at all times. Concrete pumping shall not occur until Owner's Representative has verified equipment including the tremie plug. Should the discharge line become open, with zones empty of concrete, cease pumping and re-primed with tremie plug installed before continuing.

3. Placing Concrete In Hot Weather
   a. In temperatures above 80 degrees F, place concrete in accordance with ACI 305.1.
4. Placing Concrete In Cold Weather
   a. In temperatures below 40 degrees F, place concrete in accordance with ACI 306.1.

3.03 CONSOLIDATING CONCRETE

A. Consolidate concrete in accordance with ACI 301. If evidence of inadequate consolidation is observed, concrete placement will be suspended until Contractor provides a revised plan to achieve proper consolidation.

3.04 CURING AND SEALING

A. General
   1. Cure concrete using water (including form curing and use of moister retaining covers), a clear membrane curing compound, or by a combination of both methods. Coordinate repairs or treatment of concrete surfaces so that interruption of curing will not be necessary.
   2. Maintain concrete surface temperature between 50 degrees F and 80 degrees F for at least 5 days. Cure concrete in hot weather (above 80 degrees F) in accordance with ACI 305.1. Cure concrete in cold weather (below 45 degrees F) in accordance with ACI 306.1.

B. Water Curing
   1. Keep concrete continuously wet for a minimum of 10-days after placement (14 days after placement for sections over 3-feet thick). Absorptive mats or fabric may be used to retain moisture during the curing period. Absorptive covers shall comply with AASHTO M182, Class 3, and moisture retaining covers shall comply with ASTM C171.
   2. Use water curing in hot weather for liquid containment structures. Cover forms and keep moist. Loosen forms as soon as possible without damage to the concrete, and make provisions for curing water to run down inside them. During form removal, take care to provide continuously wet cover to newly exposed surfaces.

C. Curing Compound
   1. When curing compound is allowed, apply it as soon as the concrete has set sufficiently so as not to be marred by the application or apply it immediately following form removal for vertical and other formed surfaces. Preparation of surfaces, application procedures, and installation precautions shall follow manufacturer's

instructions. For liquid containing structures, apply curing compound at twice the manufacturer's recommended dosage rate, applied in two coats perpendicular to each other.

2. Do not use curing compound on concrete surfaces to be coated, waterproofed, moisture-proofed, tiled, roofed, or where other coverings are to be bonded. In these cases, use water curing unless the curing compound is first removed or is compatible with the final finish covering.

3.05 PROTECTION

A. Protect concrete from injurious action by sun, rain, wind, flowing water, frost, excessive vibration and mechanical means.

B. Loading green concrete is not permitted. Green concrete is defined as concrete with less than 100 percent of the specified strength.

C. Backfill shall not be placed against concrete walls until the concrete has reached the specified strength, connecting slabs and beams have been cast and have also reached the specified strength, and watertightness testing and repairs have been completed for liquid containing structures to the satisfaction of the Owner's Representative.

D. Arrangements for covering, insulating, heating, and protecting concrete in cold weather shall be in accordance with ACI 306.1.

3.06 CONSTRUCTION JOINTS

A. General

1. Place concrete in each unit of construction continuously. Before new concrete is placed on or against concrete which has set, retighten forms and clean foreign matter from the surface of the set concrete. Provide waterstops as specified.

B. Construction

1. Form construction joints by producing a rough surface of exposed aggregates using a surface retardant; include joints between the slab and topping concrete. The limit of the treated surfaces shall be 1 inch away from the joint edges. Within 24 hours after placing, remove retarded surface mortar either by high pressure water jetting or stiff brushing or combination of both so as to expose coarse aggregate. A rough surface of exposed aggregate may also be produced by sandblasting followed by high pressure water jetting. Sandblasting, if used, shall remove 1/4 inch of laitance film and expose coarse aggregate to ensure adequate bond and watertightness at the construction joints.

C. Locations

1. Provide construction joint locations as follows:
   a. Cast walls exceeding 50 feet in length in panels not to exceed 30 feet in length. Cast adjoining panels only after 5-days have elapsed. Joints are not allowed within the lesser of 10 feet or 25 percent of the wall length from a corner unless specifically detailed thus on the drawings.
   b. Locate joints in beams or girders at or near the quarter point between supports.

c. Make joints in the members of a floor system at or near the quarterpoint of the span.

d. Make joints in walls and columns at the underside of floors, slabs, beams or girders and at the tops of footings or floor slabs.

e. Cast slab panels in checkerboard patterns not to exceed 40 feet in length and not to exceed 900 square feet in area, with maximum 1 ½ to 1 ratio of side lengths. Minimum lapsed time between placing adjacent panels shall be 3-days. The requirements for size of slab panel is waived if joints are located on the Drawings.

2. Vertical construction joints shall have edges grooved or beveled at faces exposed to view including interior faces of basins and tanks. Seal grooves subjected to wetting or weather with joint sealant.

3. Continue reinforcing steel and welded wire reinforcement through construction joints. Beams, girders, and floor slabs shall not be constructed over columns or walls until at least one day has elapsed to allow for initial shrinkage in the column or wall. No joint will be allowed between a slab and a beam or girder unless otherwise shown. Joints shall be perpendicular to the main reinforcement. Provide waterstops in construction joints as specified.

3.07 INSERTS AND EMBEDMENTS

A. Inserts

1. Where pipes, castings, or conduits are to pass through structures, position in forms before placing concrete; or where shown on Drawings or approved by the Owner's Representative, provide openings in the concrete for subsequent insertion of such pipes, castings, or conduits. Provide waterstops and a slight flare in the form to facilitate grouting and permit the escape of entrained air during grouting.

2. Provide additional reinforcement around openings. Use non-shrink grout to infill around inserts.

3. Place horizontal conduits and pipes, in slabs and beams, between the top and bottom layers of reinforcement. Spacing and size limitations shall conform to ACI 318.

4. Conduits and pipes shall not run directly beneath a column or base plate.

5. Position conduit, pipe, and other ferrous items such that there will be a minimum of 2-inches clearance between said item and concrete reinforcement. Welding inserts to reinforcement is not permitted.

6. The outside diameter of conduit or pipe shall not exceed one-fourth the slab or beam thickness.

B. Embedments

1. Gate frames, gate thimbles, special castings, channels, grating frames, or other miscellaneous metal parts to be embedded in concrete shall be secured in the forms prior to concrete placement.

2. Embed anchor bolts and inserts in concrete as shown. Provide inserts, anchors, or other bolts necessary for the attachment of piping, valves, metal parts, and equipment.

3. Provide nailing blocks, plugs, strips, and the like necessary for the attachment of trim, finish, and similar work. Voids in sleeves, inserts, and anchor slots shall be filled

temporarily with readily removable material to prevent entry of concrete. Do not use continuous anchor slots or strips in concrete intended to be watertight.

4. Position operators or sleeves for gate or valve stems to clear reinforcing steel, conduit, and other embedments, and to align accurately with equipment.

3.08 EXPANSION JOINTS

A. Expansion joints shall be as shown. Do not extend reinforcement or other embedded metal items through expansion joints. Provide waterstops where indicated.

3.09 WATERSTOPS

A. Waterstops shall conform to ACI 301. Tie waterstops in position prior to placement of concrete to prevent movement and deformation.

B. Provide waterstops in construction and expansion joints as follows:
   1. Joints in parts of structures exposed to ground or water on one side and occupied by non-submerged equipment or by personnel on the other.
   2. Wall and slab joints of tanks and channels subject to water pressure.
   3. Waterstops shall be provided for the full height of the walls.
   4. Provide at other locations shown on the Drawings.

C. Field splices shall be at straight sections using heat fused welded, butt splices only. Lapping of splices or joining by means other than heat fused welding is not allowed.

D. Install hydrophilic waterstops according to manufacturer's recommendations. Surfaces of concrete shall be prepared level/plumb and to the smoothness required by manufacturer. Grind surface as necessary. Provide bonding adhesive and concrete nails with fender washers to hold waterstop in position during concrete placement.

3.10 MODIFICATION OF EXISTING CONCRETE

A. General
   1. Verify structural dimensions related to or controlled by previously constructed or existing structures prior to concrete work.

B. Cutting or Coring Concrete
   1. Saw cut concrete to a depth of 1 inch to form straight outlines of concrete areas to be removed. Where reinforcement is exposed due to saw cutting or core drilling and no new material is to be placed on the cut surface, provide a protective epoxy coating to the entire cut surface.
   2. Coat surfaces of oversized openings with an epoxy bonding compound prior to re-finishing with profiling mortar to the required opening size.
   3. Grind existing joint edges to create a chamfer matching those used on adjacent construction.
   4. Investigate concrete to be drilled, cored, or sawcut to determine location of reinforcing steel. Locate penetrations to clear existing reinforcing steel. Where not possible to avoid reinforcing steel, consult the Engineer as to acceptability of cutting reinforcing steel and provide new reinforcing systems as directed.

5. Locating methods include chipping to expose reinforcing steel, ground penetrating radar, X-ray, or magnetic flux devices. Locates of existing reinforcing shall be by the Contractor.

C. Joining New Concrete To Existing
   1. Existing concrete surfaces to be joined with new concrete shall be cleaned and roughened by abrasive blasting, bush hammering, or other method to achieve ¼-inch amplitude surface. Remove existing metalwork, embeds, or other interfering items. Coat existing surface with epoxy bonding compound prior to placement of new concrete.

D. Post-Installed Anchors and Dowels
   1. Use non-destructive methods for locating reinforcement prior to drilling operations. For anchor and dowel locations that interfere with reinforcement, attempt to relocate to avoid drilling through the reinforcement if possible.
   2. For situations that do not allow relocation, cutting of reinforcement for installation is subject to the following:
      a. Prior to drilling through reinforcement, the Contractor shall consult the Owner's Representative or Engineer.
      b. Drill holes with a hammer drill and carbide bit (core drilled holes are not allowed), followed by brushing and air-cleaning with oil-free compressed air.
      c. Holes drilled through reinforcement must be in compliance with adhesive anchor assumptions for roughened hole surface typical of a hammer drill and carbide bit. No smooth hole surfaces are allowed.
      d. Do not cut slab rebar within 24 inches of a supporting wall, column, or an opening in the slab.
      e. No cutting of rebar is allowed in the middle third of slab spans for anchors with diameters equal to or greater than 3/4 inch.
      f. Maximum of two rebar may be cut in any 10 foot width of slab.
      g. Maximum of two rebar may be cut within any 10 foot width of concrete wall.
      h. Maximum of one rebar may be cut within any 8 foot width of CMU wall.
   3. For anchors that cannot be moved and that conflict with the above requirements, consult Engineer for direction. It is not acceptable to cut reinforcement in beams, columns, precast members, or stairs.
   4. Use a pre-manufactured, self-mixing, injectable, two-component, epoxy adhesive, as per Section 03 60 00. Follow manufacturer's recommendations and ICC Evaluation Report for installation.

E. Waterstops
   1. Where a waterstop between new and existing concrete is required, install a hydrophilic waterstop, or a retrofit waterstop where indicated on the design drawings for the specific location.

3.11 FORMED SURFACE FINISHES

A. Repair Of Surface Defects
   1. Repair surface defects, including tie holes, minor honeycombing, or otherwise defective concrete in accordance with ACI 301. Clean areas to be repaired. Cut and

chip out honeycombed or otherwise defective areas to solid concrete, to a depth of at least 1-inch. If defective area includes exposed reinforcing steel, correct by removing concrete a minimum of 1-inch beyond the reinforcing. Make edges of the cut perpendicular to the surface of the concrete in a neat rectangular pattern.

2. Joints shall be grooved to a radius or bevel of ¾-inch depth.
3. Finish patches on exposed surfaces to match and blend with adjoining work. Cure patches as specified for the concrete. Protect finished surfaces from stains and abrasions.

B. Formed Surface Finishes

1. Finish A - Grout Rubbed Finish
   a. After repair of surface defects, apply a grout rubbed finish in accordance with ACI 301 except that all form fins and other protrusions shall be completely removed. Lightly sandblast surfaces prior to sacking. Sandblasting shall occur after the specified curing period.
   b. Add a PVA bonding compound to the mix water used in sacking mortar; as recommended by the manufacturer.
   c. Provide Finish A at uncoated surfaces of stair wells, at interior surfaces of equipment rooms, galleries, tunnels, operations areas, exposed channels and tanks from 1 foot below minimum water surfaces and up, at exposed exterior surfaces to 1 foot below grade, and at permanently exposed vertical and sloped surfaces such as pipe chases.
   d. Do not provide Finish A at concrete surfaces receiving a coating.
2. Finish B - Smooth Surface Finish
   a. Initial surface preparation is the same as Finish A; repair surface defects and remove all form fins.
   b. Provide Finish B at surfaces to be coated, at interior surfaces of exposed channels and tanks from 1 foot below minimum water surfaces and down (Finish A applied above this level), and full height at surfaces of wet wells, tanks, and channels not exposed to view. See Section 09 90 00 for additional concrete surface preparation, including filling of bug holes, and coating requirements.
3. Finish C - Rough Form Finish
   a. Repair surface defects and imperfections greater than 3/8 inch in any dimension. Remove form fins and protrusions down to less than 3/8 inch projection.
   b. Provide Finish C or smoother at exterior surfaces from 1 foot below grade and down, at other vertical surfaces not exposed to view and not specified above to receive Finish A or B.
   c. Also apply Finish C to unoccupied interior areas not otherwise specified.
4. Finish D – Unfinished Surface
   a. Repair surface defects and otherwise leave the surfaces as they come from the forms, except plug tie holes and repair or remove defects greater than 1/2 inch in any dimension.

C. Sample Of Formed Surface Finish A

1. Provide a sample concrete panel, minimum 4 feet by 4 feet; representative of formed surface Finish A. The panel shall be representative of the workmanship and finish required, including repair of defects, filling of tie holes, sandblasting, and rubbing.
2. The sample shall be approved by the Owner's Representative prior to the start of production work. The sample shall be on display at the job site, and finished surfaces shall match sample.

3.12 SLAB FINISHES

A. General
   1. The finishes specified herein include surface finishes, treatments and toppings for floors and slabs. Do not use dry cement on new concrete surfaces to absorb excess moisture. Round edges to a radius of 1/2 inch.
   2. Slope floors to drain uniformly within a room or space. Unless otherwise specified, slope shall be a minimum of 1/8 inch per foot toward nearest drain. Restrict use of floor drains with only locally depressed slabs to locations specifically noted.
   3. Immediately after final finish is applied, the surface shall be cured and protected as specified in Curing, Sealing, and Protection paragraphs above.
   4. Where finish is not specified, floor slabs shall receive a Steel Trowel Finish.

B. Float Finish
   1. Perform floating with a hand or power-driven float in accordance with ACI 301. Begin floating when the bleed water sheen has disappeared and the surface has stiffened sufficiently. Float as required to meet tolerance requirements of ACI 117 for a conventional surface.
   2. Floating shall close cracks and checks plus compact and smooth the surface. Refloat the slab to a uniform texture.
   3. Apply float finish to surfaces of channels, tank bottom slabs, exterior below grade horizontal surfaces, including tops of footings, and surfaces to receive insulation or roofing.

C. Steel Trowel Finish
   1. Float the concrete surface as indicated above and then trowel in accordance with ACI 301.
   2. Provide Steel Trowel Finish on interior exposed floors and slabs that will receive resilient flooring, carpet or ceramic tile, unless specified otherwise.
   3. Surface Hardener (see Part 2) shall be troweled into the finished surface at the locations shown on Architectural drawings.

D. Broom Finish
   1. Float the concrete surface as indicated above, then immediately give the concrete a coarse transverse scored texture by drawing a broom or burlap belt across the surface in accordance with ACI 301.
   2. Provide a Broom Finish for steps and ramps, exterior exposed horizontal surfaces, and where otherwise indicated.

E. Samples Of Concrete Slab Finishes

1. Provide a sample concrete slab, minimum 4 feet by 4 feet, representative of workmanship and each specified finish.
2. Samples shall be approved by the Owner's Representative prior to the start of production work. The samples shall be on display at the job site, and finished surfaces shall match samples.

3.13 TOPPING CONCRETE

A. Subfloor Finish
   1. Slabs to receive a topping concrete, topping grout, or tile; shall be float finished to required elevations. Immediately following the final finishing, either:
      a. treat slab with a retardant and abrasive blast to create expose aggregate with ¼ inch amplitude, or
      b. create the ¼ inch amplitude roughened surface by raking the freshly floated surface using a standard garden rake.
   2. Immediately after finishing, proceed with required curing and protection of the slab as stated above.

B. Topping Concrete or Grout
   1. Remove dirt, laitance, and loose aggregate. Keep cleaned base slab saturated surface dry for a period of 24 hours prior to the application of topping. Remove excess water.
   2. Apply and scrub a neat cement grout into the surface of the base slab using a stiff broom. The cement grout shall not be allowed to dry and shall be spread within 15 minutes ahead of the topping placement.
   3. The topping shall then be placed, compacted, and floated. Test surface with a straight edge to detect and correct high and low spots to a tolerance of 1/8 inch in 10 feet.
   4. Incorporate float finish, surface hardener, steel trowel finish, etc. as specified.

3.14 RELATED SURFACES

A. Stair Tread:
   1. Construct stair treads with a nonskid nosing as specified in Section 05 50 00.
   2. Treads shall have a Float Finish followed by a Steel Trowel Finish with a slope of 1/8 inch toward the front.
   3. Ends of treads shall have a 1/16 to 1/8 inch cut between concrete and metal tread to allow for expansion.

B. Finishing of Unformed Surfaces
   1. Adjacent Unformed Surfaces
      a. Tops of walls, buttresses, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after concrete is placed and shall be Float Finished to a texture reasonably consistent with that of the adjacent formed surface.
      b. Continue final treatment of formed surface uniformly across the top of the unformed surface.
   2. Pavements and Sidewalks

a. The surface of the concrete shall be screeded to grade and sloped to drain. After screeding, the surface shall be Float Finished followed by a Broom Finish.
b. Round edges and expansion joints to a radius of 1/2 inch. Control joints shall be grooved or sawcut to a minimum depth of 1/4 the slab thickness.

3.15 FIELD SAMPLING AND TESTS

A. General
1. Field sampling and tests shall be performed by an independent testing laboratory. Samples of aggregates and concrete will be obtained at such times to represent the quality of the materials and work throughout the project.
2. The laboratory shall provide necessary labor, materials and facilities for sampling aggregate and for casting, handling, and initially storing the concrete samples at the work site.
3. The minimum number of samples and tests are specified in Testing paragraph below.

B. Sampling
1. Aggregates
a. General
1) Sample fine and coarse aggregates in accordance with ASTM D75 not less than 30 days prior to the use of such aggregates in the work.
2) Take samples at the discharge gates of the bins feeding the weigh hopper. Repeat sampling when the source of material is changed or when unacceptable deficiencies or variations from the specified requirements of materials are found.
3) Aggregate samples shall be tagged and their sources identified.
b. Coarse Aggregate
1) Take a sample weighing between 50 and 60 pounds after the batch plant is brought up to full operation.
2) Take samples to obtain a uniform cross section, accurately representing the materials on the belt or in the bins for sieve analysis.
c. Fine Aggregate
1) Take samples as specified for coarse aggregate.
2) Take samples of sand when the sand is moist for sieve analysis and specific gravity tests.
2. Concrete
a. Take samples of plastic concrete in accordance with ASTM C172.
b. Take samples at the hopper of mixing equipment or transit mix truck, except as noted in the Placing Concrete by Pumping subparagraph of the Conveying and Placing article above.

C. Testing

1. Aggregate
    a. A minimum of one test of coarse aggregate per 400 cubic yards of concrete used and a minimum of one test of fine aggregate per 200 cubic yards of concrete used shall be made to confirm continuing conformance with specifications for gradation, cleanliness and sand equivalent.
    b. A maximum of one test per day of each aggregate is required.
    c. Repeat of the entire concrete mix design test program is required before source changes will be accepted.
2. Concrete
    a. Strength Tests
        1) The strengths specified for the design mix shall be verified by the independent testing laboratory during placement of the concrete. Verification shall be accomplished by testing standard cylinders of concrete samples taken at the job site. Cylinders shall be 4 by 8 inch or 6 x 12 inch.
        2) Concrete samples shall represent the concrete placed in the forms. One set of six standard 6 x 12 inch (or nine 4 x 8 inch) cylinders shall be cast of each class of concrete for each 100 cubic yards or less, or for each 5,000 square feet of slab or wall surface area placed per day. Provide additional cylinders when an error in batching is suspected. Each set of cylinders are cast from material taken from a single load of concrete.
        3) Casting, handling and curing of cylinders shall be in accordance with ASTM C31. For the first 24 hours after casting, keep cylinders moist in a storage box constructed and located so that its interior air temperature will be between 60 and 80 degrees F. At the end of 24 hours, the testing laboratory will transport the cylinders to their laboratory.
        4) Testing of specimens for compressive strength shall be in accordance with ASTM C39. Each test shall consist of two 6 x 12 inch (or three 4 x 8 inch) test cylinders from each group of six (or nine) specimens. Test at the end of 7 days and at the end of 28 days. The remaining cylinders shall be tested at the end of 56 days if the 28-day strength reports below specification.
        5) A strength test shall consist of the average strength of two 6 x 12 inch (or three 4 x 8). If one cylinder shows evidence of low strength due to improper sampling, casting, handling, or curing, the result of the remaining cylinders may be used if approved by the Owner's Representative.
        6) The average of any three consecutive 28-day strength test results of the cylinders representing each class of concrete for each structure shall be equal to or greater than the specified strength. Not more than 10 percent of the individual strength test results shall have values less than the specified 28-day strength for the total job concrete. No individual strength test result shall be less than the specified strength by more than 500 pounds per square inch.
        7) Provide certified reports of the test results directly to the Owner's Representative and the Engineer. Test reports shall include sufficient information to identify the mix used, the stationing or location of the

concrete placement, and the quantity placed. Slump, water/cement ratio, air content, temperature of concrete, and ambient temperature shall be noted.

8) The 28-day strength test results shall be evaluated in accordance with ACI 214R. Quality control charts showing field test results shall be included with the test results for each class of concrete in each major structure. Charts shall be prepared in accordance with ACI 214R. Quality control charts shall be maintained throughout the entire project and shall be available for the Owner's Representative's inspection at any time.

9) If the 28-day test results fall below the specified compressive strength for the class of concrete required for any portion of the work, adjustment in the proportions, water content, or both, shall be made as necessary at the Contractor's expense. Report changes and adjustments in writing to the Owner's Representative.

10) If compressive test results indicate concrete in place may not meet structural requirements, tests shall be made to determine if the structure or portion thereof is structurally sound. Tests may include, but not be limited to, cores in accordance with ASTM C42 and any other analyses or load tests acceptable to the Engineer. Costs of such tests and/or analysis shall be borne by the Contractor.

b. Tests for Consistency of Concrete

1) Measure slump in accordance with ASTM C143. Take samples for slump determination from concrete during placement. Tests shall be made at the beginning of concrete placement operation, whenever test cylinders are cast, and at subsequent intervals to ensure that the specification requirements are met.

2) For pumped concrete, measure slump in accordance with the Placing Concrete by Pumping subparagraph of the Conveying and Placing article above.

3) When high range water reducer is added at the site, slump tests shall be taken before and after addition of the admixture.

c. Tests for Temperature and Air Content

1) Temperature tests shall be made at frequent intervals during hot or cold weather conditions until satisfactory temperature control is established. Perform temperature tests whenever test cylinders are cast.

2) Measure air content in accordance with ASTM C231 whenever test cylinders are cast. For pumped concrete, measure air content in accordance with the Placing Concrete by Pumping subparagraph of the Conveying and Placing article above.

D. Final Laboratory Report

1. The testing laboratory shall provide a final report at the completion of all concreting. This report shall summarize the findings concerning concrete used in the project and provide totals of concrete used by class and structure.
2. Include final quality control charts for compressive strength tests for classes of concrete specified in each major structure. Also include the concrete batch plant's coefficient of variation and standard deviation results for each class of concrete.

3.16 REPAIR OF DAMAGED AND CRACKED CONCRETE

A. Acceptance Of Concrete
   1. Completed cast-in-place concrete work shall conform to the applicable requirements of ACI 301 and the Contract Documents. Concrete work that fails to meet these requirements shall be repaired, as approved by the Engineer, to bring the concrete into compliance. Repair methods shall be in accordance with ACI standards, including ACI 503.7, and are subject to the approval of the Engineer.
   2. Concrete that cannot be brought into compliance by approved repair methods will be rejected. Remove and replace rejected concrete work.
   3. The cost of repairs and replacement of defective concrete shall be borne by the Contractor.

B. Repair Methods
   1. Damaged/defective concrete or concrete with crack widths exceeding 0.004 inches at liquid-containing and conveying structures or crack widths exceeding 0.006 inches for other structures shall be repaired by one of the following methods (only the Engineer may determine that a defect or crack does not require repair):
      a. Perform watertightness testing and repair as needed to meet leakage criteria in this specification even when liquid-containing and conveying structures meet the crack width criteria defined above.
      b. Damaged or defective concrete includes surface defects, honeycomb, rock pockets, indentations greater than 3/16 inch, spalls, chips, air bubbles greater than 1/2 inch diameter, pinholes, bugholes, embedded debris, lift lines, sand lines, bleed lines, leakage from form joints, fins, projections, form popouts, texture irregularities, and stains or other color variation that cannot be removed by cleaning.
         1) Damaged or defective concrete is repaired according to procedures outlined above under finish requirements, Repair of Surface Defects.
   2. Crack Repair Method 1
      a. Fill the joint or crack by drilling holes to the affected area (following the product manufacturer's details), install injection ports, and force epoxy or chemical grout (expanding urethane) into the joint under pressure.
      b. Material type and repair procedures shall be approved by Engineer.
      c. After injection and curing; ports, sealing mix, and surface shall be cleaned and worked to match the adjacent specified finish.
   3. Crack Repair Method 2
      a. Fill cracks with low viscosity epoxy, applied by pouring/flooding crack zone until cracks are filled. Prepare surface, install, and cure according to manufacturer's recommendations.
      b. At a minimum, prepare surface to be clean and dry with no visible detrimental material in cracks to be filled. Conform to temperature limitations of epoxy. Clean and refinish to match adjacent surfaces.
   4. Crack Repair Method 3
      a. Cut a bevel groove 3/8 to 1/2 inch in width and depth, use backer rod or tape, and fill with sealant in accordance with manufacturer's instructions.
      b. This repair method is only used where approved by Engineer.

c. Groove and sealant shall be applied on wet or hydrostatic pressure side of surface.

C. Repair Method Use

1. Repair Method 1: For cracks in walls, surfaces sloped 1:1 or greater, beams, columns, structural slabs, overhead surfaces, and liquid retaining surfaces. Need for repair depends upon crack width, location, and leakage.
2. Epoxy grout is used for repair of structural cracks and chemical grout (expanding urethane) for repair of non-structural cracks at liquid-containing structures. The Engineer shall determine whether a crack is classified as structural or non-structural.
3. Repair Method 2: Utilized in lieu of Method 1 for slabs when approved by Owner's Representative. Final finish shall match adjacent surfaces.
4. Repair Method 3: Limited to dry-surface slabs, walls subject to less than three feet of liquid pressure, or as approved by Engineer. Repair Method 3 is not an equivalent repair method to Repair Methods 1 or 2, which shall be considered the standards.

3.17 BEARING AND SEAL PADS

A. General

1. Seal pads are intended to result in a gas-tight and liquid tight seal between surfaces and may also serve as bearing pads. Bearing pads are intended primarily to transmit structural loads between two structural elements.
2. A seal pad is intended to seal by dead load compressive force or mechanical clamping force as detailed. The seal pad may be bonded to one or both surfaces to maintain uniformly tight contact with the pieces contacting it. Neoprene materials may not be compatible with coatings applied later, and the Contractor shall verify that the particular coating(s) proposed for use are:
   a. contact compatible without neoprene breakdown; or
   b. mask off neoprene which may be exposed to the coating to prevent contact.

B. Concrete Contact

1. Neoprene pads shall bear against clean, smooth concrete. Clean concrete with high-pressure hydro-blast (3,500 psi) equipment. Epoxy grout cracks as specified above. Repair surfaces with irregularities greater than 1/16 inch. Create a 1/4-inch amplitude surface roughness and patch using an epoxy bonding agent followed by either polymer modified repair concrete or profiling mortar. Cure patch material before installing pad.
2. Bond seal pad, as indicated, to concrete prepared as above. Bonding agent shall be as recommended by the pad manufacturer to not allow shear sliding of the pad either with or without load normal to its surface.

C. Metal Surface Contact

1. Neoprene pads with metal-to-metal or metal-to-concrete contact shall be 1/4 inch minimum thickness or as shown on the drawings.
2. Contact surfaces shall be clean, smooth, and without evidence of harmful sharp edges or chemicals.
3. Compression is achieved by tightening connection bolts to specified torque, determined by:

a. the equipment manufacturer; or
b. structural specifications on the drawings; or
c. minimum 1/16 turn past "snug tight" as defined by AISC Steel Construction Manual.

4. Tighten bolts in multiple steps, proceeding around the joint to result in a uniform compression of the pad.
5. Certain pieces of equipment may have gasket specifications particular to that piece of equipment. Refer to those Sections of the specifications for requirements.

3.18 WATERTIGHTNESS TESTING AND REPAIR

A. Liquid Containing Concrete Tanks And Channels (Injection Well Pump Station Below Ground Wet Well)
1. Watertightness testing shall comply with ACI 350.1 and the following requirements.
2. Concrete tanks, basins, reservoirs and channels which have walls or slabs subjected to hydrostatic pressure shall be tested for watertightness. The tests shall be made after the structure is complete and the concrete has achieved its specified 28-day strength, but prior to application of waterproof coating or backfill.
3. Filling of the tank for watertightness testing shall not exceed a rate of 4 feet/hour. Fill with water to the maximum operating water surface. Keep water at this level for at least 72 hours prior to start of test.
4. Testing includes visual inspection of the dry sides of all walls, wall base construction joint at top of the slab, and the soffit of elevated slabs for evidence of leakage. Damp spots, leakage, or seepage revealed by the test, including those caused by shrinkage of concrete, honeycombed areas, construction joints, or other sources shall be repaired by Repair Method 1 (see Repair Methods paragraph in the Repair of Damaged Concrete and Cracking article above).
5. Damp spots are defined as areas from which water that can be picked up on dry hand and smeared across the dry concrete surface.
6. Re-test tanks or channels which have been repaired to check the suitability of repairs.
7. Provide water required for testing and re-testing and dispose of in an approved manner.
8. After repair of visual leakage, liquid containing or conveying concrete structures supported on soil must also meet maximum leakage criteria into the soil through their base slab or mat foundation as follows:

Structure Type	Tightness Criterion
Containment structures fully lined prior to hydrostatic test	No measurable loss
Cylindrical water and wastewater storage tanks and reservoirs other than digesters	0.050 percent per day
Digesters	0.050 percent per day (surcharged hydrostatic test)
Rectangular basins and tanks	0.050 percent per day
Concrete paved reservoirs and channels	0.10 percent per day

Note: All damp spots and/or leakage through walls, wall-to-slab joints, and elevated slabs shall first be repaired as described above.

9. Record volume loss by measuring the vertical distance from the water surface to a fixed point on the tank above the water surface. Account for evaporation from open surfaces.
10. If the drop in water surface during the test period exceeds the values given in the table above, exclusive of evaporation, the leakage is considered excessive and shall be remedied. The test period shall be per ACI 350.1.

3.19 CLEANUP

A. Upon completion of the work and prior to final inspection, clean all concrete surfaces as follows: Sweep with a broom to remove loose dirt, then mop and/or flush with clean water. Scrub by hand or machine as required to remove and blend stains or discolored areas .

B. Clean floors that have curing and sealing compound as stated above, followed by the final application of curing and sealing compound.

END OF SECTION

SECTION 03 60 00

GROUTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Section includes: Grout for column base plates, other structural supports, equipment bases, reinforcing bar dowels, surface repair, grout toppings, patching of fresh concrete, and uses other than masonry. Adhesive anchor bolt grouting is specified in Section 05 05 20. Topping concrete over precast elements and clarifier topping concrete is specified in Section 03 30 00.

1.02 RELATED SECTIONS

A. This section contains specific references to the following related sections. Additional related sections may apply that are not specifically listed below.
   1. Section 05 05 20 Anchor Bolts

1.03 REFERENCES:

A. The references listed below are a part of this section. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ASTM C109	Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 inch or 50 mm Cube Specimens)
ASTM C230	Flow Table for Use in Tests of Hydraulic Cement
ASTM C307	Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings
ASTM C939	Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
ASTM C531	Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
ASTM C579	Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes
ASTM C882	Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
ASTM C942	Standard Test Method for Compressive Strength of Grouts for Preplaced-Aggregate Concrete in the Laboratory
ASTM C1107	Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
ASTM C1181	Standard Test Methods for Compressive Creep of Chemical-Resistant Polymer Machinery Grouts

Reference	Title
ASTM E329	Agencies Engaged in Construction Inspection, Testing, or Special Inspection
COE CRD-C611	Flow of Grout for Preplaced Aggregate Concrete
COE CRD-C621	Non-shrink Grout
FBC	Florida Building Code with local code amendments

1.04 SUBMITTALS

A. Action Submittals

1. Procedure: Section 01 33 00:
2. A copy of this specification section with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.
3. Check-marks (✓) shall denote full compliance with a paragraph as a whole. Deviations shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications. Include a detailed, written justification for each deviation. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
4. Complete product literature, including mixing, handling and placement instructions for the following: Cementitious non-shrink grout, epoxy grout, adhesive for reinforcing bar dowel grouting, concrete repair mortar, and prepackaged cement grout products to be used on the project.
5. Mix design for cement grout that is not prepackaged, including product data for aggregates and cement in accordance with Section 03 30 00.
6. Current ICC Evaluation Service reports for adhesives used for reinforcing dowels.
7. Installer certification in accordance with ACI/CRSI Adhesive Anchor Installer Certification Program for installers of horizontal or upwardly inclined reinforcing bar dowels grouted using adhesive.
8. Certified test results verifying the compressive strength, shrinkage and expansion requirements specified herein.

1.05 QUALITY ASSURANCE

A. Quality Control by Owner

1. Special inspection services shall be performed by the Special Inspector under contract with the Owner and in accordance with FBC and local amendments.
2. Adhesive anchors installed in horizontal or upwardly inclined orientations to resist sustained tension loads shall be continuously inspected during installation by a Special Inspector.
    a. The Special Inspector shall furnish a report to the Engineer, Owner's Representative and Building Official that the work covered by the report has been performed and that the materials used and the installation procedures used

conform with the approved Project Manual and the Manufacturer's Printed Installation Instructions (MPII).

B. Quality Control by Contractor
   1. Provide the services of an independent testing laboratory which complies with the requirements of ASTM E329 if a product other than those listed below is proposed and test data is not available from the supplier to demonstrate equivalence to the specified grout. The testing laboratory shall sample and test the proposed grout materials. Costs of testing laboratory services shall be borne by the Contractor.

C. Certifications
   1. Installer certification shall be in accordance with ACI/CRSI Adhesive Anchor Installer Certification Program for installers of horizontal or upwardly inclined reinforcing bar dowels grouted using adhesive.

D. Compression test specimens will be taken during construction from the first placement of each type of grout and at intervals thereafter as selected by the Engineer to insure continued compliance with these Specifications.
   1. Compression tests and fabrication of specimens for epoxy grout will be performed as specified in ASTM C579, Method B, at intervals during construction as selected by the Engineer. A set of three specimens will be made for testing at seven days and any other time period as appropriate.
   2. Compression tests and fabrication of specimens for cement grout and non-shrink grout will be performed as specified in ASTM C109 at intervals during construction as selected by the Engineer. A set of three specimens will be made for testing at seven days, 28 days and any additional time period as appropriate.

E. Manufacturer Qualifications
   1. Manufacturer shall have a minimum of five years experience of producing products substantially similar to that required and shall be able to submit documentation of at least five satisfactory installations that have been in successful operation for at least five years each.
   2. When required, provide services of manufacturer's full-time employee, factory-trained in handling, use, and installing the products required, with at least five years of experience in field applications of the products required.

PART 2 - PRODUCTS

2.01 CEMENTITIOUS NON-SHRINK GROUT

A. The grout material shall be an approved ready to use mixture requiring only water for use at the job site. The 2-inch cubes shall have a minimum compressive strength of 3,000 psi at 7 days and 7,000 psi at 28 days.

B. Cementitious non-shrink non-metallic aggregate grout shall be:
   1. BASF, Masterflow 928
   2. Euclid Chemical Company, Hi-Flow Grout
   3. Five Star Products, Inc., Five Star Grout
   4. Sika Corporation, SikaGrout 212

5. Approved Equal

C. Non-shrink grout shall conform to CRD-C 621 and ASTM C1107, Grade B or C when tested at a maximum fluid consistency of 30 seconds per ASTM C939 at temperature extremes of 45 degrees Fahrenheit and 90 degrees Fahrenheit and an extended working time of 15 minutes.

D. Fluid grout shall pass through the flow cone, with continuous flow, one hour after mixing.

2.02 EPOXY GROUT FOR EQUIPMENT MOUNTING:

A. Epoxy grout shall be a pourable, non-shrink, 100-percent solids system.

B. Epoxy grout for equipment mounting shall be a non-cementitious, resin based, multi-component formulation. Epoxy grout shall be flowable, with shrinkage minimized to achieve minimum 98% effective bearing area. Epoxy grout shall be:

1. BASF, Masterflow 648
2. Euclid Chemical Company, E3-G
3. Sika Corporation, Sikadur 42
4. Approved Equal.

C. The following properties shall be attained with the minimum quantity of aggregate allowed by epoxy grout manufacturer.

1. Length change after hardening shall be less than 0.0006-inch per inch and coefficient of thermal expansion shall be less than 0.00003-inch per inch per degree F when tested in accordance with ASTM C531.
2. Compressive creep at one year shall be less than 0.001-inch per inch when tested under a 400-psi constant load at 140 degrees F in accordance with ASTM C1181.
3. Minimum seven-day compressive strength shall be 14,000 psi when tested in accordance with ASTM C579
4. Grout shall be capable of maintaining at least a flowable consistency for minimum of 30 minutes at 70 degrees F.
5. Shear bond strength to portland cement concrete shall be greater than shear strength of concrete when tested in accordance with ASTM C882/C882M.

2.03 ADHESIVE FOR GROUTING REINFORCING BAR DOWELS

A. Adhesive for setting dowels in concrete shall be an injectable two-component epoxy adhesive. Adhesive shall be approved for the intended use per the product ICC Report. Adhesive shall be:

1. Hilti, HIT-RE 500v3
2. Simpson Strong Tie, SET XP
3. Approved Equal (equivalent product must have ICC approval for use in cracked concrete in areas with high seismic risk).

B. Adhesive for setting dowels in concrete masonry shall be an injectable two-component epoxy adhesive. Adhesive shall be approved for the intended use per the product ICC Report or IAPMO Report. Adhesive shall be:

1. Hilti, HIT-HY 70
2. Simpson Strong Tie, SET XP
3. Approved Equal [acceptable per ICC Report or IAPMO Report for resisting earthquake loads]

2.04 CONCRETE REPAIR MORTAR

A. Horizontal Applications: Repair mortars shall be:
   1. BASF, MasterEmaco S 466CI
   2. Sika Corporation, SikaTop 111 Plus
   3. Approved Equal

B. Vertical and Overhead Applications: Repair mortars shall be:
   1. BASF, MasterEmaco 1500HCR Vertical Overhead
   2. Sika Corporation, SikaTop 123 Plus
   3. Approved Equal

2.05 CEMENT GROUT

A. Cement grout shall be comprised of cement, fine aggregate, coarse aggregate, water, and admixtures proportioned and mixed in accordance with this Section.
   1. Minimum Compressive Strength: 4,500 psi at 28 days.
   2. Maximum Water Cement Ratio: 0.42 by weight.
   3. Coarse Aggregate: ASTM C33/C33M, No. 8 size.
   4. Fine Aggregate: ASTM C33/C33M, approximately 60 percent by weight of total aggregate.
   5. Air Content: Five percent (plus or minus one percent).
   6. Minimum Cement Content: 564 pounds per cubic yard.
   7. Slump for grout fill shall be adjusted to match placing and finishing conditions, and shall not exceed four inches.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine and accept existing conditions before beginning work.

3.02 CEMENTITIOUS NONSHRINK GROUT

A. Non-shrink, cementitious, nonmetallic aggregate grout shall be used for column base plates, structural bearing plates, and all locations where the general term “non-shrink grout” is indicated on the Drawings. Use of this grout to support the bearing surfaces of machinery shall be as specified in Section 43 05 13 or as detailed on the Drawings for specific locations or pieces of equipment. If guidance is not provided in locations noted above, use of non-shrink grout for equipment mounting shall be limited to equipment less than 25 horsepower or 750 pounds. Grout shall be placed and cured in accordance with the manufacturer's instructions.

B. Non-shrink cementitious grout shall not be used as a surface patch or topping. Non-shrink cementitious grout must be used in confined applications only.

3.03 EPOXY GROUT FOR EQUIPMENT MOUNTING

A. Prepare concrete surfaces of equipment pads as indicated in details on the Drawings and as required by the epoxy grout manufacturer. Epoxy grout for equipment mounting shall be placed and cured in accordance with the requirements of Section 43 05 13, details on the Drawings, and in conformance with manufacturer's recommendations.

3.04 ADHESIVE FOR GROUTING REINFORCING BAR DOWELS

A. Follow manufacturer's instructions.

3.05 CONCRETE REPAIR MORTAR

A. Concrete repair materials and procedures shall be submitted for review to the Owner's Representative and shall be accepted prior to commencement of the repair work.

B. Follow all manufacturer's instructions, including those for minimum and maximum application thickness, surface preparation and curing. Add aggregate as required per manufacturer's recommendations. Any deviations from the manufacturer's instructions shall be submitted for review to the Owner's Representative and shall be accepted prior to commencement of the work.

3.06 CEMENT GROUT

A. Cement grout shall be used for grout toppings less than four inches thick and for patching of fresh concrete.

B. Grouting shall comply with temperature and weather limitations in Section 03 30 00, Cast-In-Place Concrete.

C. Cure grout in accordance with grout manufacturer's instructions for prepackaged grout and Section 03 30 00, Cast-In-Place Concrete, for non-prepackaged cement grout.

**** END OF SECTION ****

SECTION 05 05 20

ANCHOR BOLTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes Bolts and all-thread rods used to attach structural elements and equipment to concrete and concrete masonry. Included are cast-in-place and post-installed anchors (adhesive systems and wedge type expansion anchors), nuts and washers.

B. Cast-in-place and post-installed anchors shall be Type 316 stainless steel unless noted otherwise.

1.01 RELATED SECTIONS

A. This section contains specific references to the following related sections. Additional related sections may apply that are not specifically listed below.
   1. Section 01 33 00 – Submittal Procedures
   2. Section 08 63 00 – Translucent Skylight Assemblies

1.02 REFERENCES

A. The references listed below are a part of this section. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ACI 318	Building Code Requirements for Structural Concrete
ASTM A193	Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
ASTM A194	Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
ASTM A320	Alloy-Steel and Stainless Steel Bolting for Low-Temperature Service
ASTM A563	Carbon and Alloy Steel Nuts
ASTM F593	Stainless Steel Bolts, Hex Cap Screws, and Studs
ASTM F594	Stainless Steel Nuts
ASTM F844	Washers, Steel, Plain (Flat), Unhardened for General Use
ASTM F1554	Anchor Bolts, Steel, 36, 55, 105-ksi Yield Strength
FBC	FBC Building Code with local amendments

1.03 SUBMITTALS

A. Action Submittals
   1. Procedures: Section 01 33 00.

2. A copy of this specification section with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.
3. Check-marks (✓) shall denote full compliance with a paragraph as a whole. Deviations shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications. Include a detailed, written justification for each deviation. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
4. Anchor bolt placement plans.
5. Anchor bolt, nut, and washer material information, including material certifications.
6. Record copy of design calculations and details showing the required diameter, length, embedment, edge distance, confinement, anchor reinforcement, anchor bolt sleeves, connection redesign, and other conditions, stamped and signed by a Professional Engineer currently registered in the state of Florida Calculations shall comply with the provisions of ACI 318-14, Chapter 17. Base anchor capacity determination on cracked concrete condition and compressive strength of new concrete per Section 03 30 00. Assume compressive strength of existing concrete is 3,000 psi unless otherwise noted.
7. Submit record copy of proof loading test results within five days after test.
8. Product Data:
    a. ICC Evaluation Service Reports for post-installed adhesive type anchors and expansion (wedge type) anchors when allowed.
    b. Product data indicating load capacity charts/calculations.
    c. Chemical resistance.
    d. Temperature limitations.
    e. Manufacturers written installation instructions.
9. Installer certification for horizontal or upwardly inclined adhesive anchors in accordance with ACI/CRSI Adhesive Anchor Installer Certification Program.

1.04 QUALITY ASSURANCE

A. Quality Assurance By Owner
    1. Special inspection of anchor bolts shall be performed by the Special Inspector under contract with the Owner and in accordance with FBC and local amendments.
    2. A minimum of quantity of Five (5) or five percent sample whichever is greater of installed post-installed anchors shall be proof-loaded by an independent laboratory contracted by the Contractor. The quantity of samples and locations shall be coordinated with the Owner's Representative.
    3. Adhesive anchors installed in horizontal or upwardly inclined orientations to resist sustained tension loads shall be continuously inspected during installation by a Special Inspector.
    4. The Special Inspector shall furnish a report to the Engineer, Owner's Representative, and Building Official that the work covered by the report has been performed and that the materials used and the installation procedures used conform with the

approved Project Manual and the Manufacturer's Printed Installation Instructions (MPII).

B. Certifications

1. Installer certification shall be in accordance with ACI/CRSI Adhesive Anchor Installer Certification Program for installers of horizontal or upwardly inclined adhesive anchors.

PART 2 PRODUCTS

2.01 GENERAL

A. Anchor bolt holes in equipment support frames shall not exceed the bolt diameters by more than 1/4 inch. Minimum anchor bolt diameter shall be 1/2 inch. Anchor bolts for equipment mounting and vibration isolation systems shall be provided by manufacturer

B. Tapered washers shall be provided where mating surface is not square with the nut.

C. Anchor bolts shall be cast-in-place anchors unless post-installed anchors are specified or shown on the Drawings. Substitution of post-installed anchors will not be permitted unless specifically requested by the Contractor and approved by the Engineer.

2.02 PERFORMANCE/DESIGN CRITERIA

A. Anchor bolts for equipment shall be designed by the equipment manufacturer to include equipment operational loads combined with seismic and wind forces when applicable. Design criteria provided on drawings.

B. Design anchor bolts for support and bracing of non-structural components and non-building structures for loading specified on drawings.

2.03 MATERIALS

A. Anchor bolt materials shall be as specified in the following table:

Material	Specification
Stainless Steel Anchor Bolts	ASTM A193 or A320, Type 316
Stainless Steel Threaded Rods	ASTM F593, Type 316
Stainless Steel Nuts	ASTM A194 Heavy Hex Nuts, Type 316 ASTM F594 Heavy Hex Nuts at Adhesive Anchors, Type 316
Stainless Steel Washers	Type 316 to match bolt material
Carbon Steel Anchor Bolts	ASTM F1554, Grade 36, Hot Dip Galvanized
High-Strength Carbon Steel Anchor Bolts	ASTM F1554, Grade 55, Weldable per Supplementary Requirement S1, Hot Dip Galvanized
Carbon Steel Nuts and Washers	ASTM A563 and F844, Heavy Hex, Hot-Dip Galvanized
Concrete Adhesive Anchors	Hilti "HIT-RE 500v3", Simpson Strong-Tie "SET-XP", or approved equal, with Type 316 Stainless Steel threaded rods
Concrete Masonry Adhesive Anchors	Hilti "HIT-HY 70", Simpson Strong-Tie "SET-XP", or approved equal, with Type 316 Stainless Steel threaded rods

Material	Specification
Concrete Masonry Expansion (wedge) Anchors*	Hilti "KWIK BOLT 3", or approved equal, Type 316 Stainless Steel
Concrete Expansion (wedge) Anchors *	Hilti “KWIK BOLT TZ”, or approved equal, Type 316 Stainless Steel

**Post installed anchors shall always be an adhesive type anchor system except where noted otherwise or when Contractor makes a request for a specific application and Engineer approves.*

2.04 STAINLESS STEEL FASTENER LUBRICANT (ANTI-SEIZING)

A. Anti-seizing Lubricant for Stainless Steel Threaded Connections:
   1. Formulated to resist washout.
   2. Acceptable manufacturers are Bostik, Saf-T-Eze, or equal.

2.05 ANCHOR BOLT SLEEVES

A. Provide anchor bolt sleeves as shown on design drawings and as required by equipment manufacturer’s design.
   1. Provide high density polyethylene plastic sleeves of single unit construction with deformed sidewalls such that the concrete and grout lock in place.
   2. The top of the sleeve shall be self-threading to provide adjustment of the threaded anchor bolt projection.
   3. Acceptable manufacturers are Contec, Wilson, or equal.

PART 3 EXECUTION

3.01 GENERAL

A. Anchor bolts shall be cast-in-place anchors unless post-installed anchors are specified or shown on the Drawings.

B. Grouting of anchor bolts using plastic sleeves with non-shrink or epoxy grout, where specified.

C. The threaded end of anchor bolts and all-thread rods shall be long enough to project through the entire depth of the nut and if too long, shall be cut off at ½-inch beyond top of nut and ground smooth.

3.02 CAST-IN-PLACE ANCHOR BOLTS

A. Anchor bolts to be embedded in concrete shall be placed accurately and held in correct position using templates while the concrete is placed.

B. After anchor bolts have been embedded, their threads shall be protected by grease and the nuts run on.

3.03 ADHESIVE ANCHOR BOLTS

A. Note that adhesive anchors shall not be substituted for cast-in-place anchor bolts unless the adhesive anchors have been specified or shown on the Drawings, or approval has

been obtained from the Engineer that substitution of adhesive anchors is acceptable for the specific use and location. Use of adhesive anchors shall be subject to the following conditions:

1. Limit to locations where intermittent or continuous exposure to the following is extremely unlikely:
   a. Acid concentrations higher than 10 percent
   b. Chlorine gas
   c. Machine or diesel oils
2. Limit to applications where exposure to the following is extremely unlikely:
   a. Fire
   b. Concrete or rod temperature above 120 degrees F
3. Overhead applications (such as pipe supports) shall not be allowed unless approved by the Engineer and installation is by an Installer specially certified for overhead applications.
4. Approval from Engineer for specific application and from supplier of equipment to be anchored, if applicable.
5. Anchor diameter and material shall be per Contract Documents or equipment manufacturer's specifications. Anchor shall be threaded or deformed the full length of embedment and shall be free of rust, scale, grease, and oils.
6. Embedment depth shall be as specified or as required by the equipment manufacturer.
7. Follow the anchor system manufacturer's installation instructions.
8. Holes shall have rough surfaces created by using a hammer drill with carbide bit. Core drilled holes are not allowed.
9. Holes shall be blown clean with oil-free compressed air and be free of dust or standing water prior to installation. Follow additional requirements of the adhesive manufacturer.
10. Concrete and air temperature shall be compatible with curing requirements of adhesives per adhesive manufacturer's instructions. Anchors shall not be placed in concrete when the temperature is below 25 degrees F.
11. Anchors shall be left undisturbed and unloaded for full adhesive curing period, which is based on temperature of the concrete.

3.04 EXPANSION ANCHORS

A. Expansion (wedge type) anchors shall not be substituted for cast-in-place anchor bolts or adhesive anchors unless approved by the Engineer for a specific application. Use of expansion anchors shall be subject to conditions 4 through 9as specified above for adhesive anchors. Expansion anchors shall not be used in a submerged condition or in mounting of equipment subject to vibration or cyclic motion.

3.05 REINFORCING STEEL CONFLICTS WITH POST-INSTALLED ANCHOR INSTALLATION

A. When reinforcing steel is encountered in the drill path, slant drill to clear obstruction and provide beveled washer to match angle of anchor. Drill shall not be slanted more than 10 degrees.

B. Where slanting the drill does not resolve the conflict, notify the Owner's Representative and resolve the conflict to the satisfaction of the Owner's Representative in consultation with the Engineer.

C. Abandoned post-installed anchor holes shall be cleaned and filled with non-shrink grout and struck off flush with adjacent surface.

D. The costs of determining and executing the resolution shall be borne by the Contractor. The determination and execution of the resolution shall not result in additional cost to the Owner.

E. Reinforcing steel in masonry shall not be damaged.

F. In order to avoid or resolve a conflict, locate embedded reinforcing steel using non-destructive methods and/or redesign the attachment.
   1. Redesign shall be done by the Contractor's Professional Engineer currently registered in the state of Florida.
   2. Calculations and details for redesign shall be submitted.

END OF SECTION

SECTION 08 63 00

TRANSLUCENT SKYLIGHT ASSEMBLIES

PART 1 – GENERAL

1.01 THE REQUIREMENT

A. Section Includes: Translucent skylight assemblies, including:
   1. Removable, insulated translucent skylight panel system including aluminum framing, battens, closures, trim and flashings.
   2. Structural design, engineering, fabrication, and installation of the entire skylight system to include framing, closures, trim and flashing.
   3. Fasteners, anchors, and related reinforcement of the framing system as required to resist design loads.
   4. Translucent panels including gaskets, sealants, setting blocks, backer rods, and related materials.

1.02 RELATED SECTIONS

A. This section contains specific references to the following related sections. Additional related sections may apply that are not specifically listed below.
   1. Section 01 33 00 – Submittal Procedures
   2. Section 05 05 20 – Anchor Bolts

1.03 REFERENCES

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

B. American Society for Testing and Materials (ASTM):
   1. ASTM C509 – Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
   2. ASTM C864 – Dense Elastomeric Compression Seal Gaskets, Setting Blocks and Spacers
   3. ASTM E283 – Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors
   4. ASTM E330 – Structural Performance of Exterior Windows, Curtainwall, and Doors by Uniformed Static Air Pressure Difference
   5. ASTM E331 – Test Method for Water Penetration of Exterior Windows, Curtain Walls and Door by Uniform Static Air Pressure Difference

C. Aluminum Association (AA)

1. AA Specifications for Aluminum Structures.

D. American Architectural Manufacturers Association (AAMA)

1. AAMA 501 – Methods for Test for Metal Curtain Walls.
2. AAMA 603-98 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
3. AAM 2604-98 – Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
4. AAMA 611-98 – Specification for Anodized Architectural Aluminum.

1.04 SYSTEM DESCRIPTION

A. Performance Requirements: Provide translucent skylight assembly system which has been designed, manufactured, fabricated and installed to withstand loading from dead, live, and all other loads required by the current Building Code of the State of Florida and performance criteria stated in this specification by manufacturer without defects, damage or failure.

B. Performance Requirements

1. Structural Members: Of sufficient size to support design loads as prescribed by the Florida Building Code. Wind loads shall be calculated based on the following criteria:

   a. Wind Speed = 187 MPH (Risk Category IV)

   b. Exposure Category = C

   c. Enclosure Classification = Enclosed

   d. Mean Roof Height = Greater than 30 ft from Adjacent Grade

C. Removable Structural Skylight Requirements

1. Structural framing to be designed to meet the requirements of the current Building Code of the State of Florida. System design and calculations must also be furnished in accordance with the Aluminum Association "Specifications for Aluminum Structures" and sealed by a Professional Engineer registered in the State of Florida.
2. Framing system shall be designed to be removable without disassembly of the skylight system. Provide a self-supporting system that includes cub cap and flashing as recommended by manufacturer.
3. Superstructure shall be pre-fabricated of extruded aluminum alloy 6005-T5 or 6061-T6 tubular box beams. Ferrous metals shall not be allowed. All parts shall be pre-assembled at the factory and knocked down for shipment to jobsite.
4. Fasteners : Aluminum or stainless steel of a type, which will not cause electrolytic action or corrosion. Locate pressure cap fasteners a minimum of 8'' on center. All lag screws, sleeve, stud and through bolt-structural connections shall be cad placated. All exposed fasteners to be finished to match the framing. Conceal fasteners where possible.
5. Anchors to the existing structure shall be Stainless Steel as specified in 05 05 20 Anchor Bolts.

6. Panels shall be as specified herein.
7. Finish on exposed structure shall be as specified herein.

1.05 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Section 01 33 00 – Submittal Procedures.

B. Product Data: Submit product data. Submit test results showing compliance with requirements specified under Quality assurance Requirements paragraph herein. Include both published data and specific data prepared for this project.

C. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors, patterns and textures.

1. Submit shop drawings for approval prior to fabrication. Include detailed plans, elevations, and details of framing members, translucent glazing materials, sealants, fasteners, anchors, and thicknesses and types of formed flashing and closures and relationship with adjacent materials. Indicate maximum horizontal and vertical forces at rafters.
2. Submit shop drawings and design calculations, showing design loads, anchorage of skylight system to concrete curb and stresses on translucent wall system. Calculations shall be signed and sealed by a Professional Engineer registered in the State of Florida.
3. Attachment of removable translucent skylight panel system to the concrete beams/curbs shall the responsibility of the translucent skylight panel system manufacturer. Structural Engineer to confirm attachment design and locations prior to fabrication.
4. Translucent skylight system shall have a Florida Product Approval and meet Miami Dade NOA requirements.

D. Samples – Submit selection and verification samples for finishes, colors and textures.

1. Aluminum Finish: Submit color charts or range samples for initial color selection. Submit finished sample of color selected for use on metal coupons. Translucent Glazing Materials: Submit a verification sample, 12" (305 mm) square of the specified translucent glazing material specified.

E. Quality Assurance Submittals: Submit the following:

1. Design Data: Complete structural calculations.
2. Test Reports: Manufacturer shall submit certified test reports, independently verified, for the skylight system. Reports shall verify that the materials will meet or exceed all performance requirements of this specification. Previously completed test reports will be acceptable if for the current manufacturer of the translucent panel system manufacturer and indicative of the product used proposed for use on this project. Required Test Reports are:
    a. Flame Spread and Smoke Developed (ASTM E-84 by UL 790)
    b. Burn Extent (ASTM D-635)
    c. Color Difference (ASTM D-2244)

d. Erosion Resistance (ASTM D-4060)
e. Impact Strength (UL 972)
f. Tensile Bond Strength (ASTM C-297 after aging by ASTM D-1037)
g. Shear Bond Strength (ASTM D-1002 after five (5) separate conditions)
h. Beam Bending Strength (ASTM E-72)
i. Insulation "U" Factor (NFRC-100)
j. Class A Burning Brand (ASTM E-108)

F. Closeout Submittals: Submit the following:

1. Operation and Maintenance Data: Operation and maintenance data for installed products. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.

2. Warranty: Warranty documents specified herein.

1.06 QUALITY ASSURANCE

A. Qualifications

1. Installer Qualifications: Installer experienced in performing work of this Section who has specialized in installation of work similar to that required for this project.

a. Installer: Manufacturer of translucent skylight assembly system, or his authorized installer, shall install system.

2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and prequalifying acceptable installer.

3. Manufacturer: Systems shall be manufactured by a firm with a minimum of ten years of experience in the fabrication and installation of translucent skylight systems.

B. Source Quality: Obtain translucent skylight assembly materials from a single manufacturer.

1.07 DELIVERY, STORAGE & HANDLING

A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Sequence deliveries to avoid delays but minimize onsite storage.

B. Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

1. Store and handle in strict compliance with manufacturer's instructions and recommendations, including storing panels on the long edge several inches above ground, blocked and under cover to prevent warping. Protect from damage from sunlight, weather, excessive temperatures and construction operations.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field

measurements and fabrication schedule with construction progress to avoid construction delays.

1. Measurements: When practical, take accurate field measurements before preparation of shop drawings and fabrication. Do not delay job progress; work from "guaranteed dimensions" and allow for field trimming of perimeter flashing if taking field measurements before fabrication is not possible.

1.09 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official.

1. System Warranty: Provide written warranty signed by manufacturer, agreeing to repair or replace work which exhibits defects in materials or workmanship. Defects are defined to include leakage of water, abnormal aging or deterioration, or failure to perform as required.

   a. Warranty Period: 5 years from date of substantial completion.

2. Translucent Glazing Material Warranty: Provide written warranty signed by manufacturer, agreeing to repair or replace glazing materials which exhibit defects in materials or workmanship. Defects are defined to include fiberbloom, or more than 8.0 Delta E units of discoloration.

   a. Warranty Period: 10 years from date of manufacture.

3. The face sheet manufacturer shall warrant the exterior face sheet against reinforcing fiber exposure, due to weathering, for a period of twenty (20) years. Warranty from any other party in this regard is not acceptable.

PART 2 – PRODUCTS

2.01 TRANSLUCENT WALL ASSEMBLIES

A. Manufacturers:

1. Kalwall Corporation (Structures Unlimited, Inc.)
2. Major Industries

2.02 MANUFACTURED UNITS

A. Panel Construction:

1. Provide double-faced, insulated, translucent fiberglass sandwich panels complying with the following:

   a. Thickness: 2 3/4" (70 mm)
   b. Grid Size: 12" x 24" (305 x 61 mm)
   c. Grid Pattern: Rectangular
   d. Light Transmission: 23 % max.

e. Exterior Sheet: 0.070" thick; White as selected from manufacturer's standard colors. To be uniform in strength, impenetrable by hand held pencil and repel an impact equal to 70 ft. lbs., without fracture or tear, when impacted by a 3¼" diameter, 5 lb. Free falling ball per UL 972

f. Interior Sheet: 0.045" thick UL listed; White as selected from manufacturer's standard colors

g. Solar Heat Gain Coefficient: 0.21

h. U-Factor: 0.53

2. Fabricate panels as a true sandwich panel of flat fiberglass sheet bonded to a grid core of mechanically interlocking aluminum I-beams, laminated under a controlled process of heat and pressure.

a. Adhesive bonding line shall be straight, cover the entire width of the I-beam and have neat, sharp edge.

b. White spots at intersections of muntins and mullions shall not exceed 4 for each 50 sq ft (4.65 m2) of panel, nor be more than 3/64" (1.19 mm) in width.

3. Panel Performance:

a. Deflection: Standard panels shall deflect no more than 1.9” at 30 PSF in 10’-0” span without a supporting frame by ASTM E-72.

b. Support Strength: Removable skylight system shall meet the fall through requirements of OSHA 1910.23 as demonstrated by testing in accordance with ASTM E-661, hereby not requiring supplemental screens or railings.

4. Skylight system shall pass Class A Roof Burning Brand Test by ASTM E-108.

B. Components and Accessories

1. Structure: Extruded aluminum alloy 6063-T5 or 6063-T6 box beams. System shall be of a Rigid Frame design.

2. Grid Core: Aluminum I-beams, minimum 7/16" (11.1 mm) width, fabricated of extruded aluminum alloy 6063-T6 with provision for mechanical interlocking of muntin/mullion and perimeter which prevents high and low intersections which do not allow full bonding surface to contact with face material.

3. Translucent Facing: Fiberglass panels manufactured with uniform color, free of ridges, wrinkles, clusters of air bubbles and pinholes, with the following characteristics:

a. Flammability for Interior Face Sheet: Flamespread no greater than 20 and smoke developed no greater than 200 per ASTM E84. Burn extent no greater than 1" (25.4 mm) per ASTM D635.

b. The exterior face shall have a permanent glass erosion barrier embedded beneath the surface to provide maximum long-term resistance to reinforcing fiber exposure. Sacrificial surface films or coatings are not acceptable erosion barrier. Exterior face surface loss shall not exceed .7 mils and 40 mgs when tested in accordance with ASTM D4060-90 employing CS17 abrasive wheels at a head load of 500 grams for 1000 cycles.

c. Weatherability of Exterior Face Sheet: Not more than 3.0 units of color difference Delta E per ASTM D2244 after 5 years outdoor weathering in South Florida at 5 degrees facing south per ASTM D2244. Fabricate from colorfast resin.

d. Strength of Exterior Face Sheet: Uniform in strength and repel an impact equal to 60 ft-lb per Free Falling Ball test per UL 972.

4. Battens and Perimeter Closure Systems: Extruded aluminum alloy 6063-T6 or 6063-T5, for screw clamp-tight closure system. Fasten to panels with Type 304 self-tapping stainless steel screws. Receiving channels for screws shall be continuous, with length of each member extruded as part of the member.

   a. Thermally broken panel and clamping system.

5. Flexible Sealing Tape: Manufacturer's standard sealing tape, pre-applied to closure system at factory under controlled conditions.

6. Laminate Adhesive

   a. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council “Acceptance Criteria for Sandwich Panel Adhesives”.

   b. Minimum tensile strength of 750 psi when the panel assembly is tested by ASTM C-297 after two (2) exposures to six (6) cycles each of the aging conditions prescribed by ASTM D-1037.

   c. Minimum shear strength of the panel adhesive by ASTM D-1002 after exposure to four (4) separate conditions:

      1) 50% Relative Humidity at 68°F: 540 psi

      2) 182°F: 100 psi

      3) Accelerated Aging by ASTM D-1037 at Room Temperature: 800 psi

      4) Accelerated Aging by ASTM D-1037 at 182°F: 250 psi

2.03 FINISHES (FACTORY)

A. Aluminum Finishes: Provide the following finish for interior and exterior exposed aluminum surfaces:

   1. All exposed aluminum to have architectural corrosion resistant finish complying with AAMA 2604. Color to be selected by Owner from manufacturer’s standards.

PART 3 – EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, and manufacturer’s shop drawings for installation.

B. Contractor shall provide training at the Site to City’s designated personnel. The one-day training session shall be conducted by qualified, experienced representatives of the skylight

manufacturer. The contractor will be responsible for coordinating the training services. Training shall include instruction in both removal, reinstallation, operation and maintenance of the removable skylight(s). Lesson plans for each training session to be conducted by the Manufacturer's representatives. In addition, three (3) copies of necessary training manual, handouts, actual installed product shop drawings, visual aids, and other reference materials for future operational use shall be included.

3.02 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions which have been previously installed under other Sections are acceptable for product installation in accordance with manufacturer's instructions. Take field dimensions and examine conditions of substrates, supports, and other conditions under which this work is to be performed and notify Contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

3.03 INSTALLATION

A. Translucent Skylight Assembly Installation

1. Match profiles, sizes and spacings indicated on approved shop drawings. Ensure that weep and condensation control system operates properly.
2. Coordinate installation with adjacent work such as roofing, sheet metal and other work to ensure creation of a complete weatherproof assembly. Anchor work securely to supporting structure but allow for differential and thermal movement.
3. Isolate between aluminum and dissimilar metals with a protective coating or plastic strip to prevent electrolytic corrosion.

3.04 ADJUSTING

A. Adjusting: During installation, remove labels, part number markings, sealant smears, handprints and construction dirt from all components. Touch up damaged coatings and finishes and repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

3.05 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

1. Clean exposed surfaces including metal and glass using non-abrasive materials and methods recommended by manufacturer of material or product being cleaned. Remove and replace work that cannot be successfully cleaned.
2. Reclean as necessary to prevent damage.

3.06 PROTECTION

A. Protection: Protect installed product and finish surfaces from damage during construction.

1. Protect completed work from damage and deterioration and inspect immediately before final acceptance of project.

**** END OF SECTION ****

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SECTION 09 90 00

PAINTING AND COATING

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section specifies coating systems, surface preparations, and application requirements for coating systems.

B. Definitions:
   1. Specific coating terminology used in this Section is in accordance with definitions contained in ASTM D16, ASTM D3960, and the following definitions.
      a. Definitions:
         1) Abrasive: Material used for blast cleaning, such as sand, grit or shot.
         2) Abrasive Blast Cleaning: Cleaning/surface preparation by abrasive propelled at high speed.
         3) Anchor Pattern: Profile or texture of prepared surface(s).
         4) ANSI: American National Standards Institute.
         5) Bug Holes: Small cavities, usually not exceeding 15 mm in diameter, resulting from entrapment of air bubbles in the surface of formed concrete during placement and compaction.
         6) Coating/Paint/Lining Thickness: The total thickness of primer, intermediate and/or finish coats.
         7) Coating System Applicator (CSA): A generic reference to the specialty subcontractor or subcontractors retained by the Contractor to install the coating systems specified in this Section.
         8) Coating System Manufacturer (CSM): Refers to the acceptable coating system manufacturer, abbreviated as the CSM.
         9) Coating System Manufacturer's Technical Representative(s) (CTR): Refers to the technical representative(s) of the acceptable Coating System Manufacturer and is abbreviated as CTR.
         10) Dew point: Temperature of a given air/water vapor mixture at which condensation starts.
         11) Dry Film Thickness (DFT): Depth of cured film, usually expressed in mils (0.001 inch). Use this definition as opposed to existing definition.
         12) Drying Time: Time interval between application and curing of material.
         13) Dry to Recoat: Time interval between application of material and ability to receive next coat.
         14) Dry to Touch: Time interval between application of material and ability to touch lightly without damage.
         15) Feather Edging: Reducing the thickness of the edge of paint.
         16) Feathering: Operation of tapering off the edge of a point with a comparatively dry brush.

17) Field Coat: The application or the completion of application of the coating system after installation of the surface at the site of the work.
18) Hold Point: A defined point, specified in this Section, at which work shall be halted for inspection.
19) Holiday: a discontinuity, skip, or void in coating or coating system film that exposes the substrate.
20) Honeycomb: Segregated condition of hardened concrete due to non-consolidation.
21) ICRI: International Concrete Repair Institute.
22) Incompatibility: Inability of a coating to perform well over another coating because of bleeding, poor bonding, or lifting of old coating; inability of a coating to perform well on a substrate.
23) Laitance: A layer of weak, non-durable concrete containing cement fines that is brought to the surface through bleed water because of concrete finishing and/or over-finishing.
24) Mil: 0.001 inch.
25) NACE: National Association of Corrosion Engineers.
26) Overspray: Dry spray, particularly such paint that failed to strike the intended surface.
27) Pinhole: A small diameter discontinuity in a coating or coating system film that is typically created by outgassing of air from a void in a concrete substrate resulting in exposure of the substrate or a void between coats.
28) Pot Life: Time interval after mixing of components during which the coating can be satisfactorily applied.
29) Resurfacer/Resurfacing Material: A layer of cementitious and/or resin-base material used to fill or otherwise restore surface continuity to worn or damaged concrete surfaces.
30) Shelf Life: Maximum storage time for which a material may be stored without losing its usefulness.
31) Shop Coat: One or more coats applied in a shop or plant prior to shipment to the site of the work, where the field or finishing coat is applied.
32) Spreading Rate: Area covered by a unit volume of paint at a specific thickness.
33) SSPC: The Society for Protective Coatings.
34) Stripe Coat: A separate coat of paint applied to all weld seems, pits, nuts/bolts/washers and edges by brush. This coat shall not be applied until any previous coat(s) have cured and, once applied, shall be allowed to cure prior to the application of the subsequent coat(s).
35) Surface Saturated Dry (SSD): Refers to concrete surface condition where the surface is saturated (damp) without the presence of standing water.
36) Tie Coat: An intermediate coat used to bond different types of paint coats. Coatings used to improve the adhesion of a succeeding coat.
37) Touch-Up Painting: The application of paint on areas of painted surfaces to repair marks, scratches, and areas where the coating has deteriorated to restore the coating film to an unbroken condition.
38) TPC: Technical Practice Committee.

39) Volatile Organic Compound (VOC) Content: The portion of the coating that is a compound of carbon, is photochemically reactive, and evaporates during drying or curing, expressed in grams per liter (g/l) or pounds per gallon (lb/gal).

40) Immersion: Refers to a service condition in which the substrate is below the waterline or submerged in water or wastewater at least intermittently if not constantly.

41) Weld Splatter: Beads of metal scattered near seam during welding.

42) Wet Film Thickness (WFT): The primer or coating film's thickness immediately following application. Wet film thickness is measured in mils or thousandths of an inch (0.001 inch) and is abbreviated WFT.

1.02 QUALITY ASSURANCE

A. References:

1. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
2. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued, or replaced.

Reference	Title
ANSI/ASC 29.4 Exhaust Systems	Abrasive Blasting Operations – Ventilation and Safe Practice
ANSI/NSF 61	Drinking Water System Components Health Effects
ANSI B74.18	Grading of Certain Abrasive Grain on Coated Abrasive Material
ASTM D16	Standard Terminology for Paint, Related Coatings, Materials, and Applications
ASTM D2200 (SSPC-VIS1)	Pictorial Surface Preparation Standards for Painting Steel Surfaces
ASTM D3960	Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
ASTM D4262	Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces
ASTM D4263	Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
ASTM D4414	Standard Practice for Measurement of Wet Film Thickness by Notch Gages
ASTM D4417	Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
ASTM D4541	Standard Test Methods for Pull-Off Strength of Coatings On Metal Substrates Using Portable Adhesion Testers
ASTM D4787	Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates

Reference	Title
ASTM D5162	Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates
ASTM D7234	Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Adhesion Testers.
ASTM E337	Standard Test Method for Measuring Humidity With a Psychrometer
ASTM F1869	Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
FS 595b	Federal Standard Colors
ICRI 03732	Guideline for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays
NACE Publication 6D-163	A Manual for Painter Safety
NACE Publication 6F-163	Surface Preparation of Steel or Concrete Tank/Interiors
NACE Publication 6G-164 A	Surface Preparation Abrasives for Industrial Maintenance Painting
NACE Standards	January 1988 Edition of the National Association of Corrosion Engineers, TPC.
NACE Standard RP0188	Standard Recommended Practice – Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates
NACE Standard RP0288	Standard Recommended Practice, Inspection of Linings on Steel and Concrete
NACE Standard RP0892	Standard Recommended Practice, Linings Over Concrete in Immersion Service
NACE Publication TPC2	Coatings and Linings for Immersion Service
NAPF 500-03	Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings
NAPF 500-03-04	Abrasive Blast Cleaning for Ductile Iron Pipe
NAPF 500-03-05	Abrasive Blast Cleaning for Cast Ductile Iron Fittings
OSHA 1910.144	Safety Color Code for Marking Physical Hazards
OSHA 1915.35	Standards – 29CFR - Painting
SSPC	Paint Application Specification No. 1.
SSPC-AB 1	Mineral and Slag Abrasives
SSPC-PA 1	Shop, Field, and Maintenance Painting of Steel
SSPC-PA 2	Measurement of Dry Coating Thickness with Magnetic Gages
SSPC-PA 9	Measurement of Dry Coating Thickness on Cementitious Substrates Using Ultrasonic Gages
SSPC-PA Guide 1	Guide for Illumination of Industrial Painting Project
SSPC-PA Guide 3	A Guide to Safety in Paint Application
SSPC-PA Guide 6	Guide for Containing Debris Generated During Paint Removal Operations
SSPC-PA Guide 11	Guide for Coating Concrete
SSPC SP1	Solvent Cleaning
SSPC SP2	Hand Tool Cleaning
SSPC SP3	Power Tool Cleaning
SSPC SP5	White Metal Blast Cleaning
SSPC SP6	Commercial Blast Cleaning
SSPC SP7	Brush-Off Blast Cleaning
SSPC SP10	Near-White Blast Cleaning
SSPC SP11	Power Tool Cleaning to Bare Metal
SSPC SP12	Surface Preparation and Cleaning of Steel and Other Hard Materials by High and Ultra-High Pressure Water Jetting Prior to Recoating
SSPC SP13	Surface Preparation of Concrete
SSPC-TR2	Wet Abrasive Blast Cleaning
SSPC-TU-3	Overcoating

Reference	Title
SSPC-TU-4	Field Methods for Retrieval and Analysis of Soluble Salts on Substrates.
SSPC V2	Systems and Specifications: Steel Structures Painting Manual, Volume 2
SSPC-VIS 1	Visual Standard for Abrasive Blast Cleaned Steel
SSPC-VIS 3	Visual Standard for Power and Hand – Tool Cleaned Steel
SSPC-VIS 4	Visual Standards (Waterjetting)
SSPC-VIS 5	Visual Standards (Wet Abrasive Blast Cleaning)
WPCF Manual of Practice No. 17	Paints and Protective Coatings for Wastewater Treatment Facilities. Guide and Paint Application Specifications.

B. Standardization:
   1. Materials and supplies provided shall be the standard products of CSMs. Materials in each coating system shall be the products of a single CSM.
   2. The standard products of CSMs other than those specified may be acceptable when it is demonstrated to the Construction Manager that they are equal in composition, durability, usefulness, and convenience for the purpose intended. Requests for consideration of CSMs other than those specified in this Section will be considered, provided the following minimum conditions are met. Such requests are not a substitution for submittals after the alternative CSMs have been considered and accepted.
      a. The proposed coating system shall use an equal or greater number of separate coats to achieve the required total dry film thickness.
      b. The proposed coating system shall use coatings of the same generic type as that specified including curing agent type.
      c. Requests for consideration of products from CSMs other than those specified in this Section shall include information listed in paragraph 1.04, demonstrating that the proposed CSM's product is equal to the specified coating system.
      d. The Contractor and the proposed alternative CSM shall provide a list of references for the proposed product where the coating of the same generic type has been applied. The reference list shall include the project name, city, state, owner, phone number of owner; coating system reference and number from this Section 09 90 00; type of facility in which it was used, generic type, and year coating was applied.

C. Quality Control Requirements:
   1. The Contractor is responsible for the workmanship and quality of the coating system installation. Inspections by the Construction Manager or the CTR will not relieve or limit the Contractor's responsibilities.
   2. The Contractor's methods shall conform to requirements of this specification and the standards referenced in this Section. Changes in the coating system installation requirements will be allowed only with the written acceptance of the Construction Manager before work commences.
   3. Only personnel who are trained by the CTR specifically for this contract or who are approved by the CSM specifically for this contract shall be allowed to perform the coating system installation specified in this Section.
   4. Contaminated, outdated, diluted materials, and/or materials from previously opened containers shall not be used.

5. For repairs, the Contractor shall provide the same products, or products recommended by the CSM, as used for the original coating.
6. The Contractor shall identify the points of access for inspection by the Owner or the Construction Manager. The Contractor shall provide ventilation, ingress and egress, and other means necessary for the Construction Manager's personnel to access safely the work areas.
7. The Contractor shall conduct the work so that the coating system is installed as specified and shall inspect the work continually to ensure that the coating system is installed as specified. Coating system work that does not conform to the specifications or is otherwise not acceptable shall be corrected as specified.
8. The Contractor shall provide written daily reports that present, in summary form, test data, work progress, surfaces covered, ambient conditions, quality control inspection test findings, and other information pertinent to the coating system installation.

D. Inspection at Hold Points:
   1. The Contractor shall conduct inspections at Hold Points during the coating system installation and record the results from those inspections on Form 09 90 00-A. The Contractor shall coordinate such Hold Points with the Construction Manager such that the Construction Manager may observe Contractor's inspections on a scheduled basis. The Contractor shall provide the Construction Manager a minimum of two (2) hours of notice prior to conducting Hold Point Inspections. The Hold Points shall be as follows:
      a. Environment and Site Conditions. Prior to commencing an activity associated with coating system installation, the Contractor shall measure, record, and confirm acceptability of ambient air temperature and humidity as well as other conditions such as proper protective measures for surfaces not to be coated and safety requirements for personnel. The acceptability of the weather and/or environmental conditions within the structure shall be determined by the requirements specified by the CSM of the coating system being used.
      b. Conditions Prior to Surface Preparation. Prior to commencing surface preparation, the Contractor shall observe, record, and confirm that oil, grease, and/or soluble salts have been eliminated from the surface.
      c. Monitoring of Surface Preparation. Spot checking of degree of cleanliness, surface profile, and surface pH testing, where applicable. In addition, the compressed air used for surface preparation or blow down cleaning shall be checked to confirm it is free from oil and moisture.
      d. Post Surface Preparation – Upon completion of the surface preparation, the Contractor shall measure and inspect for proper degree of cleanliness and surface profile as specified in this Section 09 90 00 and in the CSM's written instructions.
      e. Monitoring of Coatings Application – The Contractor shall inspect, measure, and record the wet film thickness and general film quality (visual inspection) for lack of runs, sags, pinholes, holidays, etc. as the application work proceeds.
      f. Post Application Inspection – The Contractor shall identify defects in application work including pinholes, holidays, excessive runs or sags, inadequate or excessive film thickness and other problems as may be observed.
      g. Post Cure Evaluation – The Contractor shall measure and inspect the overall dry film thickness. The Contractor shall conduct a DFT survey, as well as perform adhesion testing, holiday detection, or cure testing as required based on the type

of project and the specific requirements in this Section 09 90 00 and/or in the CSM's written instructions.

h. Follow-up to Corrective Actions and Final Inspection. The Contractor shall measure and reinspect corrective coating work performed to repair defects identified at prior Hold Points. This activity also includes final visual inspection along with follow-up tests such as holiday detection, adhesion tests, and DFT surveys.

1.03 DELIVERY AND STORAGE

A. General:

1. Materials shall be delivered to the job site in their original, unopened containers. Each container shall be properly labeled. Materials shall be handled and stored to prevent damage to or loss of label.
2. Labels on material containers shall show the following information:
   a. Name or title of product.
   b. CSM's batch number.
   c. CSM's name.
   d. Generic type of material.
   e. Application and mixing instructions.
   f. Hazardous material identification label.
   g. Shelf life expiration date.
3. Materials shall be stored in enclosed structures and shall be protected from weather and excessive heat or cold in accordance with the CSM's recommendations. Flammable materials shall be stored in accordance with state and local requirements.
4. Containers shall be clearly marked indicating personnel safety hazards associated with the use of or exposure to the materials.
5. Material Safety Data Sheets (MSDS) for each material shall be provided to the Construction Manager.
6. The Contractor shall store and dispose of hazardous waste according to federal, state and local requirements. This requirement specifically addresses waste solvents and coatings.

1.04 SUBMITTALS:

A. General:

1. Provide in accordance with Section 01 33 00:
   a. A copy of this specification section, with addendum updates included, and referenced and applicable sections, with addendum updates included, with each paragraph check-marked (✓) to indicate specification compliance or marked to indicate requested deviations from specification requirements or those parts which are to be provided by the Contractor or others. Check marks shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Construction Manager shall be the final authority

for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined shall signify compliance on the part of the Contractor with the specifications. Failure to include a copy of the marked-up specification sections, along with justification(s) for requested deviations to the specification requirements shall be cause for rejection of the entire submittal and no further submittal material will be reviewed.

b. CSM's current printed recommendations and product data sheets for coating systems including:
   1) Volatile organic compound (VOC) data.
   2) Surface preparation recommendations.
   3) Primer type, where required.
   4) Maximum dry and wet-mil thickness per coat.
   5) Minimum and maximum curing time between coats, including atmospheric conditions for each.
   6) Curing time before submergence in liquid.
   7) Thinner to be used with each coating.
   8) Ventilation requirements.
   9) Minimum atmospheric conditions during which the paint shall be applied.
   10) Allowable application methods.
   11) Maximum allowable moisture content.
   12) Maximum shelf life.

c. Affidavits signed and sealed by an officer of the CSM's corporation, attesting to full compliance of each coating system component with current and promulgated federal, state, and local air pollution control regulations and requirements.

d. Material Safety Data Sheets (MSDS) for materials to be delivered to the job site, including coating system materials, solvents, and abrasive blast media.

e. List of cleaning and thinner solutions allowed by the CSMs.

f. Storage requirements including temperature, humidity, and ventilation for Coating System Materials as recommended by the CSMs.

g. CSM's detailed, written instructions for coating system treatment and graphic details for coating system terminations in the structures to be coated including pipe penetrations, metal embedments, gate frames, and other terminations to be determined from the contract drawings. This information shall also include detail treatment for coating system at joints in concrete.

h. The Contractor and CSA shall provide a minimum of five project references each including contact name, address, and telephone number where similar coating work has been performed by their companies in the past five years.

1.05 RESPONSIBILITIES OF THE CTR

A. General:

1. The Contractor shall retain or obtain the services of the CTR to be on site to perform the Contractor and/or CSA application training and to routinely inspect and verify in writing that the application personnel have successfully performed surface preparation, filler/surface application, coating system application, and Quality Control Inspection in accordance with this Section 09 90 00 and to warrantable level of quality. This must include checking the required degree of cleanliness, surface pH for

concrete substrates, surface profile of substrates, proper mixing of coating materials, application (including checking the wet and dry film thickness of the coating systems), proper cure of the coating systems, and proper treatment of coating systems at terminations, transitions, and joints and cracks in substrates. Refer to paragraph 1.05 Coating System Installation Training. for further details on these CTR requirements. This inspection is in addition to the inspection performed by the Contractor in accordance with this Section 09 90 00.

B. Coating System Installation Training:
   1. Provide a minimum of 8 hours of classroom and off site training for application and supervisory personnel (both the Contractor's and CSA's). Provide training to a minimum of two supervisory personnel from the CSA and one supervisor from the Contractor. Alternatively, the CTR shall provide a written letter from the CSM stating that the application personnel (listed by name) who shall perform coating work are approved by the CSM without further or additional training.
   2. One CTR can provide training for up to fourteen application personnel and three supervisory personnel at one time. The training shall include the following as a minimum:
      a. A detailed explanation of mixing, application, curing, and termination details.
      b. Hands-on demonstration of how to mix and apply the coating systems.
      c. A detailed explanation of the ambient condition requirements (temperature and humidity) and surface preparation requirements for application of the coating system as well as a detailed explanation of re-coat times, cure times, and related ambient condition requirements.
      d. When training is performed, the CTR shall provide a written letter stating that training was satisfactorily completed by the personnel listed by name in the letter.

C. Coating System Inspection:
   1. While on site to routinely inspect and verify, the CTR shall perform the following activities to confirm acceptability and conformance with the specifications:
      a. Inspect ambient conditions during various coating system installation at hold points for conformance with the specified requirements.
      b. Inspect the surface preparation of the substrates where the coating system will terminate or will be applied for conformance to the specified application criteria.
      c. Inspect preparation and application of coating detail treatment (for example, terminations at joints, metal embedments in concrete, etc.).
      d. Inspect application of the filler/surface materials for concrete and masonry substrates.
      e. Inspect application of the primers and finish coats including wet and dry film thickness of the coatings.
      f. Inspect coating systems for cure.
      g. Review adhesion testing of the cured coating systems for conformance to specified criteria.
      h. Review coating system continuity testing for conformance to specified criteria.
      i. Inspect and record representative localized repairs made to discontinuities identified via continuity testing.

j. Conduct a final review of completed coating system installation for conformance to the specifications.

k. Prepare and submit a site visit report following each site visit that documents the acceptability of the coating work in accordance with the CSM's Recommendations.

D. Final Report:

1. Upon completion of coating work for the project, the CTR shall prepare a final report. That report shall summarize daily test data, observations, drawings, and photographs in a report to be submitted in accordance with paragraph 2.02. Include substrate conditions, ambient conditions, and application procedures, observed during the CTR's site visits. Include a statement that the completed work was performed in accordance with the requirements of this Section 09 90 00 and the CSM's recommendations.

PART 2 PRODUCTS

2.01 MATERIALS

A. General:

1. Notwithstanding the listing of product names in this Section 09 90 00, the Contractor shall provide affidavits, signed and sealed by an officer of the CSM's corporation, attesting to full compliance of each coating system component with current and promulgated federal, state, and local air pollution control regulations and requirements. No coatings shall be applied to a surface until the specified affidavits have been submitted and have been reviewed and accepted. Failure to comply with this requirement shall be cause for rejection and removal of such materials from the site.

2. The following list specifies the material requirements for coating systems. Coating systems are categorized by generic name followed by an identifying abbreviation. If an abbreviation has a suffix number, it is for identifying subgroups within the coating system. Coating Systems E-5 and E-6 shall be NSF 61 certified.

Material Requirements for Coating Systems:

Coating System	CSM	First Coat(s)	Finish Coat(s)
Epoxy Coatings			
E-1	PPG PMC	Amerlock 2/400 Series	Amerlock 2/400 Series
	Carboline	Carboguard 890	Carboguard 890
	International Paint/ICI *	Devran 224 HS	Devran 224
	Sherwin Williams	Macropoxy 646	Macropoxy 646
	Tnemec	Series V69	Series V69
E-1-G	PPG PMC	Amerlock 2/400 Series	Amerlock 2/400 Series
	Carboline	Carboguard 894	Carboguard 894
	International Paint/ICI *	Devran 223/224HS	Devran 224HS
	Sherwin Williams	Macropoxy 646 Epoxy B67-600	Macropoxy 646 Epoxy B67-600
	Tnemec	Series V27 or V69	Series V69
E-2	PPG PMC	Amerlock 2/400 Series	Amerlock 2/400 Series

Material Requirements for Coating Systems:

Coating System	CSM	First Coat(s)	Finish Coat(s)
	Carboline	Carboguard 890	Carboguard 890
	International Paint/ICI	Bar-Rust 236	Bar-Rust 236
	Sherwin Williams	Sea Guard 6000 Epoxy N11-400	Sea Guard 6000 Epoxy N11-400
	Tnemec	Series V27 or V69	Series V69
E-3	PPG PMC	Amerlock 2/400 Series	Amerlock 2/400 Series
	Carboline	Carboguard 890	Carboguard 890
	International Paint/ICI	Bar-Rust 236	Bar-Rust 236
	Sherwin Williams	Sea Guard 6000 Epoxy N11-400	Sea Guard 6000 Epoxy N11-400
	Tnemec	Series V69	Series V69
E-4	PPG PMC	Amerlock 2/400 Series	Amerlock 2/400 Series
	Carboline	Carboguard 890	Carboguard 890
	International Paint/ICI	Bar-Rust 236	Bar-Rust 236
	Sherwin Williams	Macropoxy 646	Macropoxy 646
	Tnemec	Series V69	Series V69
E-5	PPG PMC	Amercoat 395FD	Amercoat 395FD
	Carboline	Carboguard 691	Carboguard 691
	International Paint/ICI	Bar-Rust 233H	Bar-Rust 233H
	Sherwin Williams	Macropoxy 646	Macropoxy 646
	Tnemec	Series V69	Series V69
E6	PPG PMC	Amercoat 395FD	Amercoat 395FD
	Carboline	Carboguard 691	Carboguard 691
	International Paint/ICI	Tru-Glaze 4408 - WB	Tru-Glaze 4408 - WB
	Sherwin Williams	Macropoxy 646	Macropoxy 646
	Tnemec	Series V69	Series V69
E7	PPG PMC	Amercoat 385	Amercoat 385
	Carboline	Sanitile 120	Carboguard 890
	International Paint/ICI	Bar-Rust 236	Bar-Rust 236
	Sherwin Williams	Macropoxy 646	Macropoxy 646
	Tnemec	Series V69	Series V69
E8	PPG PMC	Amercoat 385	Amercoat 385
	Carboline	Carboguard 1340	Carboguard 1340
	International Paint/ICI	Prep and Prime (Gripper)	Tru-Glaze 4408 - WB
	Sherwin Williams	Macropoxy 646	Macropoxy 646
	Tnemec	Series 201	Series 201
E-9	PPG PMC	Amercoat 395 FD	Amercoat 395 FD
	Carboline	Carboguard 890	Carboguard 890

Material Requirements for Coating Systems:

Coating System	CSM	First Coat(s)			Finish Coat(s)	
	International Paint/ICI	Bar-Rust 231			Bar-Rust 231	
	Sherwin Williams	Sea Guard 6000 Epoxy N11-400			Sea Guard 6000 Epoxy N11-400	
	Tnemec	Series 104			Series 104	
E-9-C	PPG PMC	Amercoat 395 FD			Amercoat 395 FD	
	Carboline	Carboguard 890			Carboguard 890	
	International Paint/ICI	Bar-Rust 231			Bar-Rust 231	
	Sherwin Williams	Sea Guard 6000 Epoxy N11-400			Sea Guard 6000 Epoxy N11-400	
	Tnemec	Series 104			Series 104	
E-10	PPG PMC	Amerlock 2/400 Series			Amerlock 2/400 Series	
	Carboline	Carboguard 890			Carboguard 890	
	International Paint/ICI	Bar-Rust 236			Bar-Rust 236	
	Sherwin Williams	Macropoxy 646			Macropoxy 646	
	Tnemec	Series V69			Series V69	
Specialty Epoxy Linings						
EA-1	Carboline	Plasite 4500S			Plasite 4500S	
	Sauereisen	Sewergard 210S			Sewergard 210S	
	Tnemec	Series 435			Series 435	
Coating System	CSM	Base Coat	Filler/Surfacer		Glaze Coat	
EA-2	Carboline Carboguard	Plasite 4500S	Carboguard 510		Plasite 4500S	
	Sauereisen	Sewergard 210S	Series 209 HB		Sewergard 210S	
	Tnemec	Series 435	Series 218		Series 435	
EA-3	Carboline	N/A	Carboguard 510		Plasite 5371	
	Sauereisen	N/A	Series 209 HB		Sewergard 210T	
	Tnemec	N/A	Series 218		Series 434	
Coating System	CSM	Primer	Base Coat		Glaze Coat	
EA-4	Carboline	N/A	Plasite 5371		Plasite 4500S	
	Sauereisen	N/A	Sewergard 210T		Sewergard 210G	
	Tnemec	N/A	Series 434		Series 435	
Coating System	CSM	Primer	Filler/ Surfacer	Base Coat w/Scrim Cloth	Saturation Coat w/Silica Sand	Finish Coats
EA-5	Tnemec	Series 201	Series 218	Series 239	Series 239	Series 282
	Carboline	Semstone 110/110EP	Carboguard 510	Semstone 145	Semstone 145	Semstone 145
Elastomeric Coatings						
EC-1	Carboline	Carboguard 671			Polibrid 705 (2 coats)	
	Sherwin Williams	Corobond 100			Envirolastic 170 (2 coats)	
	Tnemec	Series 1			Series 406 (2 coats)	
EC-2	Carboline	Carboguard 671			Polibrid 705 (2 coats)	

Material Requirements for Coating Systems:

Coating System	CSM	First Coat(s)		Finish Coat(s)
	Sherwin Williams	Corobond 100		Envirolastic 520PW (2 coats)
	Tnemec	Series V69		Series 264
Epoxy Flooring Systems				
Coating System	CSM	Primer	Intermediate Coat	Finish Coat
EF-1	Stonhard	Stonhard Standard Primer	Stonshield Undercoat and Broadcoat	Stoneshield Sealer
	Tnemec	Series 238	Series 238 with Broadcoat	Series 284 Clear
EF-2	Stonhard	Stonhard Standard Primer	Stonclad GS	Stonkote GS-4
	Tnemec	Series 238	Series 238	Series 280
Epoxy Polyurethane				
		Primer Coat(s)	Intermediate Coat(s)	
EU-1	PPG PMC	Amercoat	Amercoat 385	Amercoat 450H
	Carboline	Carbozinc 859	Carboguard 890	Carbothane 134 VOC
	International Paint/ICI	Cathacoat 313	Devran 233 or 224HS	Devthane 379
	Sherwin Williams	Zinc Clad IV	Macropoxy 646	Hi Solids Polyurethane
	Tnemec	Series 90-97	Series V69	Series 1075
EU-1-FRP	PPG PMC	Amerlock 2/400 Series		Amershield VOC
	Carboline	Carbocrylic 120		Carbothane 134 VOC
	International Paint/ICI	Devran 223/224		Devthane 378H
	Sherwin Williams	Macropoxy 646		High Solids Polyurethane
	Tnemec	Series V27		Series 1075
Grease				
G	Texaco	N/A		Rust Inhibitive Grease
	Chevron	N/A		E.P. Roller Grease
High Heat				
HH-1	High Temperature Coatings, Inc.	Hi Temp 1027		1000 VS (any color)
HH-2	High Temperature Coatings, Inc.	Hi Temp 1027		1000 VS (black or aluminum)
Latex Acrylic				
L-1	PPG PMC	Amercoat 148		Amercoat 220
	Carboline	Carbocrylic 120		Carbocrylic 3359
	International Paint/ICI	UH Gripper 3210		Dulux Pro 1406
	Sherwin Williams	Loxon Acrylic Primer		Sher Cryl HPA
	Tnemec	Series 1028 or 1029		Series 1028 or 1029
L-2	PPG PMC	Amercoat 220		Amercoat 220
	Carboline	Carbocrylic 120		Carbocrylic 3359
	International Paint/ICI	Prep and Prime Gripper		Ultrahide 250-1406

Material Requirements for Coating Systems:

Coating System	CSM	First Coat(s)	Finish Coat(s)
	Sherwin Williams	Sher Cryl HPA	Sher Cryl HPA
	Tnemec	Series 1028 or 1029	Series 1028 or 1029
L-3	PPG PMC	Amercoat 148	Amercoat 220
	Carboline	Carbocrylic 3359 DTM	Carbocrylic 3359 DTM
	International Paint/ICI	Devflex 4020 PF	Dulux Pro 1406
	Sherwin Williams	Procryl Primer	Sher Cryl HPA
	Tnemec	Series 1028 or 1029	Series 1028 or 1029
L-4	PPG PMC	Amercoat 148	Amercoat 220
	Carboline	Sanitile 120	Sanitile 155
	International Paint/ICI	Prepared Prime Gripper	Ultrahide 250-1406
	Sherwin Williams	Prep Rite ProBlock	Sher Cryl HPA
	Tnemec	Series 1028 or 1029	Series 1028 or 1029
Miscellaneous			
M-1	Carboline	Carbowrap Priming Paste	Tape A, B, or C (temp. dependent)
	Denso	Denso Paste	Densyl Tape
	Trenton	Waxtape Primer	#1 Wax Tape
M-2	Carboline	Carbomastic 15	Carbomastic 15
	International Paint/ICI	Bar-Rust 231 (231K 9100)	Bar-Rust 231 (231K 9100)
	Sherwin Williams	Epoxy Mastic Aluminum II	Epoxy Mastic Aluminum II
	Tnemec	Series 135 (1243)	Series 135 (1243)
Penetrating Stain			
	CSM	Primer	Finish
S-1	Carboline	Carbocrete Sealer WB	Carbocrete Sealer WB
	International Paint/ICI	Groundworks	Groundworks
	Sherwin Williams	H&C Acrylic Concrete Stain	H&C Acrylic Concrete Stain
	Tnemec	Series 617	Series 617
S-2	Tnemec	N/A	Series 636 Dur A Pell 20
	Curecrete Chemical Company	N/A	Ashford Formula
S-3	Tnemec	N/A	Series V626 Dur A Pell GS
S-4	Tnemec	N/A	Series V626 Dur A Pell GS
	Professional Products of Kansas	N/A	PWS-15 Super

**See CSM's Product Data Sheets for acceptable thinners for VOC compliance or do not thin.*

2.02 PRODUCT DATA

A. General:
   1. Prior to application of coatings, submit letter(s) from the CTR(s) identifying the application personnel who have satisfactorily completed training as specified in paragraph 1.05 or a letter from the CSM stating that personnel who shall perform the work are approved by the CSM without need for further or additional training.
   2. Submit reports specified in paragraph 1.02 Quality Control Requirements and 1.05 Coating System Inspection when the work is underway.
   3. CTR final report in accordance with paragraph 1.05 Final Report.

PART 3 EXECUTION

3.01 COATINGS

A. General:
   1. Coating products shall not be used until the Construction Manager has accepted the affidavits specified in paragraphs 1.04 and 2.01, the Construction Manager has inspected the materials, and the CTR has trained the Contractor and CSA in the surface preparation, mixing and application of each coating system.
   2. Erect and maintain protective enclosures as stipulated per SSPC-Guide 6 Guide for Containing Debris Generated During Paint Removal Operations.

B. Shop and Field Coats:
   1. Shop Applied Prime Coat: Except as otherwise specified, prime coats may be shop-applied or field-applied. Shop-applied primer shall be compatible with the specified coating system and shall be applied at the minimum dry film thickness recommended by the CSM. Data sheets identifying the shop primer used shall be provided to the on-site coating application personnel. Adhesion tests shall be performed on the shop primer as specified in paragraph 3.01 Adhesion Confirmation. Damaged, deteriorated and poorly applied shop coatings that do not meet the requirements of this Section 09 90 00 shall be removed and the surfaces recoated. If the shop primer coat meets the requirements of this Section 09 90 00, the field coating may consist of touching up the shop prime coat and then applying the finish coats to achieve the specified film thickness and continuity.
   2. Field Coats: Field coats shall consist of one or more prime coats and one or more finish coats to build up the coating to the specified dry film thickness. Unless otherwise specified, finish coats shall not be applied until other work in the area is complete and until previous coats have been inspected.
   3. Adhesion Confirmation: The Contractor shall perform an adhesion test after proper cure in accordance with ASTM D3359 to demonstrate that (1) the shop applied prime coat adheres to the substrate, and (2) the specified field coatings adhere to the shop coat. Test results showing an adhesion rating of 5A on immersed surfaces and 4A or better on other surfaces shall be considered acceptable for coatings 5 mils or more in thickness (Method A). Test results showing an adhesion rating of 5B on immersed surfaces and 4B or better on other surfaces shall be considered acceptable for coating thicknesses less than 5 mils.

C. Application Location Requirements:

1. Equipment, Nonimmersed: Items of equipment, or parts of equipment that are not immersed in service, shall be shop primed and then finish coated in the field after installation with the specified or acceptable color. If the shop primer requires topcoating within a specified period, the equipment shall be finish coated in the shop and then touch-up painted after installation. If equipment removal and reinstallation is required for the project, touch-up coating work shall be performed in the field following installation.
2. Equipment, Immersed: Items of equipment, or parts and surfaces of equipment that are immersed when in service, with the exception of pumps and valves, shall have surface preparation and coating work performed in the field. Coating systems applied to immersed equipment shall be pinhole free.
3. Steel Water Tanks: The interior surfaces of steel water tanks or reservoirs shall have surface preparation and coating work performed in the field.

3.02 PREPARATION

A. General:

1. Surface preparations for each type of surface shall be in accordance with the specific requirements of each coating specification sheet (COATSPEC) and the following. In the event of a conflict, the COATSPEC sheets shall take precedence.
2. Surfaces to be coated shall be clean and dry. Before applying coating or surface treatments, oil, grease, dirt, rust, loose mill scale, old weathered coatings, and other foreign substances shall be removed. Oil and grease shall be removed before mechanical cleaning is started. Where mechanical cleaning is accomplished by blast cleaning, the abrasive used shall be washed, graded and free from contaminants that might interfere with the adhesion of the coatings. The air used for blast cleaning shall be sufficiently free of oil and moisture so as not to cause detrimental contamination of the surfaces to be coated.
3. Where deemed necessary by the Owner's representative, a NACE International certified coatings inspector, provided by the Owner, will inspect and approve surfaces to be coated before application of a coating. Surface defects identified by the inspector shall be corrected by the Contractor at no additional cost to the Owner.
4. Cleaning and painting shall be scheduled so that dust and spray from the cleaning process shall not fall on wet, newly coated surfaces. Hardware, hardware accessories, nameplates, data tags, machined surfaces, sprinkler heads, electrical fixtures, and similar uncoated items which are in contact with coated surfaces shall be removed or masked prior to surface preparation and painting operations. Following completion of coating, removed items shall be reinstalled. Equipment adjacent to walls shall be disconnected and moved to permit cleaning and painting of equipment and walls and, following painting, shall be replaced and reconnected.

B. Blast Cleaning:

1. When abrasive blast cleaning is required to achieve the specified surface preparation the following requirements for blast cleaning materials and equipment shall be met:
   a. Used or spent blast abrasive shall not be reused on this project.
   b. The compressed air used for blast cleaning shall be filtered and shall contain no condensed water and no oil. Moisture traps shall be cleaned at least once every

four hours or more frequently as required to prevent moisture from entering the supply air to the abrasive blasting equipment.

c. Oil separators shall be installed just downstream of compressor discharge valves and at the discharge of the blast pot discharges. These shall be checked on the same frequency as the moisture traps as defined above.

d. Regulators, gauges, filters, and separators shall be in use on compressor air lines to blasting nozzles times during this work.

e. An air dryer or desiccant filter drying unit shall be installed which dries the compressed air prior to blast pot connections. This dryer shall be used and maintained for the duration of surface preparation work.

f. The abrasive blast nozzles used shall be of the venturi or other high velocity type supplied with a minimum of 100 psig air pressure and sufficient volume to obtain the blast cleaning production rates and cleanliness/specified.

g. The Contractor shall provide ventilation for airborne particulate evacuation (meeting pertinent safety standards) to optimize visibility for both blast cleaning and inspection of the substrate during surface preparation work.

h. If, between final surface preparation work and coating system application, contamination of prepared and cleaned metallic substrates occurs, or if the prepared substrates' appearance darkens or changes color, recleaning by water blasting, reblasting and abrasive blast cleaning shall be required until the specified degree of cleanliness is reclaimed.

i. The Contractor is responsible for dust control and for protection of mechanical, electrical, and other equipment adjacent to and surrounding the work area.

C. Solvent Cleaning:

1. Any solvent wash, solvent wipe, or cleaner used, including but not limited to those used for surface preparation in accordance with SSPC SP-1 Solvent Cleaning and shall be of the emulsifying type which emits no more than 340 g/l VOCs for AIM regions, 250 g/l for CARB regions and 100 g/l for SCAQMD regions, contains no phosphates, is biodegradable, removes no zinc, and is compatible with the specified primer.
2. Clean white cloths and clean fluids shall be used in solvent cleaning.

D. Metallic Surfaces:

1. Metallic surfaces shall be prepared in accordance with applicable portions of surface preparation specifications of the Society for Protective Coatings (SSPC) specified for each coating system. See Coat Spec for each coating system in this Section 09 90 00. The profile depth of the surface to be coated shall be in accordance with the COATSPEC requirements in this Section measured by Method C of ASTM D4417. Blast particle size shall be selected by the Contractor to produce the specified surface profile. The solvent in solvent cleaning operations shall be as recommended by the CSM.
2. Preparation of metallic surfaces shall be based upon comparison with SSPC-VIS1-89 (ASTM D2200), and as described in the Coat Spec for each coating system. If dry abrasive blast cleaning is selected and to facilitate inspection, the Contractor shall, on the first day of cleaning operations, abrasive blast metal panels to the standards specified. Plates shall measure a minimum of 8-1/2 inches by 11 inches. Panels meeting the requirements of the specifications shall be initialed by the Contractor and the Construction Manager and coated with a clear non-yellowing finish. One of

these panels shall be prepared for each type of abrasive blasting and shall be used as the comparison standard throughout the project.

3. Blast cleaning requirements for steel, ductile iron and stainless steel substrates are as follows:
    a. Steel piping shall be prepared in accordance with SSPC SP-6 (Commercial Blast Cleaning) and primed before installation. Ductile iron piping surfaces including fittings shall be prepared in accordance with NAPF 500-03, NAPF 500-03-04, and NAPF 500-03-05.
    b. Stainless steel surfaces shall be abrasive blast cleaned to leave a clean uniform appearance with a minimum surface profile of 1.5 to 2.5 mils that is uniform.
    c. Remove traces of grit, dust, dirt, rust scale, friable material, loose corrosion products or embedded abrasive from substrate by vacuum cleaning prior to coating application.
    d. Care must be taken to prevent contamination of the surface after blasting from worker's fingerprints, deleterious substances on workers' clothing, or from atmospheric conditions.
    e. Ambient environmental conditions in the enclosure must be constantly monitored and maintained to ensure the degree of cleanliness is held and no "rust back" occurs prior to coating material application.

E. Concrete Surfaces:
    1. Inspection of concrete surfaces prior to surface preparation and surface preparation of concrete surfaces shall be performed in accordance with SSPC-SP13 (also called NACE 6).
    2. Prepare substrate cracks, areas requiring resurfacing and perform detail treatment including but not limited to, terminating edges, per CSM recommendations. This shall precede surface preparation for degree of cleanliness and profile.
    3. The surface profile for prepared concrete surfaces to be coated shall be evaluated by comparing the profile of the prepared concrete with the profile of graded abrasive paper, as described in ANSI B74.18 or by comparing the profile with the ICRI 03732 (surface profile replicas). Surface profile requirements shall be in accordance with the Coat Spec requirements and the CSM's recommendations.
    4. Surface cleanliness of prepared concrete substrates shall be inspected after cleaning, preparation, and/or drying, but prior to making repairs or applying a coat in the coating system. If concrete surfaces are repaired, they shall be reinspected for surface cleanliness prior to application of the coating system.
    5. Surface preparation of concrete substrates shall be accomplished using methods such as dry abrasive blast cleaning, high, or ultra high-pressure water blast cleaning in accordance with SSPC-SP-13. The selected cleaning method shall produce the requirements set forth below.
        a. A clean substrate that is free of calcium sulfate, loose coarse or fine aggregate, laitance, loose hydrated cement paste, and otherwise deleterious substances shall be achieved. Blast cleaning and other means necessary shall be used to open up air voids or bugholes to expose their complete perimeter. Leaving shelled over, hidden air voids beneath the exposed concrete surface is not acceptable. Concrete substrate must be dry prior to the application of filler/surface or coating system materials.

b. Acceptable surface preparation must produce a concrete surface with a minimum pH of 8.0 to be confirmed by surface pH testing. If after surface preparation, the surface pH remains below 8.0, perform additional water blasting, cleaning, or abrasive blast cleaning until additional pH testing indicates an acceptable pH level.

c. Following inspection by the Contractor of the concrete surface preparation, thoroughly vacuum clean concrete surfaces to be coated to remove loose dirt, and spent abrasive (if dry blast cleaning is used) leaving a dust free, sound concrete substrate. Debris produced by blast cleaning shall be removed from the structures to be coated and disposed of legally off site by the Contractor.

6. Should abrasive blast cleaning or high or ultrahigh pressure water blasting not remove degraded concrete, chipping or other abrading tools shall be used to remove the deteriorated concrete until a sound, clean substrate is achieved which is free of calcium sulfate, loose coarse or fine aggregate, laitance, loose hydrated cement paste, and otherwise deleterious substances. Concrete substrates must be dry prior to the application of filler/surfacers or coating system materials.

7. Surface cleanliness of prepared concrete substrates shall be inspected after cleaning, preparation, and/or drying, but prior to application of coating materials. If concrete surfaces are repaired, they shall be reinspected for surface cleanliness and required surface profile prior to application of the coating system.

8. Moisture content of concrete to be coated shall be tested in accordance with ASTM D4263, Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method and ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. The ASTM D4263 plastic sheet test shall be conducted at least once for every 500 sq. ft. of surface area to be coated. The presence of any moisture on plastic sheet following test period constitutes a non-acceptable test. For concrete surfaces to be coated which are on the negative or back side of concrete walls or structures exposed to soils (back filled) or immersed and waterproofed in accordance with Section 07 10 00, perform calcium chloride tests in accordance with ASTM F-1869 once for each 500 sq. ft. of surface area to be coated. Comply with CSM's written recommendations regarding acceptance/non-acceptance of moisture vapor emissions.

F. Masonry Surfaces:

1. Prepare masonry surfaces such as Concrete Masonry Units (CMU) to remove chalk, loose dirt, dried mortar splatter, dust, peeling, or loose existing coatings, or otherwise deleterious substances to leave a clean, sound substrate.

2. Be certain masonry surfaces are dry prior to coating application. If pressure washing or low-pressure water blast cleaning is used for preparation, allow the masonry to dry for at least 5 days under dry weather conditions or when the minimum ambient temperature is 70 degrees F prior to coating application work.

G. Fiberglass Reinforced Plastic (FRP) Surfaces:

1. Prepare FRP surfaces by sanding to establish uniform surface roughness and to remove gloss from the resin in the FRP. Next, vacuum clean to remove loose FRP dust, dirt, and other materials. Next, solvent clean using clean white rags and allow solvent to evaporate completely before application of coating materials.

3.03 APPLICATION

A. Workmanship:

1. Coated surfaces shall be free from runs, drips, ridges, waves, laps, and brush marks. Coats shall be applied to produce an even film of uniform thickness completely coating corners and crevices.
2. The Contractor's equipment shall be designed for application of the materials specified. Compressors shall have suitable traps and filters to remove water and oils from the air. A paper blotter test shall be performed by the Contractor when requested by the Construction Manager to determine if the air is sufficiently free of oil and moisture so as not to produce deteriorating effects on the coating system. The amount of oil and moisture in spray air shall be less than the amount recommended by the CSM. Spray equipment shall be equipped with mechanical agitators, pressure gages, and pressure regulators, and spray nozzles of the proper sizes.
3. Each coat of coating material shall be applied evenly and sharply cut to line. Care shall be exercised to avoid overspraying or spattering paint on surfaces not to be coated. Glass, hardware, floors, roofs, and other adjacent areas and installations shall be protected by taping, drop cloths, or other suitable measures.
4. Coating applications method shall be conventional or airless spray, brush or roller, or trowel as recommended by CSM.
5. Allow each coat to cure or dry thoroughly, according to CSM's printed instructions, prior to recoating.
6. Vary color for each successive coat for coating systems when possible.
7. When coating complex steel shapes, prior to overall coating system application, stripe coat welds, edges of structural steel shapes, metal cut-outs, pits in steel surfaces, or rough surfaces with the primer coat. This involves applying a separate coat using brushes or rollers to ensure proper coverage. Stripe coat via spray application is not permitted.

B. Coating Properties, Mixing and Thinning:

1. Coatings, when applied, shall provide a satisfactory film and smooth even surface. Glossy undercoats shall be lightly sanded to provide a surface suitable for the proper application and adhesion of subsequent coats. Coating materials shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Coatings consisting of two or more components shall be mixed in accordance with the CSM's instructions. Where necessary to suit the conditions of the surface, temperature, weather and method of application, the coating may be thinned as recommended by the CSM immediately prior to use. The volatile organic content (VOC) of the coating as applied shall comply with prevailing air pollution control regulations. Unless otherwise specified, coatings shall not be reduced more than necessary to obtain the proper application characteristics. Thinner shall be as recommended by the CSM.

C. Atmospheric Conditions:

1. Coatings shall be applied only to surfaces that are dry, and only under conditions of evaporation rather than condensation. Coatings systems shall not be applied during rainy, misty weather, or to surfaces upon which there is frost or moisture condensation. During damp weather, when the temperature of the surface to be coated is within 10 degrees F of the dew point, forced dehumidification equipment

may be used to maintain a temperature of minimum 40 degrees F and 10 degrees F above the dew point for the surfaces to be coated, the coated surface, and the atmosphere in contact with the surface. These conditions shall be maintained for a period of at least 8 hours or as recommended by the CSM. Where conditions causing condensation are severe, dehumidification equipment, fans, and/or heaters shall be used inside enclosed areas to maintain the required atmospheric and surface temperature requirements for proper coating application and cure.

D. Concrete Substrate Temperatures and Detail Treatment:
   1. When the surface temperatures of the concrete substrates to be coated are rising or when these substrates are in direct sunlight, outgassing of air from the concrete may result in bubbling, pinhole formations, and/or blistering in the coating system. The application of the filler/surface and the coating system will only be allowed during periods of falling temperature. This will require that application of the filler/surface and coating system shall only occur during the cooler evening hours. Contractor shall include any cost for working outside of normal hours in the bid.
   2. Should bubbles, pinholes, or discontinuities form in the applied coating system material, they shall be repaired as recommended by the CSM. Should pinholes develop in the filler/surfacer material or in the first coat of the coating material, the pinholes shall be repaired in accordance with the CSM's recommendations prior to application of the next coat of material. Whenever pinholes occur, the air void behind or beneath the pinhole shall be opened up completely and then completely filled with the specified filler/surfacer material. Next, the coated area around the pinhole repair shall be abraded and the coating reapplied over that area.
   3. Perform application detail work per CSM's current written recommendations and/or drawings.

E. Protection of Coated Surfaces:
   1. Items that have been coated shall not be handled, worked on, or otherwise disturbed, until the coating is completely dry and hard. After delivery at the site, and upon permanent erection or installation, shop-coated metalwork shall be recoated or retouched with specified coating when it is necessary to maintain the integrity of the film.

F. Method of Coating Application:
   1. Where two or more coats are required, alternate coats shall contain sufficient compatible color additive to act as indicator of coverage, or the alternate coats shall be of contrasting colors. Color additives shall not contain lead, or lead compounds, which may be destroyed or affected by hydrogen sulfide or other corrosive gas, and/or chromium.
   2. Mechanical equipment, on which the equipment manufacturer's coating is acceptable, shall be touch-up primed and coated with two coats of the specified coating system to match the color scheduled. Electrical and instrumentation equipment specified in Divisions 26 and 40 shall be coated as specified in paragraph 3.03 Electrical and Instrumentation Equipment and Materials.
   3. Coatings shall not be applied to a surface until it has been prepared as specified. The primer or first coat shall be applied by brush to ferrous surfaces that are not blast-cleaned. Coats for blast-cleaned ferrous surfaces and subsequent coats for nonblast-cleaned ferrous surfaces may be either brush or spray applied. After the prime coat is dry, pinholes and holidays shall be marked, repaired in accordance with CSM's

recommendations and retested before succeeding coats are applied. Unless otherwise specified, coats for concrete and masonry shall be brushed, rolled, or troweled.

G. Film Thickness and Continuity:
   1. WFT of the first coat of the coating system and subsequent coats shall be verified by the Contractor, following application of each coat.
   2. The surface area covered per gallon of coating for various types of surfaces shall not exceed those recommended by the CSM. The first coat, referred to as the prime coat, on metal surfaces refers to the first full paint coat and not to solvent wash, grease emulsifiers or other pretreatment applications. Coatings shall be applied to the thickness specified, and in accordance with these specifications. Unless otherwise specified, the average total thickness (dry) of a completed protective coating system on exposed metal surfaces shall be not less than 1.25 mils per coat. The minimum thickness at any point shall not deviate more than 25 percent from the required average. Unless otherwise specified, no less than two coats shall be applied.
   3. In testing for continuity of coating about welds, projections (such as bolts and nuts), and crevices, the Construction Manager shall determine the minimum conductivity for smooth areas of like coating where the dry-mil thickness has been accepted. This conductivity shall be the minimum required for these rough or irregular areas. Pinholes and holidays shall be recoated to the required coverage.
   4. The ability to obtain specified film thickness is generally compromised when brush or roller application methods are used and, therefore, more coats may need to be applied to achieve the specified dry film thickness.
   5. For concrete substrates, the Contractor shall apply a complete skim coat of the specified filler/surfacer material over the entire substrate prior to application of the coating system. This material shall be applied such that all open air voids and bugholes in the concrete substrate are completely filled prior to coating application.

H. Special Requirements:
   1. Before erection, the Contractor shall apply all but the final finish coat to interior surfaces of roof plates, roof rafters and supports, pipe hangers, piping in contact with hangers, and contact surfaces that are inaccessible after assembly. The final coat shall be applied after erection. Structural friction connections and high tensile bolts and nuts shall be coated after erection. Areas damaged during erection shall be hand-cleaned or power-tool cleaned and recoated with primer coat prior to the application of subsequent coats. Touch-up of surfaces shall be performed after installation. Surfaces to be coated shall be clean and dry at the time of application. Except for those to be filled with grout, the underside of equipment bases and supports that have not been galvanized shall be coated with at least two coats of primer specified for system E-2 prior to setting the equipment in place. Provide coating system terminations at leading edges and transitions to other substrates in accordance with the CSM's recommendations or detail drawings.

I. Electrical and Instrumentation Equipment and Materials:
   1. Electrical and instrumentation equipment and materials shall be coated by the equipment manufacturer as specified below.
      a. Finish: Electrical equipment shall be treated with zinc phosphate, bonderized or otherwise given a rust-preventive treatment. Equipment shall be primed, coated with enamel, and baked. Minimum dry film thickness shall be 3 mils.

1) Unless otherwise specified, instrumentation panels shall be coated with system E-1 for indoor mounting and system EU-1 for outdoor mounting.
2) Before final acceptance, the Contractor shall touch up scratches on equipment with identical color coating. Finish shall be smooth, free of runs, and match existing finish. Prior to touching up scratches, Contractor shall fill them with an appropriate filler material approved by the CSM.

b. Color: Exterior color of electrical equipment shall be FS 26463 (ANSI/NSF 61) light gray. Interior shall be painted FS 27880 white. Nonmetallic electrical enclosures and equipment shall be the equipment manufacturer's standard grey color.
1) Exterior color of instrumentation panels and cabinets mounted indoors shall be FS 26463 light gray; unless otherwise specified, exterior color for cabinets mounted outdoors shall be FS 27722, white. Cabinet interiors shall be FS 27880, white.

J. Soluble Salt Contamination of Metallic Substrates:
1. Contractor shall test in accordance with SSPC-TU-4 metallic substrates to be coated that have been exposed to seawater or coastal air or to industrial fallout of particulate or other sources of soluble chlorides (such as wastewater exposure). If testing indicates detrimental levels of soluble salts, those in excess of 25 ppm, the Contractor shall clean and prepare these surfaces to remove the soluble salts.

3.04 CLEANUP

A. General:
1. Upon completion of coating, the Contractor shall remove surplus materials, protective coverings, and accumulated rubbish, and thoroughly clean surfaces and repair overspray or other coating-related damage.

3.05 COATING SYSTEM SPECIFICATION SHEETS (COATSPEC)

A. General:
1. Coating systems for different types of surfaces and general service conditions for which these systems are normally applied are specified on the following COATSPEC sheets. Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified. Coating systems shall be as specified in paragraph 3.06. In case of conflict between the schedule and the COATSPECS, the requirements of the schedule shall prevail.
2. Coating Specification Sheets included in Table A are included this paragraph 3.05.

Table A Coating Specification Sheets

Coating System ID	Coating Material	Surface	Service Condition
E-1	Epoxy	Metal	Interior; exterior, covered, not exposed to direct sunlight, non-corrosive exposure.
E-1-G	Epoxy	Galvanized Steel	Interior; exterior, covered non-corrosive exposure. Do not use in immersion service.
E-2	Epoxy	Metal	Immersed, nonpotable; non-immersed, moderately corrosive environment, color required.

Table A Coating Specification Sheets

Coating System ID	Coating Material	Surface	Service Condition
E-3	Epoxy	Concrete or Masonry	Immersed, nonpotable; non-immersed, corrosive environment, color required.
E-4	Epoxy	Concrete, masonry, plaster, gypsum board	Interior
E-5 (NSF 61 certified)	Epoxy	Metal	Interior potable water tanks and reservoirs and other metal components in contact with water being treated and stored for potable use.
E-6 (NSF 61 certified)	Epoxy	Concrete	Interior potable water tanks and reservoirs and other metal components in contact with water being treated or stored.
E-7	Epoxy	Plastic	Interior; exterior covered, not exposed to direct sunlight.
E-8	Clear epoxy	Wood	Interior
E-9	Epoxy	Metal	Immersed, nonpotable; non-immersed, corrosive environment, color required. (Not for Biogenic Sulfide Corrosion areas.)
E-9-C	Epoxy	Concrete or masonry	Immersed, nonpotable; non-immersed, moderately corrosive environment, color required. (Not for Biogenic Sulfide Corrosion areas.)
E-10	Polyamidoamine epoxy	Metal or concrete	Below grade (buried).
EF-1	Amine Epoxy Broadcast Floor Coating	Concrete Floors	Light duty, wheeled traffic, frequent foot traffic, mildly corrosive.
EF-2	Amine Epoxy Troweled Floor Coating	Concrete Floors	Heavy-duty, wheeled traffic, frequent foot traffic, wet and moderately corrosive.
EA-1	Blended Amine Cured Epoxy	Metal	Immersed, nonpotable; non-immersed, corrosive environment, color not required especially for headspace environments that are corrosive due to biogenic sulfide corrosion.
EA-2	Blended Amine Cured Epoxy	Concrete or masonry	Immersed, nonpotable; non-immersed, corrosive environment, color not required, new construction especially for headspace environments that are corrosive due to biogenic sulfide corrosion.
EA-3	Blended Amine Cured Epoxy	Concrete or Masonry	Immersed, nonpotable; non-immersed, corrosive environment, color not required, new or existing construction, especially for headspace environments that are corrosive due to biogenic sulfide corrosion.
EA-4	Blended Amine Cured Epoxy – For Very Corrosive Conditions	Concrete or Masonry Potable	Non-immersed or immersed, very corrosive environment. Very high H_2S conditions.
EA-5	Novolac Epoxy Lining	Concrete	Secondary containment for spills of HFS acid or ferric chloride.
G	Grease	Metal	Ferrous Metal: Ferrous metal surfaces shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning.)
HH-1	Proprietary Primer Plus Silicone Topcoat	Metal	Temperature to 750 degrees F.
HH-2	Proprietary Primer Plus Silicone Topcoat (black or aluminum only)	Metal	Temperature to 1200 degrees F.

Table A Coating Specification Sheets

Coating System ID	Coating Material	Surface	Service Condition
L-1	Latex	Concrete, masonry, plaster, gypsum board	Interior and Exterior including existing exterior coated concrete.
L-2	Latex	PVC and CPVC pipe	Exterior, direct sunlight exposure.
L-3	Latex-Direct to Metal	Ferrous Metal	Interior or Exterior
L-4	Latex	Wood	Interior
M-1	Petrolatum based mastic or wax based wrapping tapes	Metal	Below grade (buried) or where little to no surface preparation can be performed on piping or structural steel.
M-2	Epoxy mastic or equal	Ferrous Metal	Interior, corrosive environment, confined enclosures, where minimal surface preparation is possible.
EU-1	Zinc-epoxy-polyurethane system	Ferrous Metal	Exterior, exposed to direct sunlight, moderately corrosive non-immersed.
EU-1-FRP	Specialty Primer plus Polyurethane Finish Coat	Exterior of FRP pipe and tanks, etc.	Exterior, exposed to direct sunlight, non-immersed.
EC-1	Hybrid Polyurethane	Concrete or dense masonry where existing crack or joint movement is suspected of propagating through rigid cured epoxy coatings	Service Condition: Interior or exterior, exposed to direct sunlight or not, corrosive (immersion pH 4.0 or lower and/or headspace pH 4.0 or lower and/or gaseous H_2S concentrations between 10 and 150 ppm typically.)
EC-2 (NSF-61)	Modified Polyurethane	Concrete or dense masonry where existing crack or joint movement is suspected due to thermal conditions and would propagate through rigid epoxy coating systems and/or where NSF-61 certification is required	Interior or exterior, submerged or non-submerged indirect sunlight – moderately corrosive.
S-1	Penetrating acrylic stain, color required	Concrete	Non-immersed, exposure to moisture and sunlight.
S-2	Silane/Siloxane or Blended Sealer	Concrete Floors	Wet, non-immersed, non-corrosive. Interior or exterior for waterproofing.
S-3	RTV Silicone Rubber Based Sealer	Concrete or Masonry Walls	Exterior or Interior – Weathering Exposure, Non-Corrosive.
S-4	Acrylic Co-polymer Blend	Concrete Floors	Wet, non-immersed, non-corrosive, interior for oil and water repellent.

Coating System Specification Sheets (COATSPEC)

A.	**Coating System Identification: E-1**	
1.	Coating Material:	Epoxy
2.	Surface:	Metal
3.	Service Condition:	Interior; exterior, covered, not exposed to direct sunlight, non-corrosive exposure.
4.	Surface Preparation:	
a.	General:	Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning). Damaged shop coated areas shall be cleaned in accordance with SSPC SP-5 (White Metal Blast Cleaning) to achieve a uniform surface profile of 2.0 to 2.5 mils and spot primed with the primer specified. Shop epoxy primed surfaces shall require light abrasive and vacuum cleaning blasting prior to receiving finish coats.
b.	Ferrous Metal:	Bare ferrous metal surfaces shall be prepared in accordance with SSPC SP-6 (Commercial Blast Cleaning) to achieve a uniform, surface profile of 2.0 to 2.5 mils.
		Ferrous metal with rust bleeding shall be cleaned in accordance with SSPC SP-1 (Solvent Cleaning). Areas of rust penetration shall be spot blasted to SSPC SP-10 (Near White Blast) (to achieve the 2.0- to 2.5-mil surface profile) and spot primed with the specified primer. For ductile iron surfaces, refer to the requirements in paragraph 3.02 Metallic Surfaces.
c.	Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-7 (Brush-off Blast Cleaning) to achieve uniform, minimum surface profile 1.0 to 1.5 mils.
5.	Application:	Field
a.	General:	Prime coat may be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
b.	Ferrous Metal:	Prime coats shall be an epoxy primer compatible with the specified finish coats and applied in accordance with the written instructions of the CSM.
c.	Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal shall be cleaned prior to the application of the prime coat in accordance with SSPC SP-1 (Solvent Cleaning).
6.	System Thickness:	10 mils dry film.
7.	Coatings:	
a.	Primer:	One coat at CSM's recommended dry film thickness.
b.	Finish:	One or more coats at CSM's recommended dry film thickness per coat to achieve the specified system thickness.
B.	**Coating System Identification: E-1-G**	
1.	Coating Material:	Epoxy
2.	Surface:	Galvanized Steel
3.	Service Condition:	Interior; exterior, covered, non-corrosive exposure. Do not use in immersion service.
4.	Surface Preparation:	
a.	General:	Damaged galvanized steel areas with exposed ferrous metal and/or rusted shall be cleaned in accordance with SSPC SP-5 (White Metal Blast Cleaning) or Power Tool Cleaned to Bare Metal in accordance with SSPC-SP-11 to achieve a uniform 1.0- to 1.5-milprofile and spot primed with the primer specified.
b.	Galvanized Metal:	Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-7 (Brush-off Blast Cleaning) impart a 1- to 2-milprofile to the galvanized steel surfaces. Where this cannot be performed, prepare by abrading in accordance with SSPC-SP-3, Power Tool Cleaning to impart a 1.0- to 1.5-mil profile uniformly to the galvanized steel surfaces.
5.	Application:	Field
a.	General:	Prime coat may be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
b.	Galvanized Metal:	Nonferrous and galvanized metal shall be cleaned prior to the application of the

	prime coat in accordance with SSPC SP-1 (Solvent Cleaning).
6. System Thickness:	5 to 8 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
	If the coated galvanized steel is to be exposed to ultraviolet light, apply one polyurethane top coat from coating system EU-1 over the second coat of the two epoxy coats specified.
C. Coating System Identification: E-2	
1. Coating Material:	Epoxy
2. Surface:	Metal
3. Service Condition:	Immersed, nonpotable; non-immersed, moderately corrosive environment, color required.
4. Surface Preparation:	
a. Ferrous Metal:	Ferrous metal surfaces shall be prepared in accordance with SSPC SP-5 (White Metal Blast Cleaning) to achieve a uniform surface profile of 2.0 to 2.5 mils.
	Damaged shop coating shall be cleaned in accordance with SSPC SP-5 (White Metal Blast Cleaning) and vacuum cleaning and spot primed with the primer specified. Shop epoxy primed surfaces shall require light abrasive blasting or abrading prior to receiving finish coats if the maximum recoat time for the primer has been exceeded. This cleaning must produce a uniform 1.0- to 1.5-mil profile in the intact shop primer. For ductile iron surfaces, refer to the requirements in paragraph 3.02 Metallic Surfaces.
b. Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-7 (Brush-off Blast Cleaning) to achieve a uniform surface profile of 1.0 to 1.5 mils. Galvanized steel with this E-2 coating system shall not be used in immersion service in wastewater.
5. Application:	Field
a. General:	Prime coat may be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
b. Ferrous Metal:	Prime coat shall be an epoxy primer compatible with the specified finish coats.
c. Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal, non-immersed, shall be coated prior to the application of the prime coat with a grease emulsifying agent in accordance with the CSM's written instructions. Nonferrous metal to be immersed shall not be painted. Galvanized metal shall not be immersed even if it is painted.
6. System Thickness:	16 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
D. Coating System Identification: E-3	
1. Coating Material:	Epoxy
2. Surface:	Concrete or masonry
3. Service Condition:	Immersed, nonpotable; non-immersed, corrosive environment, color required.
4. Surface Preparation:	
a. Concrete:	Concrete surfaces shall be allowed to cure for at least 28 days and allowed to dry to the moisture content recommended by the CSM before coating work proceeds. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks

	shall be repaired as specified in Section 03 30 00. Surface preparation can be performed by abrasive blast cleaning or water blast cleaning and must achieve a uniform concrete surface profile of CSP3 in accordance with ICRI 03732. After cleaning, air voids or bugholes in the concrete shall be filled with a surfacer or block filler compatible with the specified primer and finish coats.
b. Masonry:	Masonry surfaces shall be allowed to cure for at least 28 days after being constructed and be allowed to dry to the moisture content recommended by the CSM. Holes or other joint defects shall be filled with a material compatible with the primers and finish coats or shall be filled with masonry mortar that shall cure for at least 28 days. Loose or splattered mortar shall be removed by scraping and chipping.
	Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign, loose, and deleterious substances.
	Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with a sealer or block filler compatible with the specified primer.
5. Application:	Field
a. General:	Apply filler/surfacer as recommended by CSM to fill bugholes and air voids or block texture, etc. leaving a uniformly filled surface that does not produce blowholes or outgassing causing pinholing of the coating system. Filler/surfacers shall dry a minimum of 48 hours prior to application of prime coat or as required by the CSM.
	Prime coat shall be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
	Drying time between coats shall be as recommended by CSM.
6. System Thickness:	15 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
E. Coating System Identification: E-4	
1. Coating Material:	Epoxy
2. Surfaces:	Concrete, masonry, plaster, gypsum board.
3. Service Condition:	Interior
4. Surface Preparation:	
a. Concrete:	Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Loose concrete, form oils, surface hardeners, curing compounds and laitance shall be removed from surfaces, and voids and cracks shall be repaired as specified in Section 03 30 00. Surface preparation shall produce a concrete surface profile of CSP-2 in accordance with ICRI 03732. After cleaning, air voids or bugholes in the concrete shall be filled with a surfacer or block filler compatible with the specified primer and finish coats.
b. Masonry:	Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scrapping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances. Muriatic acid shall not be used. After cleaning, exterior masonry surfaces shall be sealed or filled with a sealer or block filler compatible with the specified primer.
c. Plaster:	Plaster surfaces shall be dry, clean, and free from grit, loose plaster, and surface irregularities. Cracks and holes shall be repaired with acceptable patching materials, keyed to existing surfaces, and sandpapered smooth. Surfaces shall be cleaned with clean water by washing and scrubbing to remove foreign and deleterious substances.

5. Application:	Field
a. General:	Block Filler shall be multiple component epoxy block filler or an acrylic based or waterborne epoxy based block filler and shall dry a minimum of 48 hours prior to primer application or as required by the CSM.
	Prime coat shall be thinned and applied as recommended by CSM, provided the coating as applied complies with prevailing air pollution control regulations.
	Drying time between coats shall be as recommended by CSM.
6. System Thickness:	10 mils dry film, excluding block filler and sealer.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
F. Coating System Identification: E-5 (NSF 61 certified)	
1. Coating Material:	Epoxy
2. Surface:	Metal
3. Service Condition:	Interior potable water tanks and reservoirs and other metal components in contact with water being treated and stored for potable use.
4. Surface Preparation:	
a. Ferrous Metal:	Ferrous metal surfaces shall be prepared in accordance with SSPC SP-5 (White Metal Blast Cleaning) to achieve a uniform surface profile of 2.0 to 2.5 mils.
	Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning) or SSPC-SP-3 (Power Tool Cleaning). Damaged shop coating shall be cleaned in accordance with SSPC SP-5 (White Metal Blast Cleaning) and spot primed with the primer specified. Cleaning shall produce a surface profile of 2.0 to 2.5 mils. Shop epoxy primed surfaces shall require light abrasive blasting or abrading prior to receiving finish coats if the maximum recoat limit has been exceeded for the primer. This cleaning shall produce a uniform surface profile of 1.0 to 1.5 mils in the intact primer.
b. Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-7 (Brush-off Blast Cleaning) to achieve a 1.0- to 1.5-mil profile that is uniform.
5. Application:	Field
a. General:	Prime coat shall be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
b. Ferrous Metal:	Prime coat shall be an epoxy primer compatible with the specified finish coats.
c. Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal above the high water elevation shall be cleaned prior to the application of the prime coat in accordance with SSPC SP-1 (Solvent Cleaning).
6. System Thickness:	10 mils dry film.
7. Coatings:	
a. Primer:	One coat at the CSM's recommended dry film thickness.
b. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
G. Coating System Identification: E-6 (NSF 61 certified)	
1. Coating Material:	Epoxy
2. Surface:	Concrete
3. Service Condition:	Interior potable water tanks and reservoirs and other metal components in contact with water being treated or stored.
4. Surface Preparation:	
a. Concrete:	Concrete surfaces shall be allowed to cure for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by

	the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Abrasive blast cleaning or water blast cleaning methods can be used and must produce a uniform concrete surface profile of a CSP-3 in accordance with ICRI 03732. After cleaning, air voids or bugholes in the concrete shall be filled with a surfacer or block filler compatible with the specified primer and finish coats.
b. Masonry:	Masonry surfaces shall be allowed to cure for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed and allowed to cure for 28 days or shall be filled with materials compatible with the primer and finish coats. Loose or splattered mortar shall be removed by scraping and chipping.
	Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances.
	Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with a sealer or block filler compatible with the specified primer.
5. Application:	Field
a. General:	Surfacer or block filler shall dry a minimum of 48 hours prior to application of prime coat or as recommended by the CSM. Prime coat shall be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
	Drying time between prime coat and finish coat shall be as recommended by CSM.
6. System Thickness:	15 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
H. Coating System Identification: E-7	
1. Coating Material:	Epoxy
2. Surface:	Plastic
3. Service Condition:	Interior; exterior covered, not exposed to direct sunlight.
4. Surface Preparation:	Plastic shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning) and light sanding to produce a uniform surface roughness(uniform surface profile of 1.0 to 1.5 mils) on the plastic.
5. Application:	Field
6. System Thickness:	5 mils dry film.
7. Coatings:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
I. Coating System Identification: E-8	
1. Coating Material:	Clear epoxy
2. Surface:	Wood
3. Service Condition:	Interior
4. Surface Preparation:	Wood surfaces shall be cleaned of dirt, oil or other foreign substances with mineral spirits, scrapers, sandpaper or wire brush. Finished surfaces exposed to view shall be smoothed by planing or sandpapering. Millwork shall be sandpapered and given a coat of the specified exterior primer on sides before installation. Built-in surfaces of windowsills shall be double primed. Glazing rabbets and beads in exterior sash and doors shall be double primed. Small, dry, seasoned knots shall be surfaced scraped, sandpapered, and thoroughly cleaned and shall be given a thin coat of a clear knot sealer before application of the priming coat. Large, open, unseasoned knots, and beads or streaks of pitch shall be scraped off; however, if the pitch is still soft, it shall be removed with mineral spirits or turpentine, and the resinous area

	shall be coated with knot sealer prior to priming. After priming, holes and imperfections shall be filled with putty or plastic wood, colored to match the finish coat, allowed to dry and sandpapered smooth.
5. Application:	Field
a. General:	Prime coat shall be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
6. System Thickness:	4 mils
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
J. Coating System Identification: E-9	
1. Coating Material:	Epoxy
2. Surface:	Metal
3. Service Condition:	Immersed, nonpotable; non-immersed, corrosive environment, color required. (Not for Biogenic Sulfide Corrosion areas.)
4. Surface Preparation:	
a. Ferrous Metal:	Ferrous metal surfaces shall be prepared in accordance with SSPC SP-5 (White Metal Blast Cleaning) to achieve a uniform surface profile of 2.5 to 3.0 mils.
	Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning) or SSPC-SP-3 (Power Tool Cleaning). Damaged shop coating shall be cleaned in accordance with SSPC SP-5 (White Metal Blast Cleaning) to achieve a uniform surface profile of 2.5 to 3.0 mils and spot primed with the primer specified. Shop epoxy primed surfaces shall require light abrasive blasting or abrading to achieve a uniform surface profile of 1.0 to 1.5 mils in the intact shop primer prior to receiving finish coats if the maximum recoat time for the primer has been exceeded. For ductile iron surfaces, refer to the requirements in paragraph 3.02 Metallic Surfaces.
b. Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-7 (Brush-off Blast Cleaning) to achieve a 1.5- to 2.0-mil profile that is uniform. Galvanized steel with this E-2 coating system shall not be used in immersion service in wastewater.
5. Application:	Field
a. General:	Prime coat may be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
b. Ferrous Metal:	Prime coat shall be an epoxy primer compatible with the specified finish coats.
c. Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal, non-immersed, shall be coated prior to the application of the prime coat with a grease emulsifying agent in accordance with the CSM's written instructions. Non-ferrous metal to be immersed shall not be painted. Galvanized metal shall not be immersed even if it is painted with this coating system.
6. System Thickness:	15 to 20 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
K. Coating System Identification: E-9-C	
1. Coating Material:	Epoxy
2. Surface:	Concrete or masonry
3. Service Condition:	Immersed, nonpotable; non-immersed, moderately corrosive environment, color required. (Not for Biogenic Sulfide Corrosion areas.)
4. Surface Preparation:	

a. Concrete:	Concrete surfaces shall be allowed to cure for at least 28 days following initial concrete placement and allowed to dry to the moisture content recommended by the CSM before coating work proceeds. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Cleaning can be performed using abrasive blast cleaning or water blast cleaning methods to produce a minimum concrete surface profile of CSP-3 in accordance with ICRI 03732. After cleaning, all air voids or bugholes in the concrete shall be filled with a surfacer or block filler compatible with the specified primer and finish coats.
b. Masonry:	Masonry surfaces shall be allowed to cure for at least 28 days after being constructed and be allowed to dry to the moisture content recommended by the CSM. Holes or other joint defects shall be filled with a material compatible with the primers and finish coats or shall be filled with masonry mortar that shall cure for at least 28 days. Loose or splattered mortar shall be removed by scraping and chipping.
	Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances.
	Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with a sealer or block filler compatible with the specified primer.
5. Application:	Field
a. General:	Apply filler/surfacer as recommended by CSM to fill bugholes and air voids or block texture, etc. leaving a uniformly filled surface that does not produce blowholes or outgassing causing pinholing of the coating system.
	Filler/Surfacers shall dry a minimum of 48 hours prior to application of prime coat or as required by the CSM.
	Prime coat shall be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
	Drying time between coats shall be as recommended by CSM.
6. System Thickness:	16 to 20 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
L. Coating System Identification: E-10	
1. Coating Material:	Polyamidoamine epoxy
2. Surface:	Metal or concrete
3. Service Condition:	Below grade (buried, exterior) in contact with soil
4. Surface Preparation:	
a. Ferrous Metal:	Ferrous metal surfaces shall be prepared in accordance with SSPC SP-5 (White Metal Blast Cleaning).
b. Nonferrous Metal:	Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-7 (Brush-off Blast Cleaning) to achieve a uniform surface profile of 2.0 to 2.5 mils.
c. Concrete:	Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Concrete surface preparation can be performed using abrasive blast cleaning or water blast cleaning methods and must achieve a concrete surface profile of CSP-3 in accordance with ICRI

	03732.
5. Application:	Field
6. System Thickness:	16 mils
7. Coating:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
M. Coating System Identification: EF-1	
1. Coating Material:	Epoxy Resin Based Floor Coating
2. Surface:	Concrete Floors
3. Service Condition:	For interior light duty applications light wheel traffic, mostly foot traffic, and mildly corrosive. Mainly for wear resistance, aesthetics, and cleanability. Non-slip texture can be varied depending on wetness of exposure. Test patches to be installed for deciding on level of non-slip texture required.
4. Surface Preparation:	Concrete floor slabs shall be allowed to age for at least 28 days and must meet a moisture vapor transmission rate of less than 3.0 lbs. of moisture per 24 hours per 1,000 SF in accordance with ASTM F1869. It is also essential that a well-sealed and intact vapor barrier has been installed beneath all slabs on grade to receive this floor coating system. Except as otherwise specified, loose concrete, curing compounds, and laitance shall be removed by abrasive blast cleaning or preferably by shotblasting. Surface preparation shall produce a clean sound concrete substrate with a concrete surface profile of CSP-6 minimum in accordance with ICRI 03732. Surface preparation shall be in accordance with SSPC-SP-13.
	Additionally, all coating termination and transition details shall be prepared in accordance with the CSM's standard detail drawings. This includes coating termination details, coating transitions at vertical and vertical to horizontal corners, coating terminations at joints, concrete crack treatment, pipe penetration treatment, coating terminations at metal embedments in the concrete substrate, and other details. The CSM's standard detail drawings shall be submitted for all such coating applications. If standard details are not available for a given detail treatment, the CSM shall be required to produce one at no additional cost to the owner, the engineer, or any other party.
	If wet abrasive or water blasting surface preparation methods were used, the concrete substrate shall be allowed to dry under warm conditions (minimum of 75 degrees F) for at least 5 days prior to coating application. Following surface preparation work and dry-out, all surfaces to be coated shall be vacuum cleaned to remove all loose dirt, dust, or other loose materials.
5. Application:	Carefully follow CSM's written instructions regarding mixing, thinning, application, recoat limitations (windows) and curing of coating materials.
6. System Thickness:	125 mils dry film.
7. Coatings:	
a. Primer:	Brush or roller apply at 6.0 – 10.0 mils DFT.
b. Broadcast Applied:	Brush or roller catalyzed resin and broadcast aggregate to rejection (should achieve 100 to 105 mils DFT).
c. Top:	Brush or roller apply at 8.0 – 10.0 mils.
	Install all termination and transition details in accordance with the CSM's detail drawings.
N. Coating System Identification: EF-2	
1. Coating Material:	Epoxy Resin Based Floor Coating
2. Surface:	Concrete Floors
3. Service Condition:	For interior – heavy-duty exposure applications. Frequent, heavy wheeled traffic and moderately corrosive exposure conditions. Mainly for wear resistance, impact resistance, protection of concrete, and aesthetics. Non-slip texture can be varied as needed. Test patches to be installed for deciding on level of non-slip texture required.
4. Surface Preparation:	Concrete floor slabs shall be allowed to age for at least 28 days and must meet a

	moisture vapor transmission rate of less than 3.0 lbs. of moisture per 24 hours per 1,000 SF in accordance with ASTM F1869. It is also essential that a well-sealed and intact vapor barrier has been installed beneath all slabs on grade to receive this floor coating system. Except as otherwise specified, loose concrete, curing compounds, and laitance shall be removed by abrasive blast cleaning or preferably by shotblasting. Surface preparation shall produce a clean sound concrete substrate with a concrete surface profile of CSP-7 minimum in accordance with ICRI 03732. Surface preparation shall be in accordance with SSPC-SP-13.
	Additionally, all coating termination and transition details shall be prepared in accordance with the CSM's standard detail drawings. This includes coating termination details, coating transitions at vertical and vertical to horizontal corners, coating terminations at joints, concrete crack treatment, pipe penetration treatment, coating terminations at metal embedments in the concrete substrate, and other details. The CSM's standard detail drawings shall be submitted for all such coating applications. If standard details are not available for a given detail treatment, the CSM shall be required to produce one at no additional cost to the owner, the engineer, or any other party.
	If wet abrasive or water blasting surface preparation methods were used, the concrete substrate shall be allowed to dry under warm conditions (minimum of 75 degrees F) for at least 5 days prior to coating application. Following surface preparation work and dry-out, all surfaces to be coated shall be vacuum cleaned to remove all loose dirt, dust, or other loose materials.
5. Application:	Carefully follow CSM's written instructions regarding mixing, thinning, application, recoat limitations (windows) and curing of coating materials.
6. System Thickness:	250 mils dry film.
7. Coatings:	
a. Primer:	Brush or roller apply at 6.0 – 10.0 mils DFT.
b. Trowel Applied:	Trowel apply to 230 – 236 mils.
c. Top:	Brush or roller apply at 8.0 – 10.0 mils. Cumulative dry film thickness.
	Install all termination and transition details in accordance with the CSM's detail drawings.
O. Coating System Identification: EA-1	
1. Coating Material:	Blended Amine Cured Epoxy
2. Surface:	Metal
3. Service Condition:	Immersed, nonpotable; non-immersed, corrosive environment, color not required especially for headspace environments that are corrosive due to biogenic sulfide corrosion.
4. Surface Preparation:	
a. Ferrous Metal:	Ferrous metal surfaces shall be prepared in accordance with SSPC SP-5 (White Metal Blast Cleaning) to achieve a uniform surface profile of 3.0 to 3.5 mils. Blast Cleaning shall produce a minimum surface profile of 3.0 mils.
	Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning surfaces in accordance with SSPC SP-11 (Power Tool Cleaning to Bare Metal). Damaged shop coated areas shall be cleaned in accordance with SSPC SP-5 (White Metal Blast Cleaning) and spot primed with the primer specified. Shop epoxy primed surfaces shall require light abrasive blasting and blow down cleaning prior to receiving finish coats. Cast or ductile iron surfaces to be coated shall be abrasive blast cleaned to a clean, gray uniform metal appearance free of variations in color and loose materials. Ductile iron surfaces shall be prepared in accordance with paragraph 3.02 Metallic Surfaces.
b. Nonferrous and Galvanized Metal:	Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-7 (Brush-off Blast Cleaning) to achieve a uniform surface profile of 2.0 to 2.5 mils. Galvanized metal should generally not be used in these environments.
5. Application:	Field
a. General:	Prime coat may be thinned and applied as recommended by the CSM, provided the

	coating as applied complies with prevailing air pollution control regulations.
	Drying time between coats shall be as specified by the CSM for the site conditions. If the maximum recoat time is exceeded, surface preparation shall require solvent washing, light abrasive blasting, or other procedures per CSM's instructions.
b. Ferrous Metal:	If shop priming is required or field priming is necessary, the prime coat shall be an epoxy primer compatible with the specified coating system. Generally, the EA-1 coating system is self-priming and does not require a primer unless there is a special reason to prime the steel to hold the blast cleaning from rusting back.
6. System Thickness:	30 to 40 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness only if required by special circumstances.
b. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
c. Testing:	Holiday detection shall be performed over 100% of the coated surface area to identify any holidays or pinholes that must be repaired.
d. Pinhole and Holiday Repair Procedure:	Pinholes and holidays identified by Holiday Detection shall be repaired as follows:
	• Using a pencil grinder, remove a ½-inch diameter area of the coating system material back to the ferrous metal substrate. The metal must be shiny
	• Aggressively sand or abrade the intact coating system surface 2 inches around the complete periphery of the ½-inch diameter removal area to produce a uniform 6 to 8 mils profile
	• Vacuum clean the prepared area to remove all dust and dirt to achieve a clean, sound surface. Tape the peripheral area to prevent coating application onto unprepared surfaces
	• Brush apply one coat of the finish coating material. Following proper recoat cure time, apply additional coats of the finish coating system to achieve 60 mils DFT at the coating removal area and feather the coating onto the roughened coated surfaces to form a neat repair outline
P. Coating System Identification: EA-2	
1. Coating Material:	Blended Amine Cured Epoxy
2. Surface:	Concrete or masonry
3. Service Condition:	Immersed, nonpotable; non-immersed, corrosive environment, color not required, new construction especially for headspace environments that are corrosive due to biogenic sulfide corrosion.
4. Surface Preparation:	*Confirm that the exterior of buried concrete structures will be waterproofed in accordance with Section 07 10 00 prior to application of this coating.* All coating termination and transition details shall be prepared in accordance with the CSM's standard detail drawings. This includes coating termination details, coating transitions at vertical and vertical to horizontal corners, coating terminations at joints, concrete crack treatment, pipe penetration treatment, coating terminations at metal embedments in the concrete substrate, and other details. The CSM's standard detail drawings shall be submitted for all such coating applications. If standard details are not available for a given detail treatment, the CSM shall be required to produce one at no additional cost to the owner, the engineer, or any other party.
	If wet abrasive or water blasting surface preparation methods were used, the concrete substrate shall be allowed to dry under warm conditions (minimum of 75 degrees F) for at least 5 days prior to coating application. Following surface preparation work and dry-out, all surfaces to be coated shall be vacuum cleaned to remove all loose dirt, dust, or other loose materials.
a. Concrete:	Concrete surfaces shall be allowed to cure for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface

	hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Surface Preparation must open up all shelled over air voids or bugholes to expose fully the void's depth, width, and length. Concrete shall be abraded to achieve a uniform concrete surface profile of CSP-5 in accordance with ICRI 03732. After surface preparation has been accepted, a complete skim coat of the specified filler surfacer shall be applied over all concrete surfaces and all bugholes (air voids) shall be completely filled using this same material. The filler/surfacer material shall be applied as a complete parge coat of the substrate. If the parge coat (filler/surfacer material) is non-polymer modified, it must be brush blast cleaned following adequate cure per CSM's instructions to produce a uniform anchor pattern of CSP-4 in accordance with ICRI 03732 prior to coating application.
b. Masonry:	Masonry surfaces shall be allowed to cure for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed and allowed to cure for 28 days or shall be filled with a repair material compatible with the coating system that does not require hydration cure time. Loose or splattered mortar shall be removed by scrapping and chipping.
	Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances.
	Muriatic acid shall not be used. After cleaning, masonry surfaces shall be skim coated with a surfacer or block filler compatible with the specified coating system.
5. Application:	Field
a. General:	Surfacer or filler shall be applied per CSM's recommendations prior to application of coating to fill all bugholes and voids and create a complete parge coat of the prepared substrate. This parge coat shall completely fill all bugholes and voids in the substrate, and will also completely cover the substrate unless specified otherwise above such filled voids by 1/8 inch (125 mils) of thickness.
	Drying time between coats shall be as specified by the CSM for the site conditions. If the maximum recoat time is exceeded, surface preparation shall require solvent washing, light abrasive blasting, or other procedures per CSM's instructions.
6. System Thickness:	60 mils dry film in addition to the parge coat.
7. Coatings:	
a. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
b. Testing:	Holiday detection shall be performed over 100% of the coated surface area to identify any holidays or pinholes, which could compromise coating system performance. Holiday testing to be performed after application and adequate cure of the spray applied epoxy coating material. Holiday detection shall be performed in accordance with NACE RP0188.
c. Pinhole and Holiday Repair Procedure:	Pinholes and holidays identified by Holiday Detection shall be repaired as follows:
	• Using a grinder or other suitable power tool, remove the coating system at all pinholes or holidays in an area at least 2 inches in diameter or in both dimensions around the defect back to the concrete substrate.
	• Chip out and remove the concrete to expose the full dimensions in all three directions of the air void responsible for the defect.
	• Aggressively abrade or sand the intact coating system surface at least 3 inches beyond the removal area in all directions to produce a uniform 6- to 8-mil profile in the intact coating system.
	• Vacuum clean the prepared area to remove all dust, dirt, etc. leaving clean sound surfaces.
	• Tape to mask the periphery of the prepared intact coating area to prevent coating repair application onto the prepared area.
	• Using a putty knife or other suitable tool, fill the opened void with the approved filler/surfacer material completely and strike-off. Allow to cure per CSM's recommendations.
	• Apply the coating system in the number of coats necessary to achieve the specified 60 mils DFT over the defect and coating removal area and feather

	the coating onto the abraded coated surfaces around the removal area to avoid a lip and to achieve a neat repair outline. Allow to cure properly.
Q. Coating System Identification: EA-3	
1. Coating Material:	Blended Amine Cured Epoxy
2. Surface:	Concrete or masonry
3. Service Condition:	Immersed, nonpotable; non-immersed, corrosive environment, color not required, new or existing construction, especially for headspace environments that are corrosive due to biogenic sulfide corrosion.
4. Surface Preparation:	All coating termination and transition details shall be prepared in accordance with the CSM's standard detail drawings. This includes coating termination details, coating transitions at vertical and vertical to horizontal corners, coating terminations at joints, concrete crack treatment, pipe penetration treatment, coating terminations at metal embedments in the concrete substrate, and other details. The CSM's standard detail drawings shall be submitted for all such coating applications. If standard details are not available for a given detail treatment, the CSM shall be required to produce one at no additional cost to the owner, the engineer, or any other party.
	If wet abrasive or water blasting surface preparation methods were used, the concrete substrate shall be allowed to dry under warm conditions (minimum of 75 degrees F) for at least 5 days prior to coating application. Following surface preparation work and dry-out, all surfaces to be coated shall be vacuum cleaned to remove all loose dirt, dust, or other loose materials.
a. Concrete:	Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Concrete shall be abraded also to achieve a uniform concrete surface profile of CSP 5 minimum. If the parge coat (filler/surfacer material) is non-polymer modified, it shall be brush blasted following adequate cure per the CSM's instructions to produce a uniform concrete surface profile of CSP-4 in accordance with ICRI 03732 prior to coating application. After cleaning, air voids or bugholes in the concrete shall be filled with a surfacer or block filler. The filler/surfacer material shall be applied as a complete parge coat of the substrate.
	For existing concrete that has been degraded, apply a skim coat of a surfacer or filler material to restore the substrate to a coatable condition. Be certain the filler surfacer material is compatible with the coating system.
b. Masonry:	Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scrapping and chipping.
	Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances.
	Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with sealer or block filler compatible with the specified coating system.
5. Application:	Field
a. General:	Surfacer or filler shall be applied and dry per CSM's recommendations prior to application of coating.
	Drying time between filler/surfacer and coating system shall be as specified by the CSM for the site conditions. If the maximum recoat time is exceeded, surface preparation shall require solvent washing, light abrasive blasting, or other procedures per CSM's instructions. The parge coat shall completely fill all bugholes and voids in the substrate and it will also completely cover the substrate unless specified otherwise above such filled voids by 1/8 inch of thickness.
6. System Thickness:	125 mils dry film (or 1/8 inch) in addition to the parge coat.
7. Coatings:	

a. Primer:	Self-priming.
b. Finish:	One coat at CSM's recommended dry film thickness – trowel applied.
c. Testing:	Holiday detection shall be performed over 100% of the coated surface area to identify any holidays or pinholes that could compromise coating system performance. Holiday detection shall be performed after adequate cure of the spray applied epoxy coating material. Holiday detection shall be performed in accordance with NACE RP0188.
d. Pinhole and Holiday Repair Procedure:	Pinholes and holidays identified by Holiday Detection shall be repaired as follows:
	• Using a grinder or other suitable power tool, remove the coating system at all pinholes or holidays in an area at least 2 inches in diameter or in both dimensions around the defect back to the concrete substrate.
	• Chip out and remove the concrete to expose the full dimensions in all three directions of the air void responsible for the defect.
	• Aggressively abrade or sand the intact coating system surface at least 3-inches beyond the removal area in all directions to produce a uniform 6- to 8-mil profile in the intact coating system.
	• Vacuum clean the prepared area to remove all dust, dirt, etc. leaving clean sound surfaces.
	• Tape to mask the periphery of the prepared intact coating area to prevent coating repair application onto the prepared area.
	• Using a putty knife or other suitable tool, fill the opened void with the approved filler/surfacer material completely and strike-off. Allow to cure per CSM's recommendations.
	• Apply the coating system in the number of coats necessary to achieve the specified 60 mils DFT over the defect and coating removal area and feather the coating onto the abraded coated surfaces around the removal area to avoid a lip and to achieve a neat repair outline. Allow to cure properly.
R. Coating System Identification: EA-4	
1. Coating Material:	Blended Amine Cured Epoxy
2. Surface:	Concrete or masonry
3. Service Condition:	Immersed, nonpotable; non-immersed, very corrosive environment, color not required, new or existing construction, especially for headspace environments that are very corrosive due to biogenic sulfide corrosion.
4. Surface Preparation:	All coating termination and transition details shall be prepared in accordance with the CSM's standard detail drawings. This includes coating termination details, coating transitions at vertical and vertical to horizontal corners, coating terminations at joints, concrete crack treatment, pipe penetration treatment, coating terminations at metal embedments in the concrete substrate, and other details. The CSM's standard detail drawings shall be submitted for all such coating applications. If standard details are not available for a given detail treatment, the CSM shall be required to produce one at no additional cost to the owner, the engineer, or any other party.
	If wet abrasive or water blasting surface preparation methods were used, the concrete substrate shall be allowed to dry under warm conditions (minimum of 75 degrees F) for at least 5 days prior to coating application. Following surface preparation work and dry-out, all surfaces to be coated shall be vacuum cleaned to remove all loose dirt, dust, or other loose materials.
a. Concrete:	Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Concrete shall be abraded also to achieve a uniform concrete surface profile of CSP 5 minimum. If the parge coat (filler/surfacer material) is non-polymer modified, it shall be brush blasted following adequate cure per the CSM's instructions to produce a uniform concrete surface profile of CSP-4 in accordance

	with ICRI 03732 prior to coating application. After cleaning, air voids or bugholes in the concrete shall be filled with a surfacer or block filler. The filler/surfacer material shall be applied as a complete parge coat of the substrate.
	For existing concrete that has been degraded, apply a skim coat of a surfacer or filler material to restore the substrate to a coatable condition. Be certain the filler surfacer material is compatible with the coating system.
b. Masonry:	Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scrapping and chipping.
	Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances.
	Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with sealer or block filler compatible with the specified coating system.
5. Application:	Field
a. General:	Surfacer or filler shall be applied and dry per CSM's recommendations prior to application of coating.
	Drying time between filler/surfacer and coating system shall be as specified by the CSM for the site conditions. If the maximum recoat time is exceeded, surface preparation shall require solvent washing, light abrasive blasting, or other procedures per CSM's instructions. The parge coat shall completely fill all bugholes and voids in the substrate and it will also completely cover the substrate unless specified otherwise above such filled voids by 1/8 inch of thickness.
6. System Thickness:	140 to 145 mils dry film in addition to the parge coat.
7. Coatings:	
a. Primer:	Self-priming.
b. Troweled Coat:	One coat at CSM's recommended dry film thickness – trowel applied. (125 mils)
c. Finish (Glaze Coat):	15 to 20 mils dry.
d. Testing:	Holiday detection shall be performed over 100% of the coated surface area to identify any holidays or pinholes that could compromise coating system performance. Holiday detection shall be performed after application and adequate cure of the spray applied epoxy coating material. Holiday detection shall be performed in accordance with NACE RP0188.
e. Pinhole and Holiday Repair Procedure:	Pinholes and holidays identified by Holiday Detection shall be repaired as follows:
	• Using a grinder or other suitable power tool, remove the coating system at all pinholes or holidays in an area at least 2 inches in diameter or in both dimensions around the defect back to the concrete substrate
	• Chip out and remove the concrete to expose the full dimensions in all three directions of the air void responsible for the defect.
	• Aggressively abrade or sand the intact coating system surface at least 3-inches beyond the removal area in all directions to produce a uniform 6- to 8-mil profile in the intact coating system.
	• Vacuum clean the prepared area to remove all dust, dirt, etc. leaving clean sound surfaces.
	• Tape to mask the periphery of the prepared intact coating area to prevent coating repair application onto the prepared area.
	• Using a putty knife or other suitable tool, fill the opened void with the approved filler/surfacer material completely and strike-off. Allow to cure per CSM's recommendations
	• Apply the coating system in the number of coats necessary to achieve the specified 60 mils DFT over the defect and coating removal area and feather the coating onto the abraded coated surfaces around the removal area to avoid a lip and to achieve a neat repair outline. Allow to cure properly.
S. Coating System Identification: EA-5	
1. Coating Material:	Novolac Epoxy Lining
2. Surface:	Concrete or masonry

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3. Service Condition:	Chemical area process slabs, chemical loading and unloading areas, secondary spill containment areas for ferric chloride or 25% hydrofluoro-silicic acid.
4. Surface Preparation:	All coating termination and transition details shall be prepared in accordance with the CSM's standard detail drawings. This includes coating termination details, coating transitions at vertical and vertical to horizontal corners, coating terminations at joints, concrete crack treatment, pipe penetration treatment, coating terminations at metal embedments in the concrete substrate, and other details. The CSM's standard detail drawings shall be submitted for all such coating applications. If standard details are not available for a given detail treatment, the CSM shall be required to produce one at no additional cost to the owner, the engineer, or any other party.
	If wet abrasive or water blasting surface preparation methods were used, the concrete substrate shall be allowed to dry under warm conditions (minimum of 75 degrees F) for at least 5 days prior to coating application. Following surface preparation work and dry-out, all surfaces to be coated shall be vacuum cleaned to remove all loose dirt, dust, or other loose materials.
a. Concrete:	Concrete surfaces shall be allowed to cure for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Surface Preparation must open up all shelled over air voids or bugholes to expose fully the void's depth, width, and length. Concrete shall be abraded to achieve a uniform concrete surface profile of CSP-5 in accordance with ICRI 03732. After surface preparation has been accepted, a complete skim coat of the specified filler surfacer shall be applied over all concrete surfaces and all bugholes (air voids) shall be completely filled using this same material. The filler/surfacer material shall be applied as a complete parge coat of the substrate. If the parge coat (filler/surfacer material) is non-polymer modified, it must be brush blast cleaned following adequate cure per CSM's instructions to produce a uniform anchor pattern of CSP-4 in accordance with ICRI 03732 prior to coating application.
5. Application:	Field
a. General:	Prime coat shall be applied as recommended by the CSM.
	Surfacers or filler materials shall be trowel applied per CSM's recommendations. Work surfacer/filler into all voids to displace air and fill bugholes.
	Surfacer/filler and prime coat thicknesses are in addition to the system thickness specified below.
6. System Thickness:	

Location	System Thickness (mils dry film)
[FECL Receiving Station	
Slab	110-145 (with silica sand)
Sump walls and floor	40
Storage Tank Secondary Containment	
Floor and other horizontal surfaces	60-75
Vertical Surfaces	40
Metering Pump Secondary Containment	
Floor and other horizontal surfaces	60-75 (with silica sand)
Vertical Surfaces	40]

7. Coatings:	
a. Primer:	As recommended by the CSM.
b. Surfacer/Filler:	1/16-inch minimum thickness above plane of concrete to create a monolithic and

	pinhole free surface.
	Surfacer or filler shall be applied per CSM's recommendations prior to application of coating system to fill all bugholes and voids and create a coatable surface by being applied as a complete 1/8 inch thick parge coat. This is for containment walls, curbs and bases and not for floor surfaces.
c. Base Coat Floor Surfaces:	For floor surfaces, the base coat shall be applied at thickness recommended by CSM and broadcast with aggregate to create a non-slip surface (texture to be as recommended by the CSM). Following application of the broadcast aggregate and removal of all excess aggregates, the base coat will be applied to encapsulate the non-slip aggregate embedded.
d. Base Coat and Saturation Coat:	For trench or sump surfaces and unloading areas, the base coat shall be applied to the thickness recommended by the CSM and then scrim cloth shall be embedded in it. Next, the same material will be applied as a saturation coat to encapsulate fully the scrim cloth. This shall be applied to the thickness recommended by the CSM.
e. Base Coat for Containment Wall and Base Surfaces:	For containment wall, curb, and equipment base surfaces shall be applied to the thickness recommended by the CSM.
f. Base Coat General:	The basecoat will be an aggregate filled coating as will the saturation coat. Both shall be applied in strict accordance with the CSM's recommendations. The aggregate used in these coating systems for hydrofluorosilica aggregates resistant to the HFS or fully encapsulated with resin to prevent attack of the silica aggregate.
g. Finish:	The finish coat or coats shall be applied to the thickness recommended by the CSM.
	All coating system thicknesses are in addition to the parge coat.
h. Testing:	Holiday detection shall be performed over 100% of the coated surface area to identify any holidays or pinholes that must be repaired. Holiday detection to be performed after proper application and cure of the coating system. Holiday detection to be performed in accordance with NACE RP0188.
i. Pinhole and Holiday Repair Procedure:	Pinholes or holidays identified by Holiday Detection shall be repaired as follows:
	• Using a grinder or other suitable power tool, remove the coating system at all pinholes or holidays in an area at least 2 inches in diameter or in both dimensions around the defect back to the concrete substrate.
	• Chip out and remove the concrete to expose the full dimensions in all three directions of the air void responsible for the defect.
	• Aggressively abrade or sand the intact coating system surface at least 3 inches beyond the removal area in all directions to produce a uniform 6- to 8-mil profile in the intact coating system.
	• Vacuum clean the prepared area to remove all dust, dirt, etc. leaving clean sound surfaces.
	• Tape to mask the periphery of the prepared intact coating area to prevent coating repair application onto the prepared area.
	• Using a putty knife or other suitable tool, fill the opened void with the approved filler/surfacer material completely and strike-off. Allow to cure per CSM's recommendations.
	• Apply the coating system in the number of coats necessary to achieve the specified finish coat thickness over the defect and coating removal area and feather the coating onto the abraded coated surfaces around the removal area to avoid a lip and to achieve a neat repair outline. Allow to cure properly.
	• Curing time between coats shall be as specified by the CSM for the site conditions. If the maximum recoat time is exceeded, surface preparation shall require solvent washing, light abrasive blasting, or other procedures per CSM's instructions.
T. Coating System Identification: EC-1	
1. Coating Material:	Hybrid Polyurethane
2. Surface:	Concrete or dense masonry where existing crack or joint movement is suspected of propagating through rigid cured epoxy coatings.
3. Service Condition:	Interior or exterior, exposed to direct sunlight or not, corrosive (immersion pH 4.0 or

	lower and/or headspace pH 4.0 or lower and/or gaseous H_2S concentrations between 10 and 150 ppm typically).
4. Surface Preparation:	
	Confirm that the exterior of buried concrete structures will be waterproofed in accordance with Section 07 10 00 prior to application of this coating. If a coating is used for exterior waterproofing, use System E-10.
	All coating termination and transition details shall be prepared in accordance with the CSM's standard detail drawings. This includes coating termination details, coating transitions at vertical and vertical to horizontal corners, coating terminations at joints, concrete crack treatment, pipe penetration treatment, coating terminations at metal embedments in the concrete substrate, and other details. The CSM's standard detail drawings shall be submitted for all such coating applications. If standard details are not available for a given detail treatment, the CSM shall be required to produce one at no additional cost to the owner, the engineer, or any other party.
	If wet abrasive or water blasting surface preparation methods were used, the concrete substrate shall be allowed to dry under warm conditions (minimum of 75 degrees F) for at least 5 days prior to coating application. Following surface preparation work and dry-out, all surfaces to be coated shall be vacuum cleaned to remove all loose dirt, dust, or other loose materials.
a. Concrete:	Concrete surfaces shall be allowed to cure for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Surface Preparation must open up all shelled over air voids or bugholes to expose fully the void's depth, width, and length. Concrete shall be abraded to achieve a uniform concrete surface profile of CSP-5 in accordance with ICRI 03732. After surface preparation has been accepted, a complete skim coat of the specified filler surfacer shall be applied over all concrete surfaces and all bugholes (air voids) shall be completely filled using this same material. The filler/surfacer material shall be applied as a complete parge coat of the substrate. If the parge coat (filler/surfacer material) is non-polymer modified, it must be brush blast cleaned following adequate cure per CSM's instructions to produce a uniform anchor pattern of CSP-4 in accordance with ICRI 03732 prior to coating application.
5. Application:	Field
a. General:	Surfacers or filler materials shall be applied per CSM's recommendations prior to application of prime coat to fill bugholes and voids. These materials must be compatible with the primers and finish coats.
	Prime coat shall be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
6. System Thickness:	35-50 mils dry film in addition to the parge coat.
7. Coatings:	
a. Primer:	One coat at 2-3 mils dry film thickness
b. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
c. Testing:	Holiday detection shall be performed over 100% of the coated surface area to identify any holidays or pinholes that must be repaired.
d. Pinhole and Holiday Repair Procedure:	Pinholes or holidays identified by Holiday Detection shall be repaired as follows:
	• Using a grinder or other suitable power tool, remove the coating system at all pinholes or holidays in an area at least 2 inches in diameter or in both dimensions around the defect back to the concrete substrate.
	• Chip out and remove the concrete to expose the full dimensions in all three directions of the air void responsible for the defect.
	• Aggressively abrade or sand the intact coating system surface at least 3-inches beyond the removal area in all directions to produce a uniform 6- to 8-mil

	profile in the intact coating system.
	• Vacuum clean the prepared area to remove all dust, dirt, etc. leaving clean sound surfaces
	• Tape to mask the periphery of the prepared intact coating area to prevent coating repair application onto the prepared area
	• Using a putty knife or other suitable tool, fill the opened void with the approved filler/surfacer material completely and strike-off. Allow to cure per CSM's recommendations
	• Apply the coating system in the number of coats necessary to achieve the specified 35-50 mils DFT over the defect and coating removal area and feather the coating onto the abraded coated surfaces around the removal area to avoid a lip and to achieve a neat repair outline. Allow to cure properly.
U. Coating System Identification: EC-2 (NSF-61)	
1. Coating Material:	Modified Polyurethane
2. Surface:	Concrete or Dense Masonry where existing crack or joint movement is suspected due to thermal conditions and would propagate through rigid epoxy coating systems and/or where NSF-61 certification is required.
3. Service Condition:	Interior or exterior, submerged or non-submerged indirect sunlight – moderately corrosive.
4. Surface Preparation:	All coating termination and transition details shall be prepared in accordance with the CSM's standard detail drawings. This includes coating termination details, coating transitions at vertical and vertical to horizontal corners, coating terminations at joints, concrete crack treatment, pipe penetration treatment, coating terminations at metal embedments in the concrete substrate, and other details. The CSM's standard detail drawings shall be submitted for all such coating applications. If standard details are not available for a given detail treatment, the CSM shall be required to produce one at no additional cost to the owner, the engineer, or any other party.
	If wet abrasive or water blasting surface preparation methods were used, the concrete substrate shall be allowed to dry under warm conditions (minimum of 75 degrees F) for at least 5 days prior to coating application. Following surface preparation work and dry-out, all surfaces to be coated shall be vacuum cleaned to remove all loose dirt, dust, or other loose materials.
a. Concrete:	Concrete surfaces shall be allowed to cure for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in Section 03 30 00. Surface Preparation must open up all shelled over air voids or bugholes to expose fully the void's depth, width, and length. Concrete shall be abraded to achieve a uniform concrete surface profile of CSP-5 in accordance with ICRI 03732. After surface preparation has been accepted, a complete skim coat of the specified filler surfacer shall be applied over all concrete surfaces and all bugholes (air voids) shall be completely filled using this same material. The filler/surfacer material shall be applied as a complete parge coat of the substrate. If the parge coat (filler/surfacer material) is non-polymer modified, it must be brush blast cleaned following adequate cure per CSM's instructions to produce a uniform anchor pattern of CSP-4 in accordance with ICRI 03732 prior to coating application.
5. Application:	Field
a. General:	Surfacer or filler shall be applied per CSM's recommendations prior to application of prime coat to fill bugholes and voids. These materials must be compatible with the primers and finish coats.
	Prime coat shall be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
6. System Thickness:	50-75 mils dry film.
7. Coatings:	

a. Primer:	One coat at 3-5 mils dry film thickness
b. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
c. Testing:	Holiday detection shall be performed over 100% of the coated surface area to identify any holidays or pinholes that must be repaired.
d. Pinhole and Holiday Repair Procedure:	Pinholes or holidays identified by Holiday Detection shall be repaired as follows:
	• Using a grinder or other suitable power tool, remove the coating system at all pinholes or holidays in an area at least 2 inches in diameter or in both dimensions around the defect back to the concrete substrate.
	• Chip out and remove the concrete to expose the full dimensions in all three directions of the air void responsible for the defect.
	• Aggressively abrade or sand the intact coating system surface at least 3-inches beyond the removal area in all directions to produce a uniform 6- to 8-mil profile in the intact coating system.
	• Vacuum clean the prepared area to remove all dust, dirt, etc. leaving clean sound surfaces.
	• Tape to mask the periphery of the prepared intact coating area to prevent coating repair application onto the prepared area.
	• Using a putty knife or other suitable tool, fill the opened void with the approved filler/surfacer material completely and strike-off. Allow to cure per CSM's recommendations.
	• Apply the coating system in the number of coats necessary to achieve the specified 35-50 mils DFT over the defect and coating removal area and feather the coating onto the abraded coated surfaces around the removal area to avoid a lip and to achieve a neat repair outline. Allow to cure properly.
V. Coating System Identification: EU-1	
1. Coating Material:	Zinc-Epoxy-Polyurethane System
2. Surface:	Ferrous Metal
3. Service Condition:	Exterior, exposed to direct sunlight, moderately corrosive, non-immersed.
4. Surface Preparation:	
a. General:	Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning). Damaged shop coated areas shall be cleaned in accordance with SSPC SP-3 (Power Tool Cleaning) and recoated with the primer specified.
b. Ferrous Metal:	Bare ferrous metal surfaces shall be prepared in accordance with SSPC SP-6 (Commercial Blast Cleaning) 2.5 – 3.0. Ductile iron surfaces to be coated shall be abrasive blast cleaned in accordance with paragraph 3.02 Metallic Surfaces.
	Ferrous metal with rust bleeding shall be cleaned in accordance with SSPC-SP-11 (Power Tool Cleaning to Bare Metal). Areas of rust penetration shall be spot blasted to SSPC SP-10 (Near White Blast) and spot primed with the specified primer.
c. Galvanized Metal:	Damaged galvanized steel areas with exposed ferrous metal and/or rusted shall be cleaned in accordance with SSPC SP-5 (White Metal Blast Cleaning) or Power Tool Cleaned to Bare Metal in accordance with SSPC-SP-11 to achieve a uniform 1.0- to 1.5-mil profile and spot primed with the primer specified.
	Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-7 (Brush-off Blast Cleaning) to impart a 1.0- to 2.0-mil profile to the galvanized steel surfaces. Where this cannot be performed, prepare by abrading in accordance with SSPC-SP-3, Power Tool Cleaning to impart a 1.0- to 1.5-mil profile uniformly to the galvanized steel surfaces.
	For EU-1 over galvanized steel, delete the zinc rich primer.
5. Application:	Field
a. General:	Prime coat may be thinned and applied as recommended by the CSM, provided the coating as applied complies with prevailing air pollution control regulations.
b. Ferrous Metal:	Prime coats shall be a zinc rich epoxy or polyurethane primer compatible for use with urethane finish coats and applied in accordance with written instructions of the

	CSM or in the case of CARB or SCAQMD applications, prime with specified primer that is not zinc rich. In these cases, only a two-coat system is applied.
6. System Thickness:	3 to 4 mils of zinc rich primer, one intermediate or primer epoxy coat at 5 to 6 mils and one finish coat of polyurethane at 2 to 3 mils DFT.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Intermediate:	One coat at CSM's recommended dry film thickness.
c. Finish:	One coat at CSM's recommended dry film thickness per coat to meet the specified system thickness.
W. Coating System Identification: EU-1-FRP	
1. Coating Material:	Specialty Primer plus Polyurethane Finish Coat
2. Surface:	Exterior of FRP Pipe and Tanks, etc.
3. Service Condition:	Exterior, exposed to direct sunlight, non-immersed.
4. Surface Preparation:	
a. General:	Clean to remove loose dirt, dust, or other contaminants.
	Prepare surfaces by sanding to produce roughness to achieve a uniform, minimum surface profile of 1.5 to 2.0 mils.
	Solvent clean thoroughly using solvent as recommended by the CSM.
	Thoroughly clean to remove loose debris by vacuum cleaning.
5. Application:	Field
a. General:	Apply primer coat and thin as recommended by the CSM provided the coating applied complies with prevailing air pollution control regulations.
	Apply finish coat as recommended by the CSM.
6. System Thickness:	Primer to 2 to 4 mils and finish coat is 2 to 3 mils DFT.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	One coat at CSM's recommended dry film thickness per coat to meet the specified system thickness.
X. Coating System Identification: G	
1. Coating Material:	Grease
2. Surface:	Metal
3. Surface Preparation:	
a. Ferrous Metal:	Ferrous metal surfaces shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning).
4. Application:	Field
	Coating shall be applied with stiff brush, hand swab, or airless spray gun.
5. System Thickness:	50 square feet per gallon
6. Coating:	One coat of grease coating.
Y. Coating System Identification: HH-1	
1. Coating Material:	Proprietary Primer plus Silicone Topcoat
2. Surface:	Metal
3. Service Condition:	Temperature to 750 degrees F.
4. Surface Preparation:	Metal surfaces shall be prepared in accordance with SSPC SP-10 (Near White Metal Blast Cleaning) to achieve a uniform surface profile of 2.0 to 2.5 mils.
5. Application:	Field
	Curing as required by CSM.
6. System Thickness:	6.5 to 8.0 mils dry film

7. Coating:	Primer at 5 to 6 mils DFT plus one topcoat at 1.5 to 2.0 mils DFT.
Z. Coating System Identification: HH-2	
1. Coating Material:	Proprietary Primer plus Silicone Topcoat (available in black or aluminum only)
2. Surface:	Metal
3. Service Condition:	Temperature to 1200 degrees F.
4. Surface Preparation:	Metal surfaces shall be prepared in accordance with SSPC SP-10 (Near White Metal Blast Cleaning) to achieve a uniform surface profile of 2.0 to 2.5 mils.
5. Application:	Field
	Curing as required by CSM.
6. System Thickness:	6.5 to 8.0 mils dry film
7. Coating:	Primer at 5 to 6 mils DFT plus one topcoat at 1.5 to 2.0 mils DFT.
AA. Coating System Identification: L-1	
1. Coating Material:	Latex
2. Surfaces:	Concrete, masonry, plaster, gypsum board.
3. Service Condition:	Interior and exterior including existing exterior coated concrete.
4. Surface Preparation:	
a. Concrete:	Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Loose concrete and laitance shall be removed from surfaces, and voids and cracks shall be repaired as specified in Section 03 30 00.
b. Existing Coated Concrete:	Remove all loose coating down to a sound substrate or intact, well-adhered existing coating by scraping or other means. Then, abrade all surfaces to achieve a 0.5- to 1.5-mil uniform profile and vacuum clean to remove all loose dirt, paint chips, and dirt.
c. Masonry:	Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scraping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances. Muriatic acid shall not be used. After cleaning, masonry surfaces shall be filled with block filler compatible with the specified primer.
d. Plaster:	Plaster surfaces shall be dry, clean, and free from grit, loose plaster, and surface irregularities. Cracks and holes shall be repaired with acceptable patching materials, keyed to existing surfaces, and sandpapered smooth. Surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances. After cleaning, surfaces shall be sealed with a compatible sealer.
e. Gypsum Wallboard:	Tape joints and spackled nail heads shall be sanded smooth and dusted. Seal with PVA sealer for interior uses only.
5. Application:	Field
a. General:	Sealer or filler shall dry a minimum of 48 hours prior to primer application.
	Drying time between coats shall be as recommended by CSM.
6. System Thickness:	4 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
BB. Coating System Identification: L-2	
1. Coating Material:	Latex
2. Surface:	PVC and CPVC pipe.
3. Service Condition:	Exterior, direct sunlight exposure.

4. Surface Preparation:	Plastic pipe shall be cleaned with solvent compatible with the specified primer and sanded to roughen surfaces to achieve a uniform surface profile of 1.0 to 1.5 mils. Vacuum clean after sanding to remove all loose dust, plastic particles, and dirt.
5. Application:	Field
6. System Thickness:	3 mils dry film.
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	One or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
CC. Coating System Identification: L-3	
1. Coating Material:	Latex – Direct to Metal
2. Surface:	Ferrous Metal
3. Service Condition:	Interior or Exterior
4. Surface Preparation:	
a. Ferrous Metals:	Bare ferrous metal surfaces shall be prepared in accordance with SSPC SP-6 (Commercial Blast Cleaning) unless specified otherwise. Impart a 1.5- to 2.0-mil profile to substrate.
	Ferrous metal with rust bleeding shall be cleaned in accordance with SSPC SP-1 (Solvent Cleaning). Areas of rust penetration shall be spot blasted to SSPC SP-10 (Near White Blast) and spot primed with the specified primer.
	Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning) or SSPC-SP-3 (Power Tool Cleaning).
b. Nonferrous and Galvanized Metal:	Galvanized or nonferrous surfaces shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning) after Brush Blast Cleaning in accordance with SSPC-SP-7.
5. Application:	Field
6. System Thickness:	6 to 8 mils dry film excluding sealer
7. Coatings:	
a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
DD. Coating System Identification: L-4	
1. Coating Material:	Latex
2. Surface:	Wood
3. Service Condition:	Interior
4. Surface Preparation:	Wood surfaces shall be cleaned of dirt, oil or other foreign substances with mineral spirits, scrapers, sandpaper or wire brush. Finished surfaces exposed to view shall be smoothed by planing or sandpapering. Millwork shall be sandpapered and given a coat of the specified primer on all sides before installation. Built-in surfaces of windowsills shall be double primed. Glazing rabbets and beads in exterior sash and doors shall be double primed. Small, dry, seasoned knots shall be surfaced scraped, sandpapered, and thoroughly cleaned and shall be given a thin coat of an acceptable knot sealer before application of the priming coat. Large, open, unseasoned knots, and beads or streaks of pitch shall be scraped off; however, if the pitch is still soft, it shall be removed with mineral spirits or turpentine, and the resinous area shall be coated with knot sealer prior to priming. After priming, holes and imperfections shall be filled with putty or plastic wood, colored to match the finish coat, allowed to dry and sandpapered smooth.
5. Application:	Field
6. System Thickness:	4.0 mils dry film.
7. Coatings:	

a. Primer:	One coat at CSM's recommended dry film thickness.
b. Finish:	Two or more coats at CSM's recommended dry film thickness per coat to the specified system thickness.
EE. Coating System Identification: M-1	
1. Coating Material:	Petrolatum based mastic or wax based wrapping tapes.
2. Surfaces:	Metal
3. Service Condition:	Below grade (buried) or where little to no surface preparation can be performed on piping or structural steel.
4. Surface Preparation:	Remove loose scale, rust, dirt, excessive moisture, or frost from the surface in accordance with SSPC SP-2 (Hand Tool Cleaning).
5. Application:	All surfaces shall be hand rubbed or brushed with a priming paste recommended by the CSM. Sharp projections such as threads, irregular contours, or badly pitted areas shall receive a liberal amount of priming paste to ensure maximum protection of metal throughout.
	On irregular shaped surfaces, i.e., nuts, bolts, flanges, valves, etc., the Contractor shall use either of the following systems recommended by the CSM.
	A. Apply recommended mastic by hand in sufficient quantity to build an even contour over entire surface. The Contractor shall pay particular attention to ensure that folds and air pockets within the mastic layer are thoroughly pressed out prior to subsequent application of tape.
	OR:
	B. An extra layer of tape shall be cut and carefully molded around sharp projections, nuts, bolts, etc., before final application of tape, in order to meet specified system thickness.
	Tape shall be spirally wrapped with a 55 percent overlap and sufficient tension and pressure to provide continuous adhesion without stretching the tape. Edges of tape must be continuously smoothed and sealed by hand during wrapping. On vertical application, contractor shall begin at bottom and proceed upward creating a weatherboard overlap.
6. System Thickness:	Smooth contours shall have a minimum thickness of 50 mils while nuts, bolts, and sharp projections shall be 100 mils.
7. Tape:	Number and types of tape wraps shall be in accordance with the CSM's written instructions.
FF. Coating System Identification: M-2	
1. Coating Material:	Epoxy mastic or equal
2. Surface:	Ferrous Metal
3. Service Condition:	Interior, corrosive environment, confined enclosures, where minimal surface preparation is possible.
4. Surface Preparation:	
a. Ferrous Metal:	All uncoated ferrous metal surfaces shall be prepared in accordance with SSPC SP-3 (Power Tool Cleaning), or SSPC-SP-11 (Power to Cleaning to Bare Metal) prior to assembly. Surface preparation to achieve a uniform surface profile of 2.0 to 2.5 mils. Shop primed ferrous metal surfaces and fabricated assemblies shall be clean and dry prior to the application of field coats. Following assembly, the Contractor shall smooth welds and prominences using power tools prior to the application of the field applied coatings.
5. Application:	Field
a. General:	Prior to the application of field applied coatings, welds, back-to-back angles, sharp or rough edges and weld splatter shall be brushed with the specified prime coat and allowed to cure overnight.
6. System Thickness:	15 mils dry film.
7. Coatings:	

a. Prime:	One coat of the CSM's recommended dry film thickness.
b. Finish:	One or more coats of CSM's recommended dry film thickness per coat to the specified system thickness.
GG. Coating System Identification: S-1	
1. Coating Material:	Penetrating acrylic stain, color required.
2. Surface:	Concrete
3. Service Condition:	Non-immersed, exposure to moisture and sunlight.
4. Surface Preparation:	Brush-off blast or industry standard acid etch or other preparation as approved by the CSM.
5. Application:	
a. General:	Drying time between coats shall be as specified by the CSM for the site conditions.
b. Coatings:	Minimum of two coats overall (coat as many times as required to achieve desired color).
6. System Thickness:	200 square feet per gallon maximum or as recommended by the CSM.
7. Color Selection:	As approved by the Construction Manager consistent with neighborhood selection. The Contractor to price materials based on custom color.
HH. Coating System Identification: S-2	
1. Coating Material:	Penetrating Water Repellent (Clear and Non-Film Building)
2. Surface:	Concrete Floors
3. Service Condition:	Exterior and Interior.
4. Surface Preparation:	Clean surfaces of all traces of dirt, dust, efflorescence, mold, salt, grease, oil, asphalt, laitance, curing compounds, paint, coatings, and other foreign materials by brush-off blast, water blasting, and/or chemical cleaners or other preparation as approved by the CSM.
a. Concrete	Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Loose concrete and laitance shall be removed from surfaces, and voids and cracks shall be repaired as specified in Section 03 30 00.
5. Application:	
a. General:	Drying time before placing into service shall be as recommended by the CSM for site conditions.
6. System Coverage:	Follow CSM's recommendations.
7. Color Selection:	Clear.
II. Coating System Identification: S-3	
1. Coating Material:	Penetrating Water Repellent (Clear & Non-Film Building)
2. Surface:	Concrete and Masonry Walls
3. Service Condition:	Exterior and Interior – For Anti-Graffiti Applications
4. Surface Preparation:	Clean surfaces of all traces of dirt, dust, efflorescence, mold, salt, grease, oil, asphalt, laitance, curing compounds, paint, coatings, and other foreign materials by brush-off blast, water blasting, and/or chemical cleaners or other preparation as approved by the CSM.
a. Concrete	Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Loose concrete and laitance shall be removed from surfaces, and voids and cracks shall be repaired as specified in Section 03 30 00.
b. Masonry:	Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scraping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances.

	Muriatic acid shall not be used.
5. Application:	
a. General:	Drying time before placing into service shall be as recommended by the CSM for site conditions.
6. System Coverage:	Follow CSM's recommendations.
7. Color Selection:	Clear.
JJ. Coating System Identification: S-4	
1. Coating Material:	Penetrating Oil and Water Repellent (Non-Film Forming)
2. Surface:	Concrete Floors
3. Service Condition:	Exterior and Interior
4. Surface Preparation:	Clean surfaces of all traces of dirt, dust, efflorescence, mold, salt, grease, oil, asphalt, laitance, curing compounds, paint, coatings, and other foreign materials by brush-off blast, water blasting, and/or chemical cleaners or other preparation as approved by the CSM.
a. Concrete	Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the CSM. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Loose concrete and laitance shall be removed from surfaces, and voids and cracks shall be repaired as specified in Section 03 30 00.
5. Application:	
a. General:	Drying time before placing into service shall be as recommended by the CSM for site conditions.
b. Coatings:	One coat, flood horizontal surface so coating ponds for at least 60 seconds. Broom over all puddles thoroughly until complete penetration is achieved
6. System Thickness:	Follow CSM's recommendations.
7. Color Selection:	Clear.

3.06 COATING SYSTEMS SCHEDULE (FINISH SCHEDULE)

A. General:

1. Specific coating systems, colors, and finishes for rooms, galleries, piping, equipment, and other items that are coated or have other architectural finishes are specified in the following coating system schedule. Unless otherwise specified in the coating system schedule, the word "interior" shall mean the inside of a building or structure, and the word "exterior" shall mean outside exposure to weather elements.

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
A. General: All Surfaces not Specified by Area or Structure		
1. Structural Steel, Metal Decking, and Galvanized Acoustical Decking	Uncoated or E-2	
2. Equipment and Metal Appurtenances		
a. Equipment, non immersed, unless otherwise specified		
1) Indoors	E-1	FS 25051 Blue
2) Outdoors	EU-1	FS 20040 Brown
b. Equipment, immersed, unless otherwise specified	E-2	Beige
c. High temperature equipment operable at		
1) 200 to 750 degrees F	HH-1	FS 26306 Grey
2) above 750 degrees F to 1200 degrees F	HH-2	Aluminum or Black
d. Existing equipment		
1) Not damaged nor modified by work in this contract	Uncoated	--
2) Damaged, exposed, or modified by work in this contract		
a) Indoors	E-1 (see paragraph 3.02)	Match existing color
b) Outdoors	EU-1 without primer (see paragraph 3.02)	Match existing color
e. Diffusers and grilles on coated surfaces, unless otherwise specified		
1) Indoors	E-1	Match background color
2) Outdoors	EU-1	Match background color
f. Diffusers and grilles on uncoated surfaces, unless otherwise specified		
1) Indoors	E-1	FS 25051 Blue
2) Outdoors	EU-1	FS 20040 Brown
g. Existing diffusers and grilles		
1) Not damaged not modified by work in this contract	Uncoated	--
2) Damaged, exposed, or modified by work in this contract		
a) Indoors	E-1 (see paragraph 3.02 Masonry Surfaces)	Match existing color
b) Outdoors	EU-1 without primer (see paragraph 3.02 Masonry Surfaces)	Match existing color
h. Electrical switchgear panels, unit substations, motor control centers, power transformers, distribution centers, and relay panels; indoors and outdoors	See paragraph 3.03 Electrical and Instrumentation Equipment and Materials	ANSI 61 Grey (outside) FS 27880 White (inside)
i. Instrumentation panels, graphic indicating panels, indicating and transmitting field panels, unless otherwise specified		

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
1) Indoors	See paragraph 3.03 Electrical and Instrumentation Equipment and Materials	FS 26306 Grey (outside) FS 27880 White (inside)
2) Outdoors	See paragraph 3.03 Electrical and Instrumentation Equipment and Materials	FS 27722 White (outside) FS 27880 White (inside)
j. Existing electrical and instrumentation panels		
1) Not damaged by work in this contract	Uncoated	--
2) Damaged or exposed to outside surfaces by work in this contract		
a) Indoors	E-1 (see paragraph 3.02 Masonry Surfaces)	FS 26306 Grey
b) Outdoors	EU-1 without primer (see paragraph 3.02 Masonry Surfaces)	FS 26306 Grey (Electrical) FS 27722 White (Instrumentation)
3. Conduit, Piping and Ductwork		
a. Ferrous, non-ferrous and galvanized piping, and appurtenant hangers and supports, non-immersed, unless otherwise specified.		
1) Indoors – noncorrosive	E-1	FS 25051 Blue
2) Outdoors – noncorrosive	EU-1	FS 20040 Brown
3) Indoors – in corrosive environment	EA-1	To be determined
4) Buried piping	M-1 or M-2	Not required
b. Ferrous piping, appurtenant and supports, immersed	E-2	To be determined
c. Conduit, outlet and junction boxes, lighting transformers, lighting, communication and small power panels, control stations, piping, lagged ductwork, appurtenant hangers, clamps, and supports on coated surfaces, unless otherwise specified.		
1) Indoors	E-1	Match background color
2) Outdoors	EU-1	Match background color
d. Conduit, outlets and junction boxes, lighting transformers, lighting, communication and small power panels, control stations, piping, lagged ductwork, appurtenant hangers, clamps and supports on uncoated surfaces, unless otherwise specified		
1) Indoors	E-1	FS 25051 Blue
2) Outdoors	EU-1	FS 20040 Brown
e. Existing conduit, outlet and junction boxes, lighting transformers, lighting communication and small power panels, control stations, piping, lagged ductwork, appurtenant hangers, clamps, and supports		
1) Not damaged nor modified by work in this contract	Uncoated	--
2) Damaged, exposed, or modified by work in this contract		

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
a) Indoors	E-1 (see paragraph 3.02 Masonry Surfaces)	Match existing color
b) Outdoors	EU-1 without primer (see paragraph 3.02 Masonry Surfaces)	Match existing color
f. Racked conduits and cable trays	Uncoated	--
g. Insulated pipe jacketing	Uncoated	--
h. Plastic, fiberglass and flexible conduit and piping		
1) Unless otherwise specified	Uncoated	--
2) PVC and CPVC Piping	L-2	FS 25051 Blue
a) Exposed to direct sunlight	L-2	FS 25051 Blue
b) Not exposed to direct sunlight	E-7	FS 25051 Blue
i. High temperature piping operable at		
1) 200 to 750 degrees F	HH-1	FS 26306 Grey
2) Above 750 degrees F to 1,200 degrees F	HH-2	Aluminum or Black
j. Exposed ductwork, unless otherwise specified	Uncoated	--
4. Concrete, Grout, Masonry and Plaster		
a. Immersed tank and channel walls and bottoms unless otherwise specified	Uncoated	--
b. Outside concrete walls below grade common with dry area or room	In accordance with Section 07 10 00	--
c. Walls and ceilings		
1) Precast concrete or colored masonry	Uncoated	--
2) Outdoors, unless otherwise specified	Uncoated	--
3) Indoors, unless otherwise specified	E-4	FS 23617 Beige
d. Concrete equipment bases unless otherwise specified	E-4	Match equipment color
e. Floors unless otherwise specified	S-2	
f. Existing coated surfaces.	L-1	Match existing color
5. Door and Door Frames		
a. Doors unless otherwise specified		
1) Ferrous metal		
a) Indoors	E-1	FS 20040 Brown
b) Outdoors	EU-1	FS 25051 Blue
2) Aluminum	Uncoated	--
3) Other	Plastic laminate	Formica 947 Brown
4) Existing		
a) Not damaged by work in this contract	Uncoated	--
b) Damaged, exposed, or modified by work in this contract		
(1) Indoors	E-1 (see paragraph 3.02 Masonry Surfaces)	Match existing color

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
(2) Outdoors	EU-1 (see paragraph 3.02 Masonry Surfaces)	Match existing color
b. Door frames unless otherwise specified		
1) Adjacent wall coated		
a) Indoors	E-1	Match wall color
b) Outdoors	EU-1	Match wall color
2) Adjacent wall uncoated		
a) Indoors	E-1	FS 20040 Brown
b) Outdoors	EU-1	FS 25051 Blue
3) Aluminum	Uncoated	--
4) Existing		
a) Not damaged by work in this contract	Uncoated	--
b) Damaged, exposed, or modified by work in this contract		
(1) Indoors	E-1 (see paragraph 3.02 Masonry Surfaces)	Match existing color
(2) Outdoors	EU-1 without primer (see paragraph 3.02 Masonry Surfaces)	Match existing color
6. Handrails, Gratings, Floor Plates, Manhole Covers, and Hatches		
a. Unless otherwise specified	Uncoated	
b. Existing		
1) Not damaged by work in this contract	Uncoated	--
2) Damaged, exposed, or modified by work in this contract		
a) Indoors	E-1 (see paragraph 3.02 Masonry Surfaces)	Match existing color
b) Outdoors	EU-1 without primer (see paragraph 3.02 Masonry Surfaces)	Match existing color
7. Metal Stairs, Ladders, Platforms, and Supports Except Tread and Grating		
a. Indoors	E-1	FS 25051 Blue
b. Outdoors	EU-1	FS 20040 Brown
c. Existing		
1) Not damaged nor modified by work in this contract	Uncoated	--
2) Damaged, exposed, or modified by work in this contract		
a) Indoors	E-1 (see paragraph 3.02 Masonry Surfaces)	Match existing color
b) Outdoors	EU-1 without primer (see paragraph 3.02 Masonry Surfaces)	Match existing color
8. Aluminum Flashing, Light Standards, Supports, and Louvers		

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
a. Indoors and outdoors, unless otherwise specified	Uncoated	--
9. Precast Concrete Metalwork		
a. Fasteners, anchors, supports, etc.	EU-1	Match wall
10. Other		
a. Fire hydrants	EU-1	FS 21302 Red
b. Flap gates	EA-1	Beige
c. Aluminum slide gates	Uncoated	--
d. Sluice gates		
1) Gate	--	--
2) Stem, except potable	G	--
3) Operator		
a) Indoors	E-2	FS 25051 Blue
b) Outdoors	EU-1	FS 20040 Brown
e. Tanks		
1) Steel tanks unless otherwise specified		
a) Inside of wash water or similar tanks	E-2	--
b) Inside of sludge (open top) tanks	E-9	--
c) Outside of tank		
(1) Indoors	E-1	FS 25051 Blue
(2) Outdoors	EU-1	FS 25051 Blue
2) Potable steel water storage tanks		
a) Inside of tank	E-5	See Note 1
b) Outside of tank	EU-1	FS 25051 Blue
3) Fiberglass tank	Uncoated	--
f. Pipe, ductwork, equipment and appurtenances made from fiberglass, plastic, rubber, including flexible hose, conduit, and plastic coated tubing, in areas not exposed to view (indoors) (metal hangers and supports are coated with E-1)	Uncoated	--
g. Buried, sleeve-type and flanged pipe, couplings, valves, mechanical and electrical penetrations	M-1 or M-2	Manufacturer's color
B. Primary Sedimentation Tanks and Effluent Channels		
1. Drive chain, sprockets, and shafts of longitudinal and cross collectors	G	--
2. Scum removers, collection equipment	EA-1	
3. Steel and cast iron below maximum water level (elevation [_____])	E-2	
4. Effluent control valve		
a. Gate and stem	EA-1	--
b. Operator	EU-1	FS 20040 Brown
5. Concrete walls common with equipment gallery-noncorrosive.	E-2	Beige
6. Concrete headspaces above max water level elevation [_____] and 2'-0"below max. water level – corrosive.		
C. Aerated Grit Removal Tank and Supply Channels		
1. Scum removers, collection equipment.	EA-1	--
2. Steel and cast iron below maximum water level (elevation [_____])		Beige

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
3. Concrete headspaces above max water level elevation [_____] and 2'-0" below max. water level – corrosive	E-2	
D. Secondary and Final Sedimentation Tank including Supply and Effluent Channels		
1. Submerged equipment, including interior and exterior surfaces of sludge remover with center pier, sludge collectors, drive cage, and influent chamber baffle; scum skimmers; effluent collection brackets, weir trough and piping	E-2	Beige
2. Steel bridge and sludge remover drive and equipment above maximum water level (elevation [_____]) (if not a covered structure)	EU-1	FS 20040 Brown
3. Chains and gears	G	--
E. Aeration Tanks including Supply and Effluent Channels Thickener		
1. Effluent water troughs and support brackets:		
a. Metals	EA-1	--
b. Concrete	EA-2	--
F. WAS Thickener		
1. Influent feed wells, drive cages, distribution weirs, and bottom sludge collectors	E-9	Beige
2. Concrete: upper main wall 2'-0" below max. water level elevation [_____] and launder trough surfaces	EA-2 or EC-1	
3. Float collector arms, float troughs and float conveyors	EA-1	--
4. Air dissolution tank		
a. Inside	EA-1	--
b. Outside	EU-1	FS 25051 Blue
G. Wet Well		
1. Piping and appurtenant hangers and supports above max. water level elevation [_____]	EA-1	--
2. Piping and appurtenance hangars and supports below max. water level elevation [_____]	E-2	--
3. Walls and ceiling above max. water level elevation [_____]	E-9-C	--
4. Walls and ceiling below max. water level elevation [_____]	E-2	--
H. Digesters		
1. Inside and outside gas eductor tubes and tube supports	EA-1	--
2. Underside floating covers, inside gas domes, safety chambers, and seal pipes	EA-1	--
3. Within the floating cover including trusses, structural steel, roofing	M-2	Manufacturer's standard color
I. Sludge Gas Storage Sphere		
1. Inside	EA-1	--
2. Outside	EU-1	FS 25051 Blue
J. Influent Structure		
1. Bar screen housing		
a. Inside	EA-1	--
b. Outside	EU-1	FS 25051 Blue

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
2. Bar screen sluiceway	EA-1	--
K. Administration Building		
1. Outdoors		
a. Equipment on roof	EU-1	FS 25051 Blue
b. Walls	Uncoated	--
2. Room 5401 Lobby		
a. Floor	Epoxy terrazzo	National Mosaic Assoc. Std S109
b. Base	Epoxy terrazzo	NMAS S109
c. Plaster walls	L-1	FS 23617 Beige
d. Steel deck ceiling	L-3	FS 23617 Beige
e. Steel roof trusses	L-3	FS 23617 Beige
f. Doors	L-3	FS 20040 Brown
g. Door frames	L-3	FS 23617 Beige
3. Room 5402 Clerical Area		
a. Floor	Epoxy terrazzo	NMAS S109
b. Base	Epoxy terrazzo	NMAS S109
c. Plaster walls	L-1	FS 23617 Beige
d. Steel deck ceiling	L-3	FS 23617 Beige
e. Steel roof trusses	L-3	FS 23617 Beige
f. Doors	L-3	FS 20040 Brown
g. Door frames	L-3	FS 23617 Beige
h. Filing cabinets	Shop coated	Steelcase Tan
4. Room 5403 Conference Room		
a. Floor	Vinyl composite tile	To be determined
b. Base	Plastic laminate	Formic 879 Beige
c. Plaster walls	L-1	FS 23617 Beige
d. Acoustical tile ceiling	Uncoated	Match wall color
e. Doors	L-3	FS 20040 Brown
f. Door frames	L-3	FS 23617 Beige
g. Shelving and gables	Plastic laminate	Formica 879 Beige
h. Tackboards	--	Claridge Products 1104 Burnt Umber
i. Chalkboard	--	Claridge Products 14 Charcoal Brown
5. Room 5404 Stairwell		
a. Floor	Vinyl composite tile	Amtico Ava-548
b. Base	Plastic laminate	Formica 879 Beige

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
c. Treads and risers	Vinyl composite Tile	Amtico Ava-548
d. Plaster walls and ceiling	L-1	FS 23617 Beige
e. Doors	L-3	FS 20040 Brown
f. Door frames	L-3	FS 23617 Beige
6. Room 5405 Women's Wash Room		
a. Floor	Epoxy terrazzo	NMAS S109
b. Base	Epoxy terrazzo	NMAS S109
c. Wainscoat	Ceramic tile	Dallas Ceramic C-125
d. Plaster walls and ceiling	L-1	FS 23617 Beige
e. Doors	L-3	FS 20040 Brown
f. Door frames	L-3	FS 23617 Beige
g. Toilet partition	Shop coated	Sanymetal 24 Blue
h. Vanity	Plastic laminate	Formica 879 Beige
7. Room 5406 Men's Wash Room		
a. Floor	Epoxy terrazzo	NMAS S109
b. Base	Epoxy terrazzo	NMAS S109
c. Wainscoat	Ceramic tile	Dallas Ceramic DC-125
d. Plaster walls and ceiling	E-4	FS 23617 Beige
e. Doors	L-3	FS 20040 Brown
f. Door frames	L-3	FS 23617 Beige
g. Toilet partition	Shop coated	Sanymetal 24 Blue
8. Room 5407 Plant Superintendent		
a. Floor	Vinyl composite Tile	Amtico Ava-548
b. Base	Plastic laminate	Formica 879 Beige
c. Plaster walls	L-1	FS 23617 Beige
d. Acoustical tile ceiling	--	Match wall color
e. Doors	L-3	FS 20040 Brown
f. Door frames	L-3	FS 23617 Beige
g. Counters		
1) Top	Plastic laminate	Formica 879 Beige
2) Door faces	Plastic laminate	Formica 947 Brown
3) Dead panels	Plastic laminate	Formica 947 Brown
4) Inside and shelving	L-4	FS 23617 Beige

Coating Systems Schedule (Finish Schedule)

Location/Surface	Coating System Identification	Standard Color
h. Upper cabinet		
1) Door faces	Plastic laminate	Formica 947 Brown
2) Inside and shelving	L-4	FS 23617 Beige
9. Room 5408 Shower Room		
a. Floor	Epoxy terrazzo	NMAS S109
b. Base	Epoxy terrazzo	NMAS S109
c. Wainscoat	Ceramic tile	Dallas Ceramic DC 125
d. Plaster walls and ceiling	E-4	FS 23617 Beige
e. Bench		
1) Top	E-8	–
2) Steel frame	E-1	FS 20040 Brown
f. Lockers	Shop coated	To match Sanymetal 24 Blue
10. Room 5409 Laboratory		
a. Floor	Epoxy terrazzo	NMAS S109
b. Base	Epoxy terrazzo	NMAS S109
c. Plaster walls	L-1	FS 23617 Beige
d. Acoustical tile ceiling	–	Match wall color
e. Doors	L-3	FS 20040 Brown
f. Door frames	L-3	FS 23617 Beige
g. Counters		
1) Tops	Plastic laminate	Formica 879 Beige
2) Door and drawer faces	Plastic laminate	Formica 947 Brown
3) Dead panels	Plastic laminate	Formica 947 Brown
4) Inside	L-4	FS 23617 Beige
5) Shelving	Plastic laminate	Formica 879 Beige
6) Bookshelves	Plastic laminate	Formica 879 Beige
7) Bookshelf gables	Plastic laminate	Formica 879 Beige
h. Upper cabinets		
1) Gable faces	Plastic laminate	Formica 879 Beige
2) Inside	L-4	FS 23617 Beige
3) Shelving	Plastic laminate	Formica 879 Beige
i. Exhaust hood trim	Plastic laminate	Formica 947 Brown
j. Dumbwaiter door	Plastic laminate	Formica 947 Brown

Note: Owner will select color from coating manufacturer's list of EPA approved colors for potable water.

3.07 INSPECTION AND TESTING BY OWNER

A. General:
   1. Inspection by the Owner or others does not limit the Contractor's or CSA's responsibilities for quality workmanship or quality control as specified or as required by the CSM's instructions. Inspection by the Owner is in addition to any inspection required to be performed by the Contractor.
   2. The Owner may perform, or contract with an inspection agency to perform, quality control inspection and testing of the coating work covered by this Section 09 90 00. These inspections may include the following:
      a. Inspect materials upon receipt to ensure that are supplied by the CSM.
      b. Inspect to verify that specified storage conditions for the coating system materials, solvents and abrasives are provided.
      c. Inspect and record findings for the degree of cleanliness of substrates.
      d. Inspect and record the pH of concrete and metal substrates.
      e. Inspect and record substrate profile (anchor pattern)
      f. Measure and record ambient air and substrate temperature.
      g. Measure and record relative humidity.
      h. Check for the presence of substrate moisture in the concrete.
      i. Inspect to verify that correct mixing of coating system materials is performed in accordance with CSM's instructions.
      j. Inspect, confirm, and record that the "pot life" of coating system materials is not exceeded during installation. Inspect to verify that recoat limitations for coating materials are not exceeded.
      k. Perform adhesion testing.
      l. Measure and record the thickness of the coating system.
      m. Inspect to verify proper curing of the coating system in accordance with the CSM's instructions.
      n. Perform holiday or continuity testing for coatings that will be immersed or coatings that will be exposed to aggressively corrosive conditions.

3.08 FINAL INSPECTION

A. General
   1. Contractor shall conduct a final inspection to determine whether coating system work meets the requirements of the specifications.
   2. The Construction Manager will subsequently conduct a final inspection with the Contractor to determine the work is in conformance with requirements of the contract documents.
   3. Any rework required shall be marked. Such areas shall be recleaned and repaired as specified at no additional cost to the Owner.

END OF SECTION

SECTION 40 61 13.01

PROCESS CONTROL SYSTEM GENERAL PROVISIONS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. This section specifies requirements which are applicable to all process control, instrumentation, communication, and signal systems. The contractor is to supply, install and startup the equipment for a complete, functional system as shown and specified.
2. Supply and install the equipment and field instruments as shown and specified.
3. The Work includes:
    a. Field annunciation equipment:
        1) Beacon and horn.
    b. Process Control Hardware:
        1) Integration of an existing control system. Existing plant PLC-1 has capacity for additional input/output modules. Additional modules to be added as required per P&ID.
    c. Process Control Software, Programming, and Integration:
        1) Integration/expansion of an existing control system. The hydraulic lift system monitoring, and control shall be integrated to the existing plant PLC-1. PLC-1 manufacturer and model: Schneider Modicon M340. SCADA system manufacturer and model: Trihedral VT SCADA.
        2) Integrated hardware and software across controllers and operator interface systems from separate manufacturers. Bar screen hydraulic lift manufacturer to propose an integration scheme between the new hydraulic lift system controller and the existing bar screen local control panels. System Integrator shall be responsible for integrating the resulting hydraulic lift and bar screen systems into the existing VT SCADA system.
        3) Programming and integration. System Integrator shall update existing bar screen graphics on plant SCADA system to include the hydraulic lift system.
4. The above is a general summary of the major items and is not intended to be all inclusive

B. Work included:

1. Major constituents of this system shall include, but are not limited to, all materials, equipment and labor required to implement a complete and operating system of instrumentation and controls. The Contractor shall supply, install, calibrate, test, and document each system in its entirety. The Contractor shall also place the completed systems in operation including tuning loops and make final adjustments to instruments as required during startup. The Contractor shall provide the services of NICET certified instrument technicians for testing and adjustment activities. The Contractor shall examine the mechanical drawings and specifications to determine

actual locations, sizes, materials and ratings of the equipment. The system shall include control panels containing microprocessor-based display and control devices, electronic signal conditioning equipment, programmable logic controllers, and power supplies. Field mounted equipment shall include pressure switches, annunciation devices, and control devices. Process variables shall include, but are not limited to, flow, level, pressure, temperature and analytical measurements.

C. Related Work:

1. Raceways, signal cables, and their requirements are specified in electrical drawings.

Definitions:

2. General: The definitions of terminology used in these specifications shall be defined in ISA Standard S51.1 unless otherwise specified. Not all terminology may apply to this project.
3. Solid State: Circuitry or components of the type which convey electrons by means of solid material such as crystals or which work on magnetic principles such as ferrite cores. Vacuum tubes, gas tubes, slide wires, stepping motors, or other devices are not acceptable substitutes for solid state components or circuitry.
4. Integrated Circuit: A number of circuit elements inseparably associated on or within a continuous body to perform the function of a circuit.
5. Two-Wire Transmitter: A transducer which derives operating power supply from the signal transmission circuit and therefore requires no separate power supply connections. As used in this specification, two-wire transmitter refers to a transmitter which produces a 4 to 20 milliampere current regulated signal in a series circuit with a 24-volt direct current driving potential and a maximum circuit resistance of 600 ohms.
6. Galvanic Isolation: Pertaining to an electrical node having no direct current path to another electrical node. As used in this specification, galvanic isolation refers to a device with electrical inputs and/or outputs which are galvanically isolated from ground, the device case, the process fluid, and any separate power supply terminals, but such inputs and/or outputs are capable of being externally grounded without affecting the characteristics of the devices or providing path for circulation of ground currents.
7. Panel: An instrument support system which may be a flat surface, a partial enclosure, or a complete enclosure for instruments and other devices used in process control systems. Panels may provide mechanical protection, electrical isolation, and protection from dust, dirt, and chemical contaminants which may be present in the atmosphere. Panel shall include consoles, cabinets and racks.
8. Data Sheets: Data sheets as used in this specification shall refer to ISA S20.
9. Signal Types: The following types of signals are used in systems specified in this division.
    a. Low Level Analog: A signal that has a full output level of 100 millivolts or less. This group includes thermocouples and resistance temperature detectors.
    b. Digital Code: Coded information such as that derived from the output of an analog to digital converter or the coded output from a digital computer or other digital transmission terminal. This type includes those cases where direct line driving is utilized and not those cases where the signal is modulated.

c. Pulse Frequency: Counting pulses such as those emitted from speed transmitters.

d. High Level Analog: Signals with full output level greater than 100 millivolts but less than 30 volts, including 4-20 mAdc transmission.

e. Modulated Signals: Signals emanating from modems or low level audio signals. Normal signal level is plus 4 dBm to minus 22 dBm. Frequency range is 300 to 10,000 hertz.

f. Discrete Events: Dry contact closures monitored by solid state equipment. If the conductors connecting to dry contacts enter enclosures containing power or control circuits and cannot be isolated from such circuits in accordance with NEC Article 725, this signal shall be treated as low voltage control.

g. Low Voltage Control: Contact closures monitored by relays, or control circuits operating at less than 30 volts and 250 milliamperes.

h. High Level Audio Signals: Audio signals exceeding plus 4 dBm, including loudspeaker circuits.

i. Radio Frequency Signals: Continuous wave alternating current signals with fundamental frequency greater than 10 kilohertz.

1.02 QUALITY ASSURANCE

A. References:

1. This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

2. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, whether or not the document has been superseded by a version with a later date, discontinued or replaced.

Reference	Title
API RP550	Manual on Installation of Refinery Instruments and Control Systems, Part I-Process Instrumentation and Control Sections 1 Through 13
ASME Section VII	Rules for Construction of Pressure Vessels
ASTM B68	Seamless Copper Tube
ASTM B209	Aluminum and Aluminum Alloy Sheet and Plate
ASTM D883	Terms Relating to Plastics
ASTM D1248	Polyethylene Plastics Molding and Extrusion Materials
IEEE 100	Dictionary of Electrical and Electronic Terms
IEEE C37.90.1	Guide to Surge Withstand Capability (SWC) Tests
ISA RP7.1	Pneumatic Control Circuit Pressure Test
ISA RP12.6	Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations

Reference	Title
ISA S5.4	Instrument Loop Diagrams
ISA S18.1	Annunciator Sequences and Specifications
ISA S51.1	Process Instrumentation Terminology
MILSPEC MIL-I-46058C	Insulating Compound, Electrical (For Coating Printed Circuit Assemblies)
NEMA 250	Enclosures for Electrical Equipment (1000 Volts Maximum)
NEMA ICS 1	General Standards for Industrial Control and Systems
NEMA ICS 2	Industrial Control Devices, Controllers, and Assemblies
NFPA 70	National Electrical Code (NEC)
SAMA PMC 17-10-63	Bushings and Wells for Temperature Sensing Elements
UBC	Uniform Building Code
UL 1012	Power Supplies
UL 94	Tests for Flammability of Plastic Materials for Parts in Devices and Appliances
Weik, Martin H.	Communications Standard Dictionary, Van Nostrand Reinhold Co., 1983

B. Systems Integrator Responsibility:

1. General

a. The specified control system and instrumentation integration including panel building, instrument calibration, testing, start-up, operational testing, and training shall be performed by a Systems Integrator staffed with qualified personnel, possessing necessary equipment and experience in performing similar installations.

b. The control system components shall, as far as practical, be of one manufacturer.

c. The components, modules, devices, and control system equipment shall be recognized industrial quality products. Recognized commercial or office grade products are prohibited.

d. The overall system performance shall be demonstrated to and accepted by Owner.

e. The application software packages shall be latest versions available, or compatible with existing software currently in use, as specified herein.

C. Systems Integrator Qualifications:

1. The following Systems Integrators are pre-qualified to perform the work specified in Division 40 without the need to provide Evidence of Experience:

a. CC Controls, West Palm Beach, FL

b. Revere Controls, Birmingham, AL

1.03 PROJECT/SITE CONDITIONS

A. General:

1. Specified communication and process control equipment shall be modified, if necessary, to make it suitable for operation in the following ambient conditions. Indoor and outdoor field location temperatures and relative humidity are specified in Section 01 11 80.

B. All Areas:

Atmospheric Contaminants

Hydrogen sulfide	0.1 mg/l
Chlorine	0.01 mg/l
Ammonia	0.5 mg/l
Dust	50.0 µg/m^3

Electromagnetic Radiation

27-500 MHz	10 volts/m

C. Control Rooms:

Temperature	60 to 100 degrees F
Humidity	20 to 80 percent

D. Indoor Field Locations:

Temperature	40 to 100 degrees F
Humidity	10 to 100 percent

E. Outdoor Field Locations:

Temperature	0 to 105 degrees F
Humidity	10 to 100 percent

F. Hazardous Locations:

1. Hazardous locations shall be as specified in Division 26 and or shown on the drawings.

G. Corrosive Locations:

1. Corrosive locations shall be as specified in Division 26 and or shown on the drawings.

H. Electric Power:

1. Electric power for instrumentation and communication systems shall be obtained from the power distribution system specified in Division 26 or on drawings. This power is not regulated, wave forms may be distorted, and significant amounts of electrical noise may be present. Equipment shall be configured to withstand a momentary power outage where the equipment when energized returns to the ready state.
2. The Contractor shall provide all necessary power supply and conditioning equipment to provide electrical power of the required voltages and current capacities and of adequate quality to ensure reliable operation of the instrumentation and communication systems. Unless otherwise specified, the Contractor shall assume that the power supply for instrumentation systems is 120 volts plus or minus 15 percent, 60 hertz plus or minus 3 hertz, 5 percent maximum harmonic distortion.

1.04 SUBMITTALS

A. General:

1. Procedures: Submittals shall be provided in accordance with Section 01 33 00. Offers of substitution for items specified by name shall be submitted in accordance with Section 00 43 25.

2. Deviations: A copy of each specification section in this division, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph check-marked (✓) to indicate specification compliance or marked to indicate requested deviations from specification requirements. If deviations from the specifications are indicated and, therefore requested by the Contractor, the submittal shall be accompanied by a detailed, written justification for each deviation. Failure to include a copy of the marked-up specification sections, along with justification for any requested deviations to the specification requirements, with the submittal shall be cause for rejection of the entire submittal with no further consideration.

3. Completeness: A separate submittal shall be provided for each section of this division requiring a submittal. The submittal for each section shall be bound separately and shall include all the information required for each item specified in the subject section. Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

B. Additional Information:

1. Test Forms: Test report forms shall, where appropriate, conform to the requirements of reference forms 40 95 10-A through 40 95 10-K included in Section 01 99 90. Additional and/or more detailed forms shall be developed as necessary to suit more complex instrumentation. Usage of terms used on test forms shall be in compliance with ISA S51.1.

2. Data Sheets: Data sheets for all instruments and accessories to be provided shall be submitted. Data sheets shall be in accordance with ISA S20. All applicable entries on the data sheet shall be completed.

3. Drawings:

a. General: The drawings included in this project manual are functional in nature and do not show exact locations of equipment or interconnections between equipment. Detailed construction drawings as specified below shall be provided. Drawings shall be prepared on 11-inch by 17-inch drafting media. Drawings shall have borders and title blocks identifying the project, system, revisions to the drawing, and type of drawing. Each revision of a drawing shall carry a date and brief description of the revisions. Diagrams shall be developed using NEMA standards, carry a uniform and coordinated set of wire numbers and terminal block numbers in compliance with paragraph 3.01 B. of this section.

b. Elementary and Loop Diagrams: Elementary diagrams shall be provided. Loop diagrams shall be prepared in compliance with ISA S5.4 and shall be provided for all loops. Elementary diagrams and loop diagrams shall show circuits and devices of a system. These diagrams shall be arranged to emphasize device elements and their functions as an aid to understanding the operation of a system and maintaining or troubleshooting that system. Elementary and loop diagrams shall also show wire numbers, wire color codes, signal polarities, and

terminal block numbers. Loop drawings shall include the process, field instrument, control panel (front and behind), software functions and SCADA.

c. Connection Diagrams: Connection diagrams for panels shall be provided. Connection diagrams shall show components of a control panel in an arrangement similar to the actual layout of the panel. Internal wiring between devices within the panel shall be shown on these diagrams. Connection diagrams shall show all terminal blocks whether used for internal or field wiring. Those used for field wiring shall be clearly identified as such. Wiring diagrams shall indicate insulation color code, signal polarities, and shall show wire numbers and terminal block numbers.

d. Interconnection Diagrams: Interconnection diagrams shall show each panel and field device. Wire numbers, cable numbers, raceway numbers, terminal box numbers, panel numbers, and field device tag numbers shall be shown.

4. Graphics: submit operator interface and SCADA color graphics for review and comment at the 30, 60 and 90 percent stage for Owner and Engineer review.

5. PRODUCT DATA

a. Material List: Within 60 days after "Notice to Proceed", a list of the manufacturer and model series for each major category of equipment, system, and instrument to be provided shall be submitted.

b. Catalog Cuts: Catalog cuts showing pertinent information and features for the proposed equipment shall be provided. Catalog information shall include technical specifications and application information for each piece of equipment. Catalog cuts shall be edited to indicate only those items, model or series of equipment which are being provided. All extraneous materials shall be crossed out or otherwise obliterated.

c. Component Fabrication Drawings: Detailed circuit schematics, printed circuit board drawings, and chassis layouts shall be provided for electrical and electronic components.

d. Certification:

1) Temperature: Test data, certified by the manufacturer, shall be provided to demonstrate that field electronic devices are suitable for the specified ambient temperatures.

2) Corrosion: Data shall be provided showing design features of the electronic equipment provided to protect against damage by the specified atmospheric contaminants and specific evidence that similarly protected electronic equipment has operated in similar environments for a period of not less than 5 years without failure due to corrosion.

e. Record Documentation: Panel wiring diagrams, connections diagrams, interconnection diagrams, loop diagrams, elementary control diagrams, and data sheets included in paragraph 1.04 of this section, and all schedules included in this section shall be provided as record drawings in accordance with Section 01 78 39. Following start-up but prior to acceptance of the work, the Contractor shall provide electronic copy on CD using ACAD format and full-size reproducible prints of elementary, loop, connection and interconnection diagrams and reproducible prints of other drawings; and PDF format for equipment data sheets. Documentation shall reflect the final constructed state of the instrumentation and control systems.

C. Operation and Maintenance Information: Operation and maintenance information shall be provided in accordance with Section 01 78 23.

D. Test Results: Test data sheets, printouts, and other records of testing as specified in paragraph 3.02 of this section shall be provided.

PART 2 PRODUCTS

2.01 GENERAL

A. Materials and Quality:

1. Material shall be new, free from defects, and of the quality specified. Each type of instrument, instrument accessory, and device shall be by the same manufacturer throughout the work.

2. Electronic equipment shall be of solid-state construction unless otherwise specified. Printed or etched circuit boards shall be glass epoxy of sufficient thickness to prevent warping. Solder shall be tin-lead plate, 55 to 75 percent tin, electrodeposited followed by tin emersion and reflow (fusing). Printed wiring shall have solder finish with no exposed copper on surface, edges, or in holes of finished product. Printed circuit boards in field mounted equipment shall be coated with 2 mils of a solderable conformal coating complying with MILSPEC MIL-I-46058C. Alignment and adjustments shall be noncritical, stable with temperature changes or aging and accomplished with premium grade potentiometers. Components of standard electronic assemblies shall not be replaced with components of different characteristics to meet the performance requirements of this specification. Parts shall be as shown in the instruction manuals and shall be replaceable with standard commercial components of the same description without degrading the performance of the completed assembly.

B. Instrumentation Specification Sheets (INSTRUSPEC):

1. General requirements for instruments specified in this section are listed on INSTRUSPEC sheets in paragraph 3.03 of this section.

C. Instrument Schedule:

1. The Instrument Schedule, paragraph 3.04 of this section, lists major instruments required to provide the process instrumentation system. All instrument functions specified on this list shall be provided. Additional instruments may be required to complete the instrument loops because of certain characteristics of the specific equipment provided. Such additional instruments shall be provided at no additional cost even though not specified in the Instrument Schedule or on the Contract Drawings.

2. In some cases, it is possible to combine the functions of two or more instruments specified in the Instrument Schedule into a single instrument. Functions which may be ordinarily combined into a single instrument are multiple alarms derived from a common transmission signal, and signal linearization may be combined into transmitters except where the nonlinear signal is used for specific purposes such as standardized flow calculations. Flow computers may be used in lieu of individual function modules for standardized flow calculations providing equivalent performance is provided. Alarm or safety functions shall be derived directly from

process measurements and shall not be derived from transmission signals unless specifically shown. Alarm or safety functions shall not be combined into any instrument used for process control, indication, recording, or any combination thereof unless specifically shown.

3. Standard instruments shall be modified as necessary to meet the specified application requirements.

2.02 PANELS

A. General:

1. Support systems including panels shall be designed in accordance with the Standard Building Code and to prevent deformation greater than 1/8 inch under the attached equipment load and an external load of 200 pounds in any direction. Panels shall be designed and manufactured in accordance with UL-508A and shall include a UL-508A label.

B. Open Panels:

1. Panels shall be aluminum plate, ASTM B209, Alloy 6061, 3/8-inch thickness, painted white. Plates over 2 feet in any dimension shall be braced with 1 1/2-inch aluminum angles for rigidity. Mounting hardware shall be Type 316 stainless steel. Wiring shall be carried in rigid aluminum conduit with cast aluminum fittings. Equipment shall be surface mounted on the panel's front face.

C. Enclosed Panels:

1. General Services: Cabinet shall be a NEMA 250, Type 12 enclosure fabricated from 1/8-inch minimum thickness sheet steel. Face-mounted instruments and devices shall be mounted in the door a minimum of 36 inches above the finished grade. Cabinet shall be provided with an interior frame or otherwise formed so as to provide a rigid structure. Doors shall be hung on full-length piano-type hinges and equipped with vault-type latch capable of accepting a 3/8-inch-shackle padlock. Three-point latch hardware shall be provided for doors exceeding 30 inches height. Where cabinet width exceeds 36 inches, multiple doors no wider than 34 inches shall be provided. The enclosure sub-panel shall be painted white. Coating shall be as specified in paragraph 09 90 00-3.03H.

2. Provide print pocket on inside of enclosure door with As-Installed drawings properly wrapped and stored. Provide a fold up shelf on the inside door to accommodate a laptop.

3. Within the enclosure provide a 60-watt convenience fluorescent light with guard and light switch; provide a GFCI-type convenience receptacle. Enclosures over 36 inches shall have a 60-watt fluorescent light each 24- to 36-inch increments.

4. Enclosures with 208 or 480 VAC motor circuits shall include a safety barrier to separate the 120 V or less control circuits from the motor control circuits.

5. Enclosure subpanel:

   a. Shall include wireway dedicated for field wire installation.

   b. Shall include a minimum of 20 percent space for future use. Din rails for terminal blocks and relays shall include space for future addition.

   c. Shall provide clear free space at the top of the panel and the bottom of the panel for cable entry, minimum 6 inches at the top and 12 inches at the bottom.

6. Cutouts for future equipment shall be blanked off with suitable covers. Instrument tag numbers shall be identified on the panel rear. Nameplates shall identify face-mounted instruments. Instruments shall be mounted in a manner that allows ease of access to components and ease of removal.
7. Face-mounted instruments that are more than 6 inches deep, weigh more than 10 pounds, or exert more than a 4 ft-lb moment force on the face of the panel shall be supported underneath at the rear by a 1-inch X 1-inch X 1/8-inch thick steel angle.
8. Face-mounted equipment shall be flush or semi-flush with flat-black escutcheons.
9. Process Areas and/or Outdoors: Cabinet shall be similar to those specified in paragraph 2.02 C.1 above, except it shall be fabricated from Type 316 stainless steel, provided with suitable door clamps and gaskets as required for NEMA 250, Type 4X requirements. Enclosure shall also be provided with a rain and sun shield when mounted outdoors.
10. Heating and Ventilating: Forced air ventilation shall be provided for enclosed cabinets. Fans shall be equipped with UL-approved washable filters and provide at least 240 cfm. Noise level at 3 feet from exterior wall and 30 degrees off axis shall not exceed 60 NC units. Fans for field cabinets and outdoor consoles shall be thermostatically controlled. Outdoor cabinets shall also be provided with thermostatically controlled space heaters. If space heater surface temperature exceeds 120 degrees F, an expanded metal guard shall be provided. Thermostats shall be Hoffman, Honeywell T631B1013, Penn Controls A28AA-4, or equal.
11. Coating: Panels shall be coated as specified in paragraph 09 90 00-3.03 H.

D. Panel Nameplates:
1. Comply with section 2.13 of this specification.
2. Machine embossed metallic adhesive labels shall identify tag number of instruments inside panels.
3. Nameplates shall be attached to panel surfaces, not to instruments.

E. Panel Wiring and Accessories:
1. Power and control wiring shall be single conductor stranded copper NFPA No. 70 Type MTW No. 16 AWG minimum. Wiring for signal shall be No. 16 AWG stranded copper NFPA No. 70 Type MTW.
2. Terminal blocks shall be tubular clamp type with closed cable funnels rated for 300 volts. Each terminal strip shall have a unique identifying alphanumeric code at one end and a vinyl marking strip running the entire length of the terminal strip with a unique number for each terminal. Numbers shall be machine printed and 1/8 inch high. Connections between adjacent terminals, if required, shall be made by means of prefabricated metal comb type jumpers. Terminal blocks shall be Phoenix Contact UK 2,5 N, or equal.
3. Surge protection:
   a. General: surge protection shall be provided to protect electronic instrumentation systems from surges propagating along the signal and power supply lines.
   b. Surge protectors shall be provided at panel terminal blocks for signal circuits which extend outside the building where the control panel is located. Surge protectors shall be multi-stage plug-in type, and shall be selected in accordance

with the requirements of the equipment to be protected. Surge protectors shall be removable without changing the impedance of the circuit. Surge protectors shall be Phoenix Contact MCR-PLUGTRAB UFBK 2-PE, or equal.

c. Surge protectors shall be provided at panel incoming power supply. Surge protectors for three phase power shall be as specified in Division 26 or as shown on the drawings. Surge protection for 120 VAC shall be EDCO model HSP-121 or equal.

d. Field instruments mounted outside the building where the control panel is located shall include surge protection for two-wire and four-wire instruments and shall be EDCO model SS64 and model SLAC, or equal.

4. Circuits shall be fused. Fuses shall be 1/4 x 1 1/4 inch; fuses on 120V AC circuits shall be ceramic tube type with 25,000 amperes interrupting capacity at 125 volts. Fuses for 24V DC circuits shall be fast-acting glass tube type rated 1/8 or 1/10 amp for 4-20 mA loops and 1/2 amp for the power supply to individual instruments. Fuse holders for 120V AC control circuits shall be drawout type and molded from melamine plastic. Fuses shall include a neon blown fuse indicator lamp.

F. Control Relays:

1. Load-Switching Control Relays:

a. Control relays used for switching loads such as solenoids, actuators, contactors, motor starter coils, remote interlocking, etc. shall be heavy-duty machine tool type.

b. Contacts shall be 4-pole and be field interchangeable to either normally-open or normally-closed. Relay shall be capable of accepting a 4-pole adder.

c. AC relays shall have NEMA A600 contact ratings and electrical clearances for 600 volts. DC relays shall have NEMA P300 contact ratings and electrical clearances for 250 volts.

d. Manufacturer: Allen Bradley Bulletin-700, Square D Class 8501, or equal.

2. Logic Level Switching Control Relays:

a. Control relays for signal circuits shall have a minimum of three SPDT, gold-flashed, fine silver contacts rated 10-ampere resistive at 120Vac or 28Vdc.

b. Control relays shall be plug-in type with heavy-duty, barrier-protected screw terminal sockets and clear polycarbonate dust cover with clip fastener.

c. AC models shall have neon lamp indicator wired in parallel with coil. DC models shall have LED lamp indicator wired in parallel with coil.

d. Manufacturer: IDEC Series RH; Potter Brumfield series KUP; or equal

3. Timers:

a. Multi-function, micro-controller based, socket mounted timing relay.

b. Single functions:

1) Delay on Make

2) Delay on Break

3) Recycle (on time first, equal recycle delays)

4) Single shot

5) Interval

6) Trailing edge single shot

7) Inverted single shot
8) Inverted delay on break
9) Accumulative delay on make
10) Re-triggerable single shot

c. Dual functions:
1) Delay on make/delay on break
2) Delay on make/recycle (on time first, equal recycle delays.)
3) Delay on make/interval
4) Delay on make/single shot
5) Interval/recycle (on time first, equal recycle delays)
6) Delay on break/recycle (on time first, equal recycle delays)
7) Single shot/recycle (on time first, equal recycle delays)
8) Recycle – both times adjustable (on time first)
9) Recycle – both times adjustable (off time first)
10) Interval/delay on make
11) Accumulative delay on make/interval

d. Time delay range, switch selectable:
1) Single function 0.1 second to 1,705 hours in 8 ranges.
2) Dual function 0.1 second to 3,100 minutes in 8 ranges.
3) Setting accuracy +/- 1 percent or 50 milliseconds, whichever is greater.
4) Repeat accuracy +/- 0.1 percent or 16 milliseconds, whichever is greater.

e. Output:
1) Two Form-C electromechanical isolated contacts rated 10-amperes resistive at 240Vac
2) Rated 1/3-horsepower at 120 or 240Vac
3) Double-pole double-throw: DPDT.
4) Mechanical life: 10,000,000 operations
5) Electrical life: 1,000,000 operations at full load.

f. Mounting: Magnal Plug 11-pin socket

g. Environment: -20 to +65 degree C.

h. Manufacturer:

G. ABB / SSAC's multifunction type TRDU time delay relay with dip-switch function setting with 12Vdc, 24Vac, 120Vac, 240Vac inputs as required or indicated or equal.

H. Pilot devices shall be heavy duty, NEMA 4/13, 30.5 mm as manufactured by Allen Bradley 800H or approved equal. Pilot lights shall be push to test type and LED type.

2.03 AUTOMATIC TELEPHONE DIALER SYSTEM – NOT USED

2.04 ANNUNCIATOR SYSTEMS – NOT USED

2.05 POWER SUPPLY AND CONDITIONING EQUIPMENT – NOT USED

2.06 INSTRUMENT AIR SUPPLY AND TRANSMISSION SYSTEMS – NOT USED

2.07 PROCESS TAPS AND ACCESSORIES – NOT USED

2.08 TRANSMITTERS – NOT USED

2.09 PROCESS SWITCHES – NOT USED

2.10 INTRINSIC SAFETY BARRIERS AND RELAYS – NOT USED

2.11 SIGNAL CONDITIONING MODULES – NOT USED

2.12 MINIATURE CASE ELECTRONIC PANEL INSTRUMENTS – NOT USED

2.13 NAMEPLATES

A. Nameplates shall be machine engraved white phenolic with black lettering. Where nameplate engraving is not specifically specified, it shall include the equipment or instrument loop title as specified in the Instrument Schedule, paragraph 3.04 of this section, and the instrument or equipment tag number. Lettering shall be 5/32-inch minimum unless otherwise specified. Nameplate wording may be changed without additional cost or time if changes are made prior to commencement of engraving. Name plates shall be mechanically fastened with stainless steel self-tapping screws.

2.14 HORNS AND BEACONS

A. The alarm beacon shall be a 75-watt sealed-beam lamp with motor driven rotating reflector; Beacon shall be for 120-volt AC service and shall be Federal Signal Model 191XL or equal.

B. The horn shall be a surface mount 120-volt AC enclosed buzzer and shall be Federal Signal Model WB350 (NEMA 4X); Model 31X (NEMA 7) or equal.

C. The above equipment shall be NEMA 4 and or NEMA 7 to meet the respective area classification.

2.15 SPARE PARTS

A. Furnish 5 spare fuses of each type provided.

B. Furnish 5 spare relays of each type provided.

PART 3 EXECUTION

3.01 INSTALLATION

A. General: Equipment shall be installed in accordance with manufacturer's instructions, NFPA 70, API RP550, this section, and as shown on the drawings. Equipment shall be located so that it is readily accessible.

B. Electrical Power Supply and Conditioning Equipment:

1. Electric power wiring and equipment shall comply with Division 26. Power disconnect switches shall be provided within sight of equipment and shall be labeled to indicate opened and closed positions and specific equipment served. "Within sight of" is defined as having a clear unobstructed view from the equipment served and within 50 feet of the equipment served. Disconnect switches shall be mounted between 36 and 72 inches above the floor or permanent work platform. Line and load side overcurrent protection shall be provided for power supply and conditioning equipment in compliance with NFPA 70. Power supply and conditioning equipment larger than 5 kVA load capacity supported by surfaces other than concrete shall be provided with sound isolators.

2. Each disconnect switch serving equipment located outdoors shall be provided with a surge arrestor, General Electric 9L15CCB001, or equal. The surge arrestor shall be bonded to the plant ground grid with a No. 8 AWG bare copper conductor.

C. Panels:

1. Mounting: Control room cabinets shall be mounted on channel iron sills as specified. Sills shall be leveled so panel structures will not be distorted. Panels shall be shimmed to precise alignment, so doors operate without binding. Floor mounted panels shall be installed per the manufactures instructions and the details shown.

2. Floor-mounted cabinets except in dry control rooms or electrical equipment rooms shall be mounted on 3 1/2-inch minimum height concrete pads or grouted bases as specified.

3. Wiring:

a. Wiring shall comply with the requirements of NFPA No. 70 as a minimum standard. Power and control wiring shall be carried in covered channels separate from low voltage signal circuits. An interior steel barrier shall be provided between AC control devices and the electronic equipment. Where unconditioned power is brought into control panels, it shall be enclosed in metallic raceways within the panel. Wiring shall be supported independently of terminations by lacing to panel support structure or by slotted flame-retardant plastic wiring channels. Wiring channels shall comply with UL 94, Type V. Wiring channel fill shall not exceed 50 percent.

b. Interconnection Wiring:

1) Panel Interconnecting Wiring:

2) Panel control wiring: Single conductor stranded copper NFPA No. 70 Type MTW No. 16 AWG minimum, with an exception for factory supplied PLC wiring harnesses that are U.L. approved.

3) Panel instrument wiring: Twisted No. 16 AWG shielded pair or tri conductors.

4) Panel power wiring: Conductors specified in Division 26 and meet the NFPA No. 70 NEC requirements for power including phase, grounded, and grounding conductors.

5) Wiring shall be supported independently of terminations by lacing to panel support structure or by slotted flame-retardant plastic wiring channels.

c. Field connections shall be on separate terminal blocks. Terminal blocks for field terminations shall be in a separate part of the panel close to where the field

cables enter the panel. Field terminals shall have no internal panel wiring attached thereto.

d. Wiring shall be tagged at terminations with machine printed plastic sleeves. Wire numbers shall consist of three parts. The prefix of the wire number shall be the respective drawing sheet number. Following the prefix shall be respective sheet rung number. The third part of the wire number shall be a number that identifies wires in a circuit that are electrically identical. The field wiring number shall consist of the terminal number the wire is landed on at each end for ease of reference.

e. Code letters and wire colors are given in the following tables:

Item Code	120 Vac Wire	Color
L	Power	Black
C	Control	Red
N	Neutral	White
PG	Ground	Green

Item Code	24V DC Wire	Color
SP	Power Supply	Blue
S	Signal (+)	Black
SG	Signal Ground	White
PG	Equipment Ground	Green

f. Wire used for dry contacts that are connected to remote devices shall be Yellow in color.

g. No more than two wires shall be connected to a terminal.

h. Each panel shall have its record connection and interconnection diagrams mounted behind a piece of plexiglass on the inside of one (or more) door(s). Also provide a copy of the as-installed drawings in the enclosure print pocket.

4. Grounding: Each panel shall be provided with two copper ground bars. One bar shall be bonded to the panel frame or sheet metal and to the station ground system. The second (signal) ground bar shall be mounted on insulated stand-offs and shall be bonded to the frame ground bar at one point only. Signal circuits, signal cable shields, and low-voltage DC power supply commons shall be bonded to the signal ground bar. Surge protectors and separately derived AC power supplies shall be bonded to the frame ground bar. In panel line-ups exceeding 30 inches in width, ground bars shall be 1/4 by 1-inch copper bars extending the entire length of the panel.

D. Field Equipment:

1. General: Equipment shall be provided as specified on the drawings such that ports and adjustments are accessible for in-place testing and calibration. Where possible, equipment shall be located between 48 and 60 inches above the floor or a permanent work platform. Instrumentation equipment shall be mounted for unobstructed access but mounting shall not obstruct walkways. Equipment shall not be mounted where shock or vibration will impair its operation. Support systems shall

not be attached to handrails, process piping or mechanical equipment except for measuring elements and valve positioners. Instruments and cabinets supported directly by concrete or concrete block walls shall be spaced out not less than 5/8 inch by framing channel between instrument and wall. Steel used for support of equipment shall be 316 stainless steel, unless otherwise specified. Support systems including panels shall be designed in accordance with Standard Building Code and to prevent deformation greater than 1/8 inch under the attached equipment load and an external load of 200 pounds in any direction.

2. Signal Wiring:
   a. General: Electrical signal wiring and equipment shall be in compliance with Division 26. Electric signal connections to equipment shall be made on terminal blocks or by locking plug and receptacle assemblies.
   b. Jacketed flexible conduit shall be used between equipment and rigid raceway systems. Flexible cable assemblies may be used where plug and receptacle assemblies are provided and the installation is not subject to mechanical damage in normal use. The length of flexible conduit or cord assemblies shall not exceed 3 feet. Flexible cable, receptacle and plug assemblies shall be used only where specified.
   c. Signal Types: Signal types as specified in paragraph 1.01 C.9 of this section shall be installed in raceways as described below. Signals of different types shall not be run together in common raceways unless expressly stated.
      1) Signal type specified in paragraph 1.01 C.9.a. of this section shall be run in metallic raceways separate from all other signal types.
      2) Signal type specified in paragraph 1.01 C.9.b. of this section shall be run in metallic raceways separate from all other signal types.
      3) Signal type specified in paragraph 1.01 C.9.c. of this section shall be run in metallic raceways separate from all other signal types.
      4) Signal type specified in paragraph 1.01 C.9.e. of this section shall be run in metallic raceways separate from all other signal types.
      5) Signal types specified in paragraphs 1.01 C.9.d. and 1.01 C.9.f. of this section shall be run in cables separate from each other, but may be run in a common raceway. Where open raceways are used, cable shall be double-shielded.
      6) Signal types specified in paragraphs 1.01 C.9.g. and 1.01 C.9.h. of this section shall be run in cables separate from each other, but may be run in a common raceway.
3. Hazardous Areas: Switches and two-wire transmitters located in hazardous areas shall be made intrinsically safe for the specified conditions by use of equipment and barriers or intrinsic safety relays approved by Underwriters Laboratories, Inc. (UL), Factory Mutual (FM), or Canadian Standards Association (CSA). Intrinsically safe systems shall be installed in accordance with ANSI/ISA-RP12.6.
4. Identification Tags: Each field mounted instrument or device shall be provided with a 16-gauge stainless steel identification tag. Identification tags shall bear the complete instrument number as listed in paragraph 3.04 of this section. Characters shall be 1/4 inch, die-stamped. Identification tags shall be securely attached to the equipment in a readily visible location using stainless steel screws or wire.

E. Signal Transmission:

1. Signal transmission between electric or electronic instruments not located within a common panel shall be 4 to 20 milliamperes and shall operate at 24 volts DC unless otherwise specified. Milliampere signals shall be current regulated and shall not be affected by changes in load resistance within the unit's rating. Milliampere signals from field shall be converted to a 1- to 5-volt signal by dropping across a plus/minus 0.1 percent, 250-ohm, 0.5 watt resistor at the external terminals of each panel, and all instruments within the panel shall be parallel wired. Measurement loops shall be grounded at external terminals by bonding to the instrument panel signal ground bus. Isolating amplifiers for field equipment possessing a grounded input or output shall be provided.

2. Spacing between signal conductors and alternating current power and control conductors shall be maintained at not less than 24 inches, except (1) at terminations on equipment, (2) where both the signal conductors and the power and control conductors are enclosed by separate metallic raceways, the spacing may be reduced to 12 inches, and (3) where power and signal conductors cross at 90 degrees.

3.02 TESTS AND INSPECTIONS

A. General Requirements:

1. Materials, equipment, and construction included under this specification shall be inspected in accordance with Section 00 43 25 and this section. Testing shall be performed in accordance with Section 01 45 20, and this section. No required test shall be applied without prior notice to the Construction Manager, who has the right to witness any test. At least 14 days before the commencement of any testing activity, a detailed step-by-step test procedure, complete with report forms for the recording of test results, shall be provided. All equipment necessary to perform the specified tests shall be provided.

B. Delivery Inspection:

1. The Contractor shall notify the Construction Manager upon arrival of any material or equipment to be incorporated into the work and shall remove protective covers or otherwise provide access in order that the Construction Manager may inspect such items.

C. Installed Tests and Inspection:

1. Test Reports: Test reports shall conform to the requirements of reference forms 40 61 13-A through 40 61 13-K included in Section 01 99 90.

2. Test Equipment: Test equipment used to simulate inputs and read outputs shall have a rated accuracy at the point of measurement at least three times greater than the component under test. Each test instrument shall be calibrated prior to the commencement of a testing activity and at the completion of a testing activity. Certified calibration reports traceable to the National Bureau of Standards shall be included with the test report. Buffer solutions and reference fluids shall be provided as necessary for tests of analytical equipment.

3. Testing Stages:

a. General: Each instrument loop shall be tested in the following sequence:

Testing sequence	Form reference
Wiring and piping	40 61 13-A and B
Individual components	40 61 13-C through I
Individual loops	40 61 13-J
Loop commissioning	40 61 13-K

Testing of piping and wiring and individual components shall be completed with certified test reports provided to the Construction Manager prior to commencement of individual loop testing, which shall be completed with certified test reports provided to the Construction Manager prior to commencement of loop commissioning.

b. Piping Testing:
   1) Pneumatic Piping Systems: Pneumatic piping systems shall be tested for leaks in compliance with ISA RP7.1.
   2) Liquid Piping Systems: Liquid piping systems shall be tested for leaks in compliance with Section 40 05 01.

c. Individual Component Calibration and Test: Each instrument and final element shall be field calibrated in accordance with the manufacturer's recommended procedure and then tested in accordance with the Contractor's test procedure. Data shall be entered on the applicable test report form at the time of testing. Alarm trips, control trips, and switches shall be set to the initial values specified in paragraph 3.04 of this section. Final elements shall be checked for range, dead-band, and speed of response.

d. Any component which fails to meet the required tolerances shall be repaired by the manufacturer or replaced, and the above tests repeated until the component is within tolerance.

e. Loop Test: Each instrument loop shall be tested as an integrated system. This test shall check operation from transmitter to readout components. Test signals shall be injected at the process impulse line connection where the measuring technique permits, and otherwise at the most primary signal access point.

f. If any output device fails to indicate properly, corrections to the loop circuitry shall be made as necessary and the test repeated until all instruments operate properly.

g. Closed-Loop Commissioning Test: Commissioning test shall be performed as part of the system acceptance test specified in paragraph 3.02 C.3.f. of this section, and shall demonstrate stable operation of the loop under actual plant operating conditions. This test shall include adjustment of loop tuning parameters. Tuning parameters (proportional gain, integral time constant, and derivative time constant) for each control loop shall be adjusted to provide 1/4-amplitude damping unless otherwise specified. A chart recording showing loop response to a step disturbance shall be provided for each loop. Two charts shall be made for cascade loops, one showing the secondary loop response with its setpoint on manual, and the second showing overall loop response. Each control loop with "batch" feature shall be adjusted to provide optimum response following start-up from an integral action saturation condition. Chart recording shall be provided showing this response. Chart recordings shall be made at sufficient speed and amplitude to clearly show 1/4-amplitude damping and shall be annotated to show loop number and title, and settings of parameters and setpoint.

h. SYSTEM ACCEPTANCE TEST: The system test shall be executed after all component and subsystem tests have been completed and be designed to place the completed system in full operation and demonstrate that all functional requirements of this specification have been met. The system test shall, as a minimum demonstrate the following:

1) That each component of the system operates correctly with all other components of the system;
2) That analog control loops operate in a stable manner;
3) That all interlocks perform correctly;
4) That all control sequences perform correctly;
5) That the complete system is reliable and consistent under all conditions of plant operation.

3.03 INSTRUSPEC SHEETS (STARTS ON THE NEXT PAGE) – NOT USED

3.04 TRAINING

A. In accordance with Section 01 79 00, operation and maintenance training on the equipment provided under this section shall be provided for the Owner's personnel by a representative of the manufacturer, at the Owner's facility. Subjects shall include operation and troubleshooting of both hardware and software, programming, and basic program generation. The program written for installation will be used for examples during the training. Training sessions shall not exceed 8 hours per day and shall be held during the Owner's normal daytime working hours. If more than 8 hours of training is required, the sessions shall be held on consecutive business days. The training shall be certified by the manufacturer on Form 43 05 11-B included in Section 01 99 90. A minimum of 4hours of training per site shall be provided.

****END OF SECTION****

SECTION 41 22 13.16

PORTABLE GANTRY CRANE

PART 1–GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section specifies a portable T-frame gantry crane system with electric trolley and chain hoist. This section includes materials, fabrication, installation and testing of the gantry system. Where applicable, the equipment shall meet NFPA 820 standard for fire protection in Wastewater Treatment and Collection Facilities.

B. TYPE:

Portable gantry crane shall be adjustable height type. Trolley and hoist shall be electric type.

1.02 QUALITY ASSURANCE

A. PERFORMANCE AND DESIGN REQUIREMENTS:

Gantry crane and hoist shall have been tested by at least 150 percent of rated capacity. The hoist electrical cable shall be of sufficient length to permit operation from finished grade but shall not reach the floor when the crane is in the lowest position. Crane and hoist shall be designed for indoor highly corrosive environment use.

General	
Equipment Location:	Headworks Building
Service:	Indoor environment temperature range of 40°F to 110°F
Altitude:	Mean sea level
Relative Humidity:	60% to100%
Equipment Capacity:	10-Tons
Service Class:	C
Main Power Supply:	460 volts, 60 hertz, 3 phase
Control Panel Enclosures:	NEMA 4
Gantry Control:	Push-button pendant (115-volt control)
Gantry	
Rated Capacity	10 tons
Clear Span, minimum	8-ft

Distance between bottom of hook and floor, minimum	8-ft
Motorized Trolley	
Trolley Speed:	65 fpm max (variable by inverter)
Motor Duty Rating:	30 minutes per CMAA specifications
Motorized Hoist	
Service Class:	H3 minimum per ANSI HST-4-1999
Lift Speed:	Two speed: 3.3 and 20 fpm
Hoist Hook travel	20-ft
Upper Limit Switch	2 feet below bridge

1.03 SUBMITTALS

A. Submit shop drawings in accordance with the following:

1. Certification that gantry crane, trolley and hoist have been factory tested as specified in paragraph 1.02 A of this section.
2. Sufficient data, including catalog information and dimensional drawings to verify that the equipment provided conforms with these specifications.
3. Show areas to be coated and type of coating.
4. Submit electrical drawings showing wiring, disconnect switch, terminals, limit switches, and fuses. Label each terminal showing which control or electric power wire connects to each terminal. Submit motor data showing motor horsepower, enclosure and NEMA design classification.
5. Sumit manufacturer's field assembly and installation instructions.
6. Submit calculations showing that runway and trolley stop resist the forces applied.
7. Submit test reports describing procedures and results of both shop and field tests.
8. Recommendations for short- and long-term storage.
9. The latest ISO 9001 series certification.
10. Operation and Maintenance manual.

1.04 STANDARDS, SPECIFICATIONS, AND CODES

A. Design and construction of T-Frame gantry crane system shall conform to CMAA and ASME B30.17 Standards.

B. Design and construction of motorized hoists shall conform to ANSI HST-4-1000 (reaffirmed 2004).

1.05 MANUFACTURER'S SERVICES

Provide equipment manufacturer's services at the jobsite for the minimum labor days

listed below, travel time excluded:

A. One-half (1/2) labor day to check the installation and advise during start-up, functional and performance testing and adjustment of equipment.

B. One-half (1/2) labor day to instruct the City's personnel in the operation and maintenance of equipment.

PART 2–PRODUCTS

2.01 ACCEPTABLE PRODUCTS

The portable gantry crane shall be B. E. Wallace, Thern, Spanco, or equal. The hoist and trolley shall be Harrington, Coffing, Yale, or equal, modified as needed to provide the specified features and performance.

2.02 PORTABLE GANTRY CRANE

A. Portable three-way adjustable gantry crane shall be with swivel lock casters and polyurethance wheels. The gantry system sha be fabricated from ASTM A36 steel sections with finished ends and surfaces. Beam height shall be adjustable with telescopic legs and spring-loaded bolts. Portable gantry system shall not require no foundation or structural support.

B. Design Factors – The gantry cranes are designed with a factor of 15 percent of the rated capacity for hoist and trolley weight and 25 percent of the rated capacity for impact. The design should provide a margin to allow for variations in material properties, operating conditions, and design assumptions.

C. Caster – The casters shall have wheel brakes and shall be Nylacron Casters.

D. System Components

   a. I-Beam
      i. Adjustable steel I-beam
      ii. Adjustable for cantilever positioning up to 25 percent of span using provided counterweight.
      iii. Capability to self-center overload
      iv. Engineered design to ensure secure positioning of I-beam and allows span adjustment for inboard/outboard bracing or cantilever configuration.
   b. Upper and Lower Main Legs
      i. Main legs adjust at six-inch intervals to raise or lower beam height to allow use on multi-level floors.
      ii. Push/pull pins inserted or removed when adjusting height.
   c. Brace Legs
      i. Constructed from heavy gauge square mechanical tubing.
   d. Casters
      i. Four position swivel-locking casters

ii. Nylacron casters
iii. Polyurethane wheels

E. Shop Finishing

a. All gantries shall be painted with Yellow, Blue or Gray Industrial Enamel.

b. Surface Preparation and Painting Procedures

i. Product surface preparation shall adhere to the Society for Protective Coatings (SSPC) standards.

ii. Crane components shall be deburred and descaled using power tools equipped with sanding discs and wire wheels prior to painting.

iii. Components are washed with high-pressure/high-temperature biodegradable degreaser solution.

iv. Components shall be coated with quick drying, semi-gloss enamel to a minimum dry-film thickness of two to three mils.

v. A finishing coat shall be applied with a hot airless electrostatic spray paint system.

vi. Painted components shall be cured at air temperature.

2.03 MOTORIZED HOIST

A. Hoists shall be electric, wire-rope type. Hoisting machinery shall consist of a rope drum driven through gear reductions by an electric motor with hoisting rope, sheaves, and hoist brake. Hoist and trolley shall be a standard package of a single trolley/hoist manufacturer. Provide near true vertical lift. Design and construct hoists in accordance with ANSI HST-4-1999 (reaffirmed 2004) and CMAA standards as appropriate.

B. Provide drums grooved to 50% (minimum) of the rope diameter to protect against rope pileup. Hoisting rope shall be of plow steel or improved plow steel, flexible, designed and manufactured for crane and hoist service, and complying with ANSI HST-4-1999 (reaffirmed 2004).

C. Provide brake for hoist capable of holding 150 percent of the hoist's rated load capacity and 125 percent of the rated load at any operating speed. Brake shall be a fail-safe electric type, connected to the motor shaft or to a shaft in the hoist gear train. Brake shall operate when power to the motor is shut off or there is a power failure. Hoist brake shall comply with ANSI HST-4-1999 (reaffirmed 2004).

D. Provide upper and lower adjustable geared limit switch with automatic reset control circuit to prevent overtravel. Setting to be field adjustable in accordance with OSHA 29 CFR 1910.179.

E. Design load hook so that it opens slowly before hook failure when the hoist is overloaded. Provide hook latch. Provide gauge marks to show if hook has opened up.

F. Provide hoist block with steel-enclosed housing.

G. Provide mechanical or electrical overload protection to prevent lifting of loads exceeding the rated capacity of the crane.

H. Shop Finishing - Hoist shall be coated with manufacturer's standard epoxy paint. Apply prime and finish coats at factory.

2.04 MOTORIZED TROLLEYS

A. Trolley frame shall be welded steel, cast steel, or ductile iron.

B. Design wheel and axle system to prevent a drop of more than 1 inch in case of axle failure.

C. Trolley drive shall consist of a drive shaft driven by an electric motor through a gear reduction unit. The trolley drive shall drive the trolley wheels either directly or through another gear reduction at the wheels.

D. Gears shall be of the helical, spur, worm, or herringbone type, made from rolled or cast steel, with machine-cut teeth having a 20-degree pressure angle. Horsepower ratings shall be in accordance with AGMA standards for the service factor associated with the ANSI HST trolley service classification. Gears shall be AGMA Class II service or better. Gearing shall be oil splash lubricated.

E. Provide trolley brakes designed in accordance with ANSI HST-4-1999 (reaffirmed 2004).

F. Provide mechanical stops and limit switches at both ends of trolley travel.

G. Wheels shall be drop forged or rolled steel with heat-treated treads and flanges or cast iron with chilled tread. Wheels and wheel bearings shall comply with ANSI HST-4-1999 (reaffirmed 2004).

H. Shop Finishing - Trolley shall be coated with manufacturer's standard epoxy paint. Apply prime and finish coats at factory.

2.05 MOTORS

A. Motors shall be NEMA Design D with high starting torque, low starting current, and high slip at full load.

B. Provide separate motors for bridge, hoist, and trolley drives when motorized units are specified. Provide one motor for hoist. Provide one or two motors for trolley.

C. Motors shall be totally enclosed non-ventilated (TENV), with Class B or F insulation, 65°C ambient temperature, and with a temperature rise that does not exceed the insulation class at the duty rating listed in the subsection on "Service Conditions." Provide thermal overload protection either of the thermostatic type in the motor starter or of the relay type in the motor windings. Provide integral motor starters for the bridge, hoist, and trolley motors.

D. Motors shall be single or two speed and have voltage and frequency ratings as specified in the subsection on "Service Conditions." Motor speed shall not exceed 1,800 rpm. Determine the required motor horsepower for the trolley and hoist and bridge per ANSI MH27.1 and ANSI HST-4-1999 (reaffirmed 2004).

E. Service Factor 1.15

PART 3–EXECUTION

3.01 INSTALLATION

Gantry crane and hoist shall be assembled in accordance with manufacturer's instructions and recommendations and placed in the headworks building as directed by the City. Additional general requirements are listed below:

A. For electrical cranes, install runway conductors before the runway rails. The alignment of the conductors shall be horizontal and vertical within a tolerance of ±1/4 inch. Install the runway rail adjacent to the conductors next.

B. Install the opposite runway rail and align to correct span and straightness with the first rail. The runway rails shall be horizontal and parallel. The distance center-to-center and the elevation of the rails shall be as shown in the drawings within a tolerance of ±1/8 inch.

C. Bolt the rail sections together. The rail joints shall be tight and provide a smooth-running surface.

D. After assuring that rail alignment is correct, securely fasten the rails to their supports.

E. Install crane runway end stops before placing crane on the runway. Faces of the two end stops at each end of the runway shall form a line perpendicular to the runway rails. Install bridge and trolley per the manufacturer's instructions. After crane is placed on runway, assure that both bridge bumpers contact the end stops at the same instant. If this does not occur, check the bridge for squareness. If bridge is square, either adjust the stops or place shims behind the bumpers.

3.02 LABELING AND MARKING

A. Provide labels and marking. Provide capacity plates on each side of the trolley/hoist and on bridge. Plates shall be legible from the floor.

B. Provide tags on each piece of equipment requiring lubrication. Tag shall state the following information:

   i. Manufacturer's recommended lubricant, by brand name and number or code.

   ii. Frequency of lubrication.

3.03 LUBRICATION

Provide the manufacturer's recommended lubricants for motors, gears, and other equipment.

3.04 TESTING

After completion of installation, the gantry and hoist shall be completely tested to ensure compliance with the performance requirements as specified. As a minimum, testing shall be by operating the equipment through a complete lift and lowering cycle to determine that the equipment performs smoothly and safely without failure. Such tests shall be carried out

with the hoisting equipment loaded as near to the specified capacity as possible. Any defects shall be corrected or replaced immediately by the Contractor and at no expense to the Owner. All testing shall be at the Contractor's expense.

Perform a no-load test and a load test on the gantry crane system in the presence of the City's Representative as follows:

A. No-Load Test:
    1. Raise empty block to within about 2 feet of its upper position and stop.
    2. Raise empty block until the upper limit trips and stops the hoisting motion. Assure that limit switch trips at the specified setting.
    3. Adjust upper limit switch if necessary. Repeat Steps a and b.
    4. Lower the block to about 2 feet above its lower position and stop.
    5. Lower empty block until the lower limit switch trips and stops the lowering motion. Assure that limit switch trips at the specified setting.
    6. Adjust lower limit switch if necessary. Repeat Steps d and e.
    7. Do not lower the block beyond the point at which two wraps remain at each end of the drum.
    8. Move the trolley.

B. Trolley Test:
    1. Move the trolley to within about 2 feet of its farthest left limit switch position and stop.
    2. Move the trolley to the left until the limit switch trips and stops the trolley motion. Assure that limit switch trips at the specified setting.
    3. Adjust limit switch if necessary. Repeat Steps 1 and 2.
    4. Repeat Steps 1, 2, and 3 for the right limit switch.

C. Load Test: After the no-load test and trolley test have been completed, test the system with loads in the following manner:
    1. Raise a load equal to 50% of the rated load no higher than required to clear its supports and stop. Adjust brakes if necessary. Raise load about 2 feet above its supports and stop. Lower load about 12 inches and stop. Check drift of load during stopping. If load drifts, brakes are not in proper adjustment and shall be corrected. Repeat this operation until proper adjustment of the brakes is obtained. Lower load carefully back to its supports.
    2. Follow the same procedure as indicated in Step a above except with a 100% test load; then hoist the load high enough to clear all obstructions. Move trolley across the entire span of bridge or length of track. Transport the test load by means of the bridge or monorail for full length of the runway in one direction with the trolley at one extreme end of the crane and in the other direction with the trolley at the extreme opposite end of the crane. Lower load carefully onto its supports.

D. Crane system shall run smoothly, with no binding, stopping, or sticking. Adjust and realign equipment and retest if binding, stopping, or sticking occurs. Motors shall not be overloaded.

3.05 CERTIFICATION

Provide written certification from the equipment manufacturer that the crane equipment and appurtenances have been properly installed according to the contract documents and manufacturer's recommendations, and that the equipment is operating normally. Make all necessary corrections and adjustments including but not limited to parts, labor or freight at no additional cost to the City.

****END OF SECTION****

CITY OF HOLLYWOOD
FLORIDA

SOUTHERN REGIONAL WASTEWATER TREATMENT PLANT
1621 N 14TH AVENUE
HOLLYWOOD, FLORIDA 33019

CONTRACT DRAWINGS FOR:

BAR SCREEN MODIFICATIONS
CITY PROJECT NO. 22-9216A

CITY COMMISSION

JOSH LEVY, MAYOR

CARYL S. SHUHAM, COMMISSIONER

LINDA H. ANDERSON, COMMISSIONER

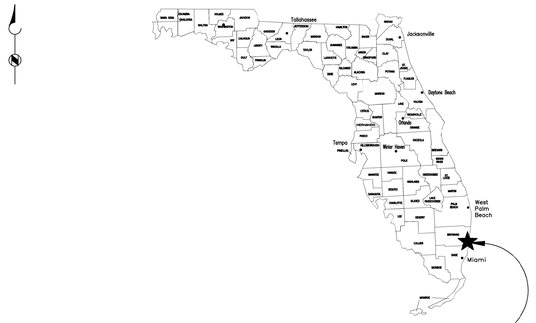
TRACI L. CALLARI, COMMISSIONER

ADAM GRUBER, COMMISSIONER

KEVIN D. BIEDERMAN, COMMISSIONER

LINDA SHERWOOD, COMMISSIONER

LOCATION MAP



PROJECT LOCATION
CITY OF HOLLYWOOD, FL

VICINITY MAP

SHEET INDEX

SHEET NO.	TITLE
STRUCTURAL	
SD-10-1001	BAR SCREEN FACILITY - FLOOR PLAN DEMOLITION
S-10-1001	BAR SCREEN FACILITY - FLOOR PLAN
S-10-1002	BAR SCREEN FACILITY - SECTION SHEET 1
S-10-1003	BAR SCREEN FACILITY - ROOF PLAN
S-10-1004	BAR SCREEN FACILITY - ELEVATIONS SHEET 1
ELECTRICAL	
E-10-1001	BAR SCREENS HYDRAULIC LIFT DIAGRAMS
INSTRUMENTATION	
I-10-1001	BAR SCREENS HYDRAULIC LIFT PROCESS AND INSTRUMENTATION DIAGRAMS

Digitally signed by Gui E DeReamer
DN: CN=Gui E DeReamer, E=GDeReamer@BrwnCald.com, O=Unaffiliated, C=US
Date: 2022.06.22 14:04:22-05'00'

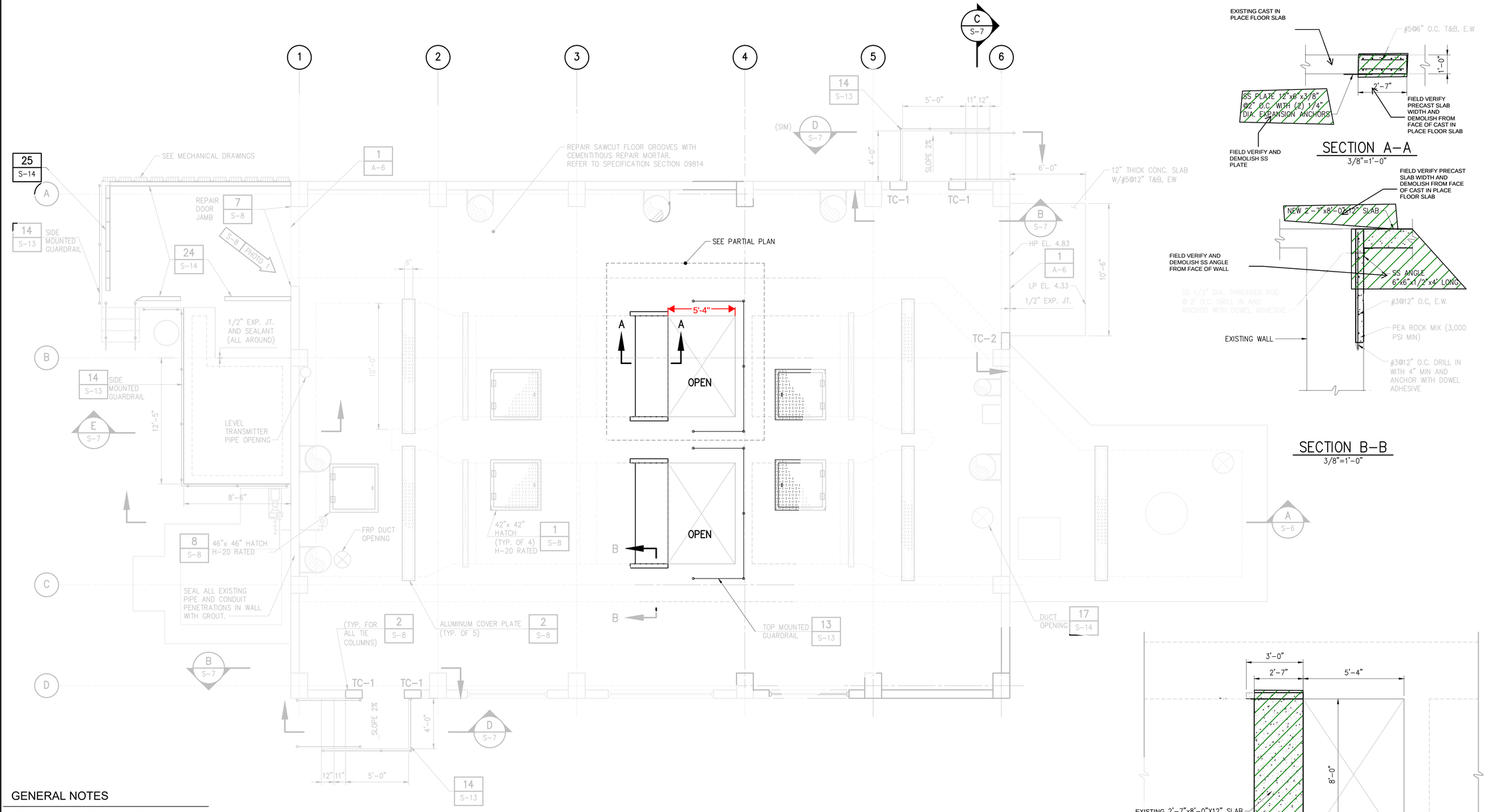
PREPARED BY:

Brown AND Caldwell

1580 SAWGRASS CORPORATE PARKWAY, SUITE 400
SUNRISE, FLORIDA 33323
PHONE: 954-200-7611 FAX: 954-200-7612

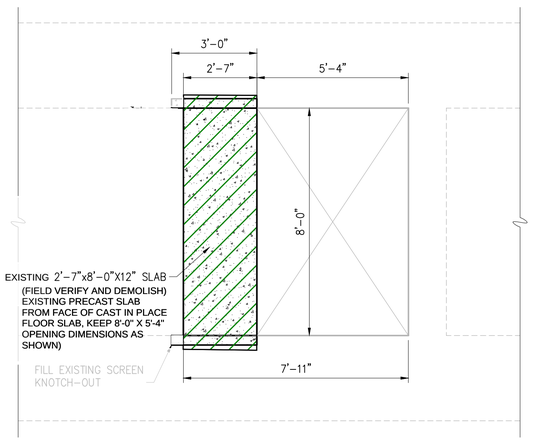
FLORIDA BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF AUTHORIZATION #00002602

JUNE 2023



SECTION A–A
3/8"=1'-0"

SECTION B–B
3/8"=1'-0"



PARTIAL PLAN
3/8"=1'-0"

GENERAL NOTES

1. BASE DRAWING DEVELOPED FROM COH PROJECT # 12-9214 (HEADWORKS REHABILITATION AND REPLACEMENT, NOVEMBER 2012 BY HAZEN AND SAWYER), WHICH WAS PROVIDED BY CITY OF HOLLYWOOD FOR USE FOR THIS PROJECT. BROWN AND CALDWELL ASSUMES NO RESPONSIBILITY OF THE ACCURACY OF THE SAME. ADDITIONAL AVAILABLE INFORMATION FOR THIS PARTICULAR BUILDING SHALL BE REVIEWED BY CONTRACTOR (1985 IMPROVEMENT BY HAZEN AND SAWYER AND 1973 EXISTING SCREEN CHAMBER MODIFICATIONS BY POST, BUCKLEY, SCHUH & JERNIGAN, INC)

2. CONTRACTOR SHALL FIELD VERIFY, ALL INFORMATION SHOWN INCLUDING ALL DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCEMENT OF WORK. NOTIFY ENGINEER FOR ANY DISCRIPANCY. EXISTING REINFORCEMENT SHALL BE LOCATED USING NON-DESTRUCTIVE MEANS PRIOR TO DRILLING FOR ADHESIVE DOWELS.

3. OWNER SHALL RETAIN THE SERVICES OF SPECIAL INSPECTOR, CONTRACTOR SHALL COORDINATE WITH THE BUILDING OFFICIAL PER BROWARD COUNTY AMENDMENTS (SECTION 110.3) FOR THE FOLLOWING,
   a. ANCHOR INSTALLED USING EPOXY ADHESIVE. NO EXISTING REBAR SHALL BE CUT OR DAMAGED DURING ANCHOR INSTALLATION. EPOXY ADHESIVE SHALL BE HILTI RE-500 V3 OR EQUAL.
   b. SKYLIGHT ATTACHMENT

4. THE CONTRACTOR SHALL SHALL NOTIFY BUILDING OFFICIAL AND ENGINEER WHEN WORK IS READY FOR INSPECTION.

5. PRIOR TO NEW LIFTING MECHANISM FRAME ATTACHMENT TO FLOOR, THE NEW FLOOR SLAB SHALL BE AT MINIMUM 4500 PSI DESIGN STRENGTH. PROVIDE FORMWORK AND SHORING IN ACCORDANCE WITH CAST IN PLACE CONCRETE SPECIFICATION, REFER TO 03 30 00. PROVIDE REBAR SHOP DRAWINGS FOR REVIEW AND APPROVAL. NEW CONCRETE REQUIRES TO HAVE CRYSTALLINE WATERPROOFING ADMIXTURE INCLUDE IN THE MIX DESIGN PER DOSAGE RECOMMENDED BY MANUF. ALL NEW CONCRETE SURFACE AND DEMOLISHED AREAS SHALL BE FINISHED TO MATCH SURROUNDING AREAS AND COATED WITH NEW COATING TO MATCH EXISTING COATING.

LEGEND

EXISTING

PROPOSED

1/4"=1'-0"

1 0 1 2 3 7'

CITY OF HOLLYWOOD FLORIDA

CITY OF HOLLYWOOD PUBLIC UTILITIES

2600 HOLLYWOOD BOULEVARD,
HOLLYWOOD, FLORIDA 33020-4807
954-967-4357
hollywoodfl.org

Brown AND Caldwell
Environmental Engineering and Consulting
1580 Sawgrass Corporate Parkway, Suite 400, Sunrise, Florida 33323 (954)200-7611
Florida Board of Professional Engineers Certificate of Authorization No. 00002652

HOLLYWOOD FLORIDA PUBLIC UTILITIES
2600 HOLLYWOOD BOULEVARD, HOLLYWOOD, FLORIDA 33020-4807

BAR SCREEN FACILITY - FLOOR PLAN DEMOLITION

DRAWING ISSUED

REVISION No.	DESCRIPTION	DATE	BY
A			
B			
C			
D			

CONFORMED - FOR CONSTRUCTION

PROJ No.: 155007

DESIGNED: AS	CHECKED: BD
DRAWN: JS	FINAL CHECK: AS

LINE IS 2 INCHES AT FULL SIZE

DATE: 5/2/2023 | SCALE: AS NOTED

SHEET: SD-10-1001

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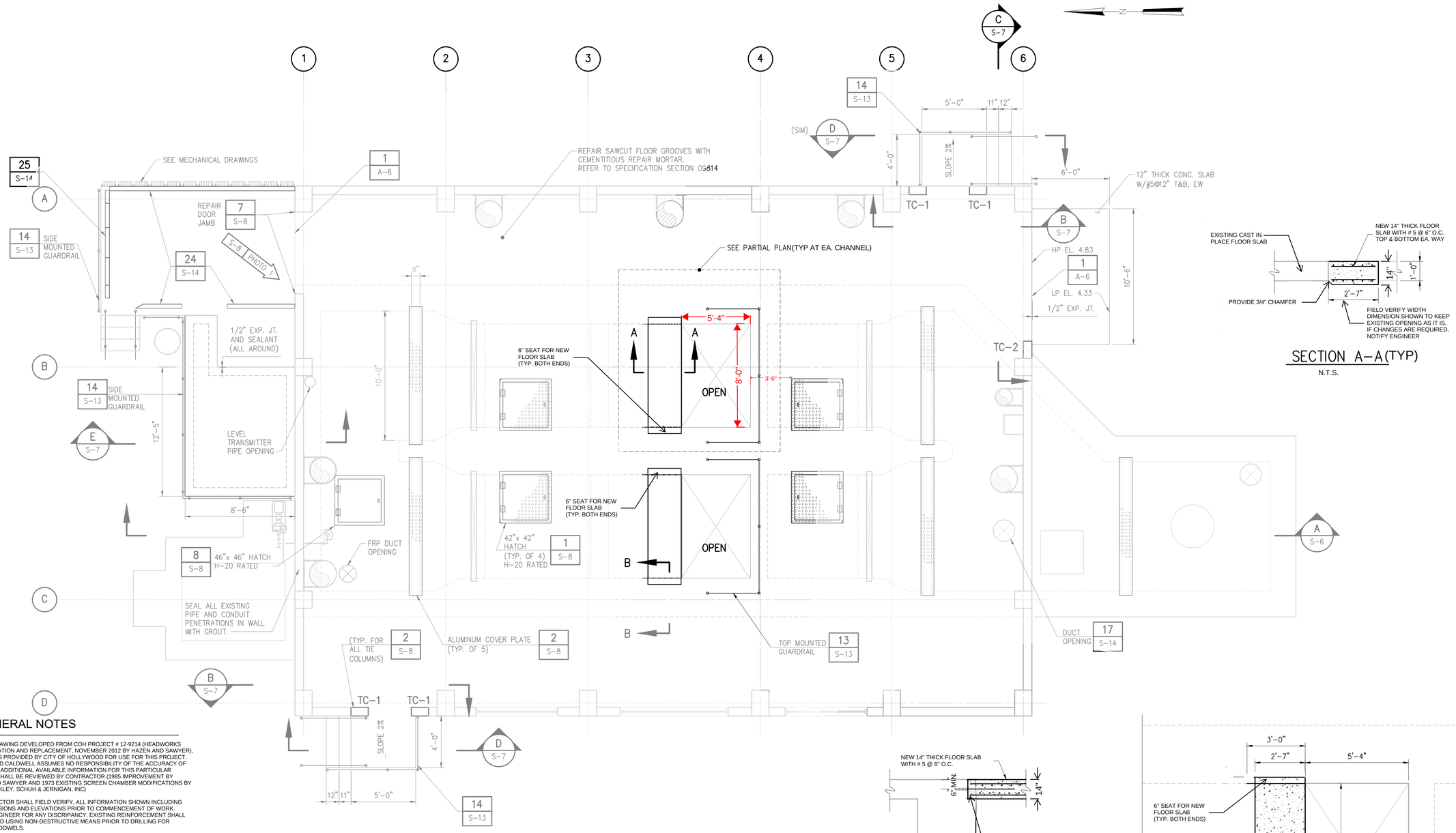

SECTION A–A (TYP)

N.T.S.

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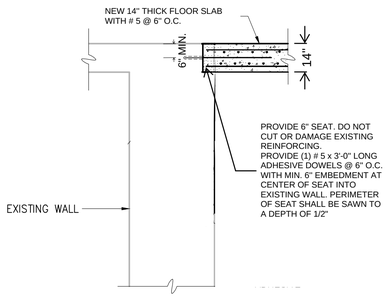
LEGEND

EXISTING

PROPOSED

1/4"=1'-0"

1 0 1 2 3 7'



SECTION B–B (TYP)

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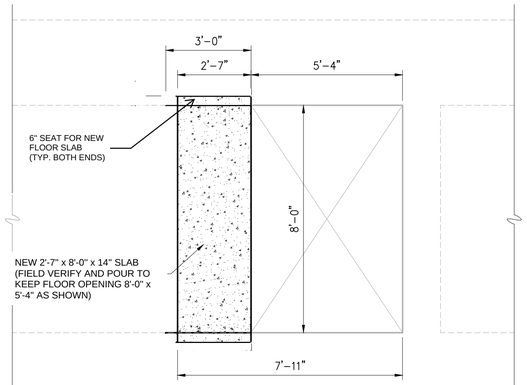

PARTIAL PLAN (TYP)

3/8"=1'-0"

CITY OF HOLLYWOOD PUBLIC UTILITIES
2600 HOLLYWOOD BOULEVARD,
HOLLYWOOD, FLORIDA 33020-4807
954-967-4357
hollywoodfl.org

Brown AND Caldwell
Environmental Engineering and Consulting
1580 Sawgrass Corporate Parkway, Suite 400, Sunrise, Florida 33323 (954)200-7611
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2600 HOLLYWOOD BOULEVARD, HOLLYWOOD, FLORIDA 33020-4807

BAR SCREEN FACILITY - FLOOR PLAN

DRAWING ISSUED

REVISION No.	DESCRIPTION	DATE	BY
A			
B			
C			
D			

CONFORMED - FOR CONSTRUCTION

PROJ No.: 155007

DESIGNED: AS	CHECKED: BD
DRAWN: JS	FINAL CHECK: AS

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DATE: 5/2/2023 | SCALE: AS NOTED

SHEET: S-10-1001

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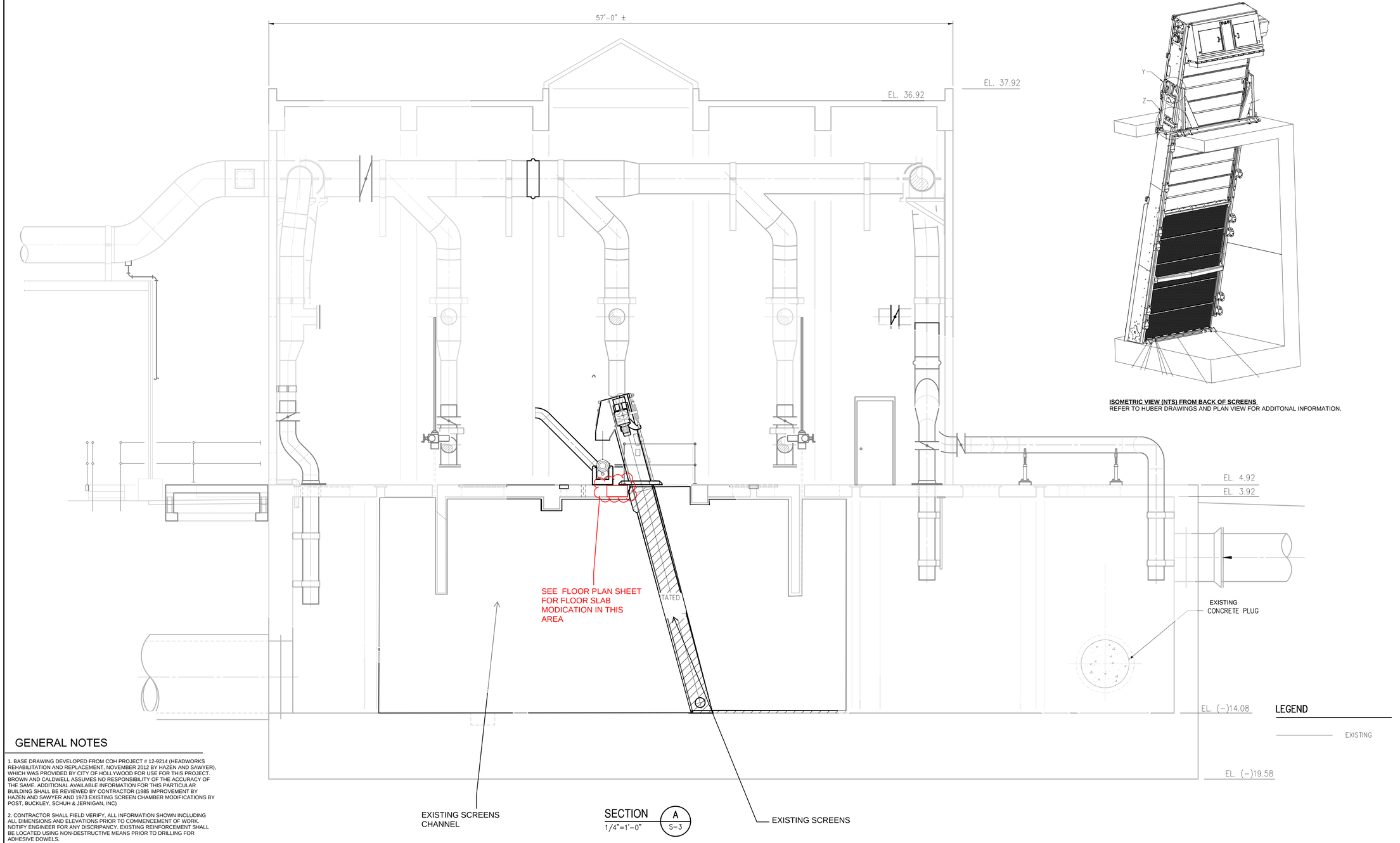

ISOMETRIC VIEW (NTS) FROM BACK OF SCREENS
REFER TO HUBER DRAWINGS AND PLAN VIEW FOR ADDITONAL INFORMATION.

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LEGEND

EXISTING

CITY OF HOLLYWOOD FLORIDA

CITY OF HOLLYWOOD PUBLIC UTILITIES

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HOLLYWOOD FLORIDA PUBLIC UTILITIES
2600 HOLLYWOOD BOULEVARD, HOLLYWOOD, FLORIDA 33020-4807

BAR SCREEN FACILITY - SECTION SHEET 1

DRAWING ISSUED

REVISION No.	DESCRIPTION	DATE	BY
A			
B			
C			
D			

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PROJ No.: 155007

DESIGNED: AS	CHECKED: BD
DRAWN: JS	FINAL CHECK: AS

LINE IS 2 INCHES AT FULL SIZE

DATE: 5/2/2023 | SCALE: AS NOTED

SHEET: S-10-1002

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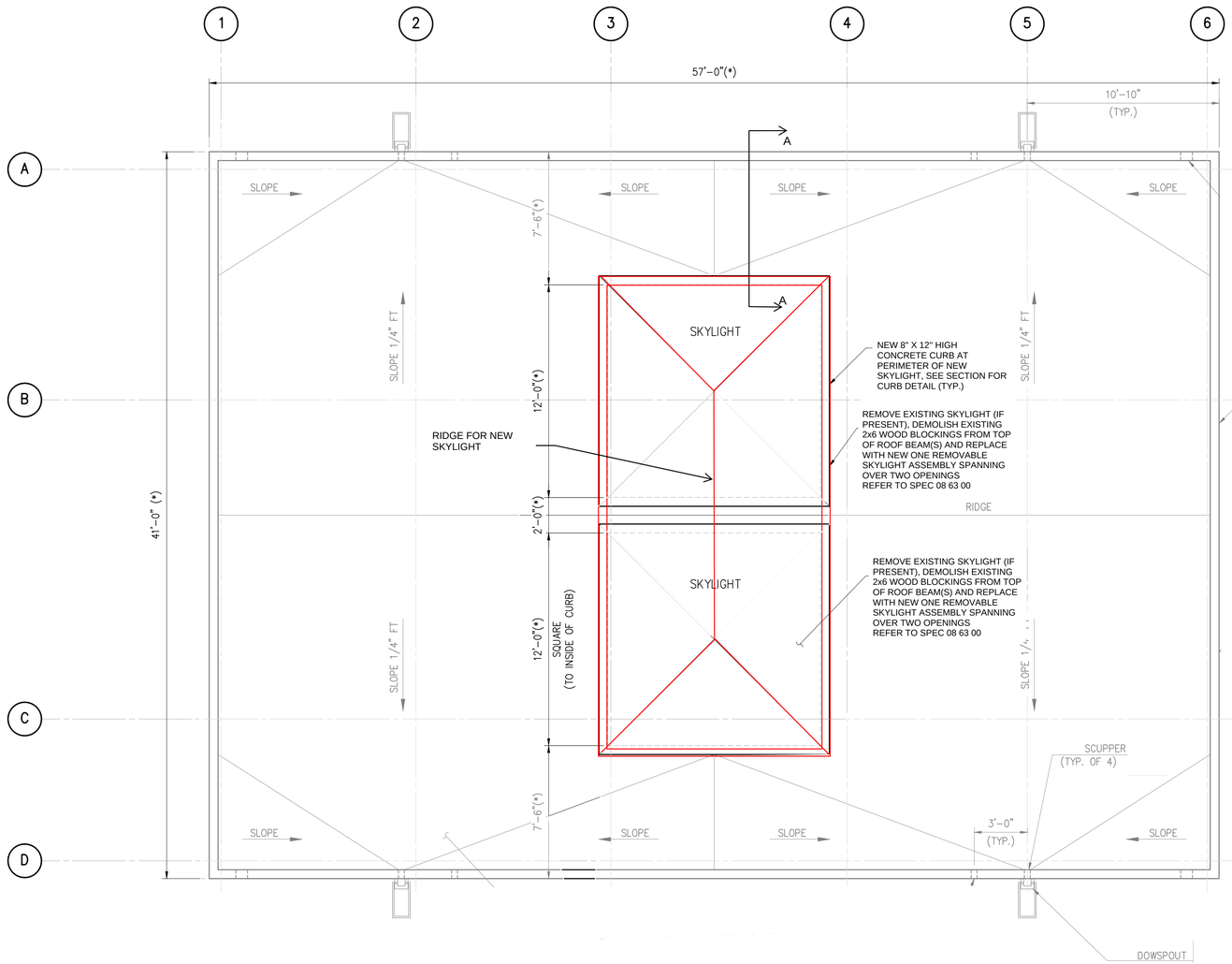
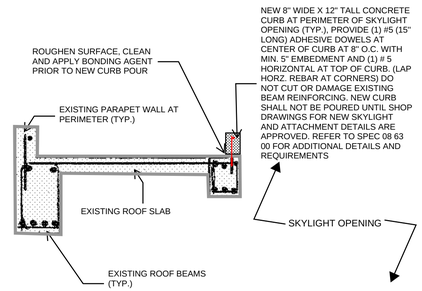




SECTION A-A AT NEW CURB (N.T.S)

GOVERNING BUILDING CODE

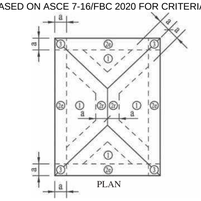
CONSTRUCTION AND DESIGN SHALL BE IN ACCORDANCE WITH THE FLORIDA BUILDING CODE (FBC) 2020 WITH BROWARD COUNTY LOCAL AMENDMENTS. THIS CODE SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR CONTRACT PROVISIONS ARE MORE RESTRICTIVE.

COMPONENT AND CLADDING WIND PRESSURE SCHEDULE NOTES

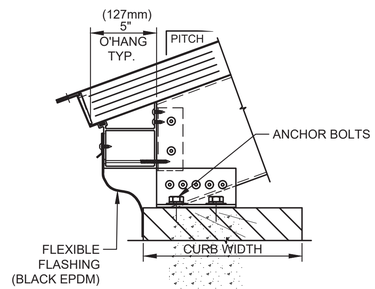
1. SCHEDULE IS BASED ON THE FOLLOWING CRITERIA:

ULTIMATE WIND SPEED, Vult:	187 MPH
RISK CATEGORY:	IV
EXPOSURE CATEGORY:	C
GUST FACTOR:	0.85
BUILDING ENCLOSURE:	ENCLOSED AT BUILDING (GC_{Pi} = +/-0.18)
TOPOGRAPHIC FACTOR (Kzt)	1.0
ROOF LIVE LOAD :	30 PSF
WIND ZONE :	HVHZ, WIND BORNE DEBRIS REGION PER FBC

2. CALCULATE COMPONENT AND CLADDING WIND PRESSURE(S) FOR SKYLIGHT BASED ON ASCE 7-16/FBC 2020 FOR CRITERIA SHOWN.



COMPONENT & CLADDING PLAN FOR PYRAMID SHAPED SKYLIGHT



SKYLIGHT ATTACHMENT DETAIL TO CURB

N.T.S. (REFERENCE SCHMATIC DETAIL SHOWN. REFER TO 08 63 00 FOR REQUIREMENTS)

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2. CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION SHOWN INCLUDING ALL DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCEMENT OF WORK. CONTACT ENGINEER FOR ANY DISCRIPANCY.

3. DURING DEMOLITION OF EXISTING SKYLIGHT AND FOR INSTALLATION OF NEW SKYLIGHT (INCLUDING FUTURE USE OF REMOVABLE SKYLIGHT) , ALL FALL PROTECTION REQUIREMENTS SHALL BE OBSERVED BY CONTRACTOR/CITY EMPLOYEES WHEN WORKING AT THE ROOF LEVEL.

4. CONTRACTOR TO VERIFY AND MAKE SURE NO DAMAGE OR MODIFICATION TO EXISTING ROOFING SYSTEM DURING NEW SKYLIGHT(S) INSTALLATION.
   A. REPAIRS AND ALTERATION TO EXISTING ROOFING : ALL REPAIRS AND ALTERATIONS SHALL BE PERFORMED ONLY BY PERSONNEL WHO ARE FULLY TRAINED AND EXPERIENCED IN INSTALLATION AND REPAIR OF THE EXISTING ROOF SYSTEM TYPE.
   B. ALL REPAIRS AND ALTERATIONS, INCLUDING BUT NOT LIMITED TO, NEW ROOF CURBS AND/OR ROOF FLASHING SHALL BE PROVIDED IN STRICT COMPLIANCE WITH RECOMMENDED DETAILS AND WRITTEN INSTRCUTIONS OF THE EXISTING ROOF MANUFACTURER OR THE NATIONAL ROOFING CONTRACTOR'S ASSOCIATION (NRCA).
   C. IF THE EXISTING ROOFING IS STILL UNDER WARRANTY, OWNER SHALL FURNISH WARRANTY DATA. CONTRACTOR SHALL THEN SUBMIT, TO ENGINEER FOR APPROVAL. MANUFACTURER'S WRITTEN STATEMENT OF ALL CONDITIONS REQUIRED, INCLUDING APPROVAL OF INSTALLERS SO AS NOT TO VOID WARRANTY. AT COMPLETION OF REPAIR, CONTRACTOR SHALL SUBMIT, TO ENGINEER, EXISTING ROOFING MANUFACTURER'S WRITTEN STATEMENT THAT ALL SUCH REPAIR IS ACCEPTABLE AND WARRANTY IS NOT VOIDED IN ANY MANNER DUE TO SUCH REPAIR.
   D. IF EXISTING ROOFING IS NOT UNDER WARRANTY, OWNER WILL FURNISH MANUFACTURER'S NAME, IF AVAILABLE. CONTRACTOR SHALL THEN SUBMIT, TO THE ENGINEER FOR APPROVAL, MANUFACTURER'S WRITTEN RECOMMENDATIONS FOR REPAIR. IF THE EXISTING ROOFING MANUFACTURER'S NAME IS NOT AVAILABLE, CONTRACTOR SHALL THEN SUBMIT, TO THE ENGINEER FOR APPROVAL, DETAILS AND WRITTEN INSTRUCTIONS RECOMMENDED BY NRCA FOR THE PROPOSED REPAIR AND ALTERATION OF THE EXISTING ROOFING SYTEM TYPE.

5. NEW ONE LARGE SKYLIGHT SHALL BE CENTER RIDGE SHAPED WITH MATCHING SLOPES TO EXISTING SKYLIGHT AND COVER BOTH SKYLIGHT OPENINGS AND ATTACHED TO NEW 8" WIDE X 12" TALL CONCRETE CURB PER MANUFACTURER'S REQUIREMENTS. NEW CURB SHALL NOT BE POURED UNTIL SHOP DRAWINGS FOR NEW SKYLIGHT AND ATTACHMENT DETAILS ARE APPROVED. REFER TO SPEC 08 63 00 FOR ADDITIONAL DETAILS AND REQUIREMENTS. REFER TO CAST IN PLACE CONCRETE SPECIFICATION FOR NEW CURB. PROVIDE REBAR SHOP DRAWINGS FOR REVIEW AND APPROVAL. NEW CONCRETE REQUIRES TO HAVE CRYSTALLINE WATERPROOFING ADMIXTURE INCLUDE IN THE MIX DESIGN PER DOSAGE RECOMMENDED BY MANUF. ALL NEW CONCRETE SURFACE AND DEMOLISHED AREAS SHALL BE FINISHED TO MATCH SURROUNDING AREAS AND COATED WITH NEW COATING TO MATCH EXISTING COATING.

6. EXISTING SKYLIGHT ATTACHMENT ANCHOR HOLES SHALL BE FILLED WITH NON-SHRINK CEMENTITIOUS GROUT AND AT MIN. 4000 PSI STRENGTH PRIOR TO ATTACHING NEW SKYLIGHT. NO REBAR SHALL BE CUT FOR NEW SKYLIGHT ATTACHMENT.

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8. OWNER SHALL RETAIN THE SERVICES OF SPECIAL INSPECTOR, CONTRACTOR SHALL COORDINATE WITH THE BUILDING OFFICIAL PER BROWARD COUNTY AMENDMENTS (SECTION 110.3) FOR THE FOLLOWING,
   a. ANCHOR INSTALLED USING EPOXY ADHESIVE. NO EXISTING REBAR SHALL BE CUT OR DAMAGED DURING ANCHOR INSTALLATION. EPOXY ADHESIVE SHALL BE HILTI RE-500 V3 OR EQUAL. EXISTING REINFORCEMENT SHALL BE LOCATED USING NON-DESTRUCTIVE MEANS PRIOR TO SHOP FABRICATION AND BEFORE DRILLING FOR ADHESIVE ANCHORS.
   b. SKYLIGHT ATTACHMENT

9. THE CONTRACTOR SHALL SHALL NOTIFY BUILDING OFFICIAL AND ENGINEER WHEN WORK IS READY FOR INSPECTION.

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BAR SCREEN FACILITY - ROOF PLAN

DRAWING ISSUED

REVISION No.	DESCRIPTION	DATE	BY
A			
B			
C			
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CONFORMED - FOR CONSTRUCTION

PROJ No.: 155007

DESIGNED: AS	CHECKED: BD
DRAWN: JS	FINAL CHECK: AS

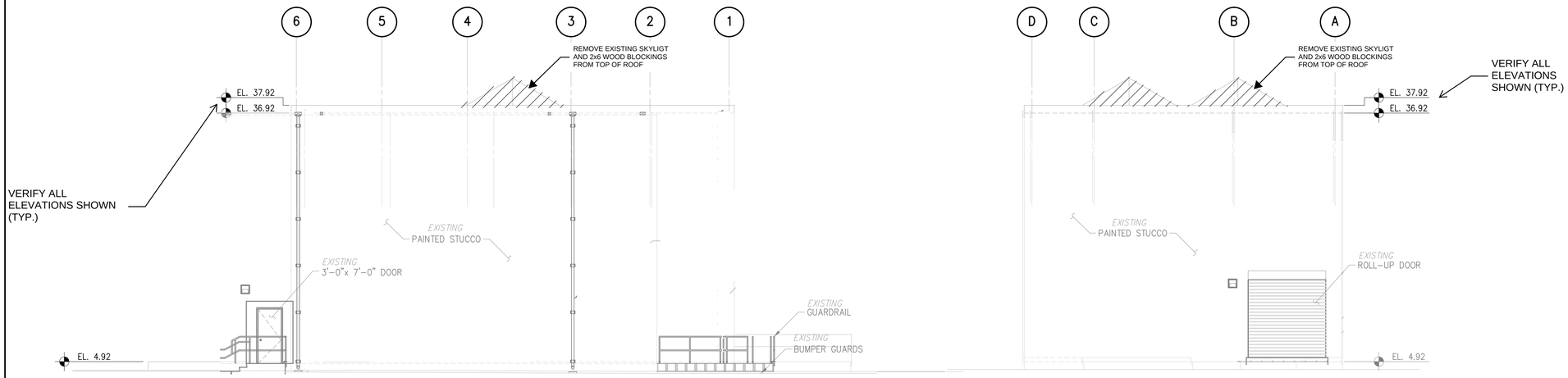
LINE IS 2 INCHES AT FULL SIZE

DATE: 5/2/2023 SCALE: AS NOTED

SHEET: S-10-1003

Path: C:\USERS\HSERRANO\ONEDRIVE - BROWN AND CALDWELL\SHARED INTERNAL\LY\HOLLYWOOD EMERGENCY BAR\SCREEN EVAL\STICK\SET

Plot Date: 5/2/2023 7:40 AM

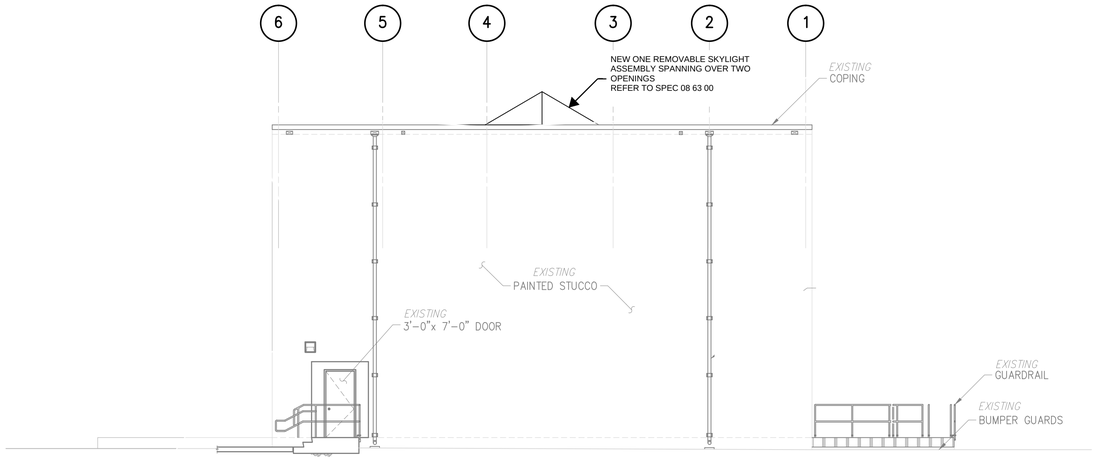


EXISTING EAST ELEVATION

1/8"=1'-0"

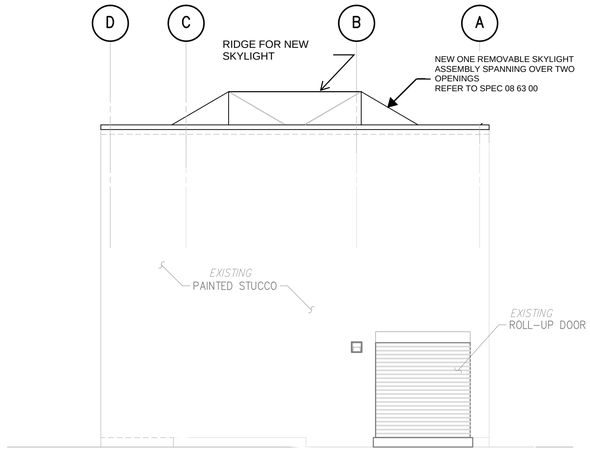
EXISTING SOUTH ELEVATION

1/8"=1'-0"



PROPOSED EAST ELEVATION

1/8"=1'-0"



PROPOSED SOUTH ELEVATION

1/8"=1'-0"

LEGEND

- EXISTING
- PROPOSED
- DEMOLISH

1/8"=1'-0"

8 6 4 2 0 8'

GENERAL NOTES

1. BASE DRAWING DEVELOPED FROM COH PROJECT # 12-9214 (HEADWORKS REHABILITATION AND REPLACEMENT, NOVEMBER 2012 BY HAZEN AND SAWYER), WHICH WAS PROVIDED BY CITY OF HOLLYWOOD FOR USE FOR THIS PROJECT. BROWN AND CALDWELL ASSUMES NO RESPONSIBILITY OF THE ACCURACY OF THE SAME. ADDITIONAL AVAILABLE INFORMATION FOR THIS PARTICULAR BUILDING SHALL BE REVIEWED BY CONTRACTOR (1985 IMPROVEMENT BY HAZEN AND SAWYER AND 1973 EXISTING SCREEN CHAMBER MODIFICATIONS BY POST, BUCKLEY, SCHUH & JERNIGAN, INC)

2. CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION SHOWN INCLUDING ALL DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCEMENT OF WORK. CONTACT ENGINEER FOR ANY DISCRIPANCY.

3. DURING DEMOLITION OF EXISTING SKYLIGHT AND FOR INSTALLATION OF NEW SKYLIGHT (INCLUDING FUTURE USE OF REMOVABLE SKYLIGHT) , ALL FALL PROTECTION REQUIREMENTS SHALL BE OBSERVED BY CONTRACTOR/CITY EMPLOYEES WHEN WORKING AT THE ROOF LEVEL.

4. CONTRACTOR TO VERIFY AND MAKE SURE NO DAMAGE OR MODIFICATION TO EXISTING ROOFING SYSTEM DURING NEW SKYLIGHT(S) INSTALLATION.
   A. REPAIRS AND ALTERATION TO EXISTING ROOFING : ALL REPAIRS AND ALTERATIONS SHALL BE PERFORMED ONLY BY PERSONNEL WHO ARE FULLY TRAINED AND EXPERIENCED IN INSTALLATION AND REPAIR OF THE EXISTING ROOF SYSTEM TYPE.
   B. ALL REPAIRS AND ALTERATIONS, INCLUDING BUT NOT LIMITED TO, NEW ROOF CURBS AND/OR ROOF FLASHING SHALL BE PROVIDED IN STRICT COMPLIANCE WITH RECOMMENDED DETAILS AND WRITTEN INSTRCUTIONS OF THE EXISTING ROOF MANUFACTURER OR THE NATIONAL ROOFING CONTRACTOR'S ASSOCIATION (NRCA).
   C. IF THE EXISTING ROOFING IS STILL UNDER WARRANTY, OWNER SHALL FURNISH WARRANTY DATA. CONTRACTOR SHALL THEN SUBMIT, TO ENGINEER FOR APPROVAL, MANUFACTURER'S WRITTEN STATEMENT OF ALL CONDITIONS REQUIRED, INCLUDING APPROVAL OF INSTALLERS SO AS NOT TO VOID WARRANTY. AT COMPLETION OF REPAIR, CONTRACTOR SHALL SUBMIT, TO ENGINEER, EXISTING ROOFING MANUFACTURER'S WRITTEN STATEMENT THAT ALL SUCH REPAIR IS ACCEPTABLE AND WARRANTY IS NOT VOIDED IN ANY MANNER DUE TO SUCH REPAIR.
   D. IF EXISTING ROOFING IS NOT UNDER WARRANTY, OWNER WILL FURNISH MANUFACTURER'S NAME, IF AVAILABLE. CONTRACTOR SHALL THEN SUBMIT, TO THE ENGINEER FOR APPROVAL, MANUFACTURER'S WRITTEN RECOMMENDATIONS FOR REPAIR. IF THE EXISTING ROOFING MANUFACTURER'S NAME IS NOT AVAILABLE, CONTRACTOR SHALL THEN SUBMIT, TO THE ENGINEER FOR APPROVAL, DETAILS AND WRITTEN INSTRUCTIONS RECOMMENDED BY NRCA FOR THE PROPOSED REPAIR AND ALTERATION OF THE EXISTING ROOFING SYTEM TYPE.

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   b. SKYLIGHT ATTACHMENT

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BAR SCREEN FACILITY - ELEVATIONS SHEET 1

DRAWING ISSUED

REVISION No.	DESCRIPTION	DATE	BY
A			
B			
C			
D			

CONFORMED - FOR CONSTRUCTION

PROJ No.: 155007

DESIGNED: AS	CHECKED: BD
DRAWN: JS	FINAL CHECK: AS

LINE IS 2 INCHES AT FULL SIZE

DATE: 5/2/2023 | SCALE: AS NOTED

SHEET: S-10-1004

Path: C:\USERS\HSERRANO\ONEDRIVE - BROWN AND CALDWELL\SHARED INTERNAL\1YHOLLYWOOD EMERGENCY BARSCREEN EVAL\STICKSET

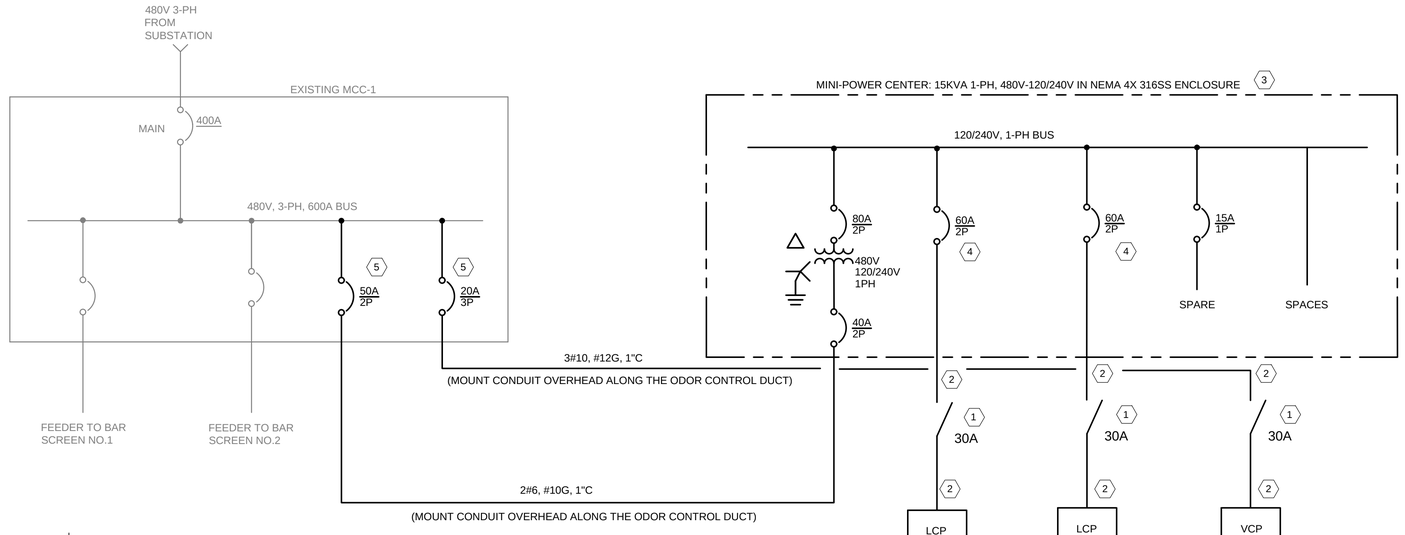
Plot Date: 5/2/2023 7:40 AM

KEY NOTES:

1. NEMA 7 EXPLOSION PROOF DISCONNECT SWITCH, MOUNT SWITCH IN SS UNISTRUT PEDESTAL.
2. 2#8, #10G, 3/4"C
3. MINI POWER CENTER SHALL BE BY EATON OR EQUAL.
4. CONTRACTOR MAY HAVE TO MODIFY THE BREAKER COMPARTMENT TO INSTALL 60A/2P BREAKER.
5. CONTRACTOR TO VERIFY THE EMPTY SPACE IN THE EXISTING MCC-1 TO INSTALL THE BREAKER.
6. TYPICAL FOR LCP-01002/BAR SCREEN NO. 2.
7. INSTALL CABLING IN FLEXIBLE CONDUIT OR OR SIMILAR TO ALLOW MOVEMENT FROM LIFTING ACTION. VENDOR TO SPECIFY REQUIRED LENGTH.

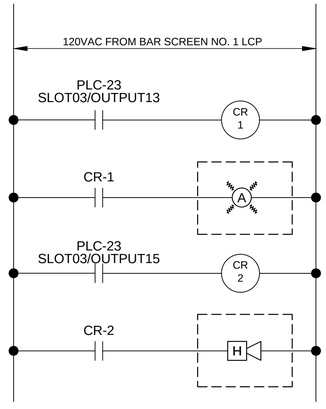
GENERAL NOTES:

1. ALL CONDUIT INSTALLATIONS SHALL BE PVC COATED RIGID GALV STEEL. ALL CONDUIT SUPPORTS AND HARDWARE SHALL BE STAINLESS STEEL.
2. ALL CONDUIT INSTALLATIONS INSIDE THE BAR SCREEN ROOM IN THE HEADWORKS SHALL HAVE EXPLOSION PROOF FITTINGS (CLASSIFIED AREA CLASS 1 DIV 2).
3. MOUNT MINI POWER CENTER OUTSIDE THE HEADWORKS BLDG ON THE NORTH WALL. FIELD VERIFY ACTUAL LOCATION.



BAR SCREEN HYDRAULIC LIFT ONE-LINE DIAGRAM

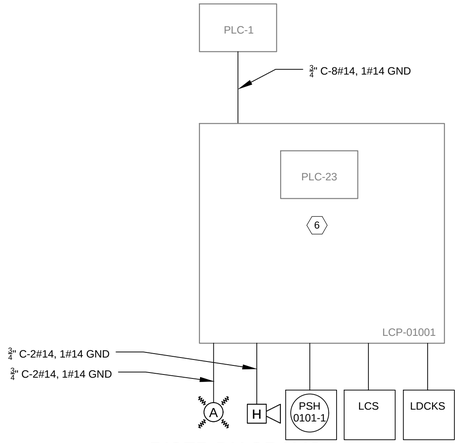
SCALE: NTS



LCP-01001 BEACON AND HORN RELAY SCHEMATIC

SCALE: NTS

TYPICAL FOR LCP-01002 (NOTE: PLC-24 IS IN LCP-01002)



RISER DIAGRAMS

SCALE: NTS

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BAR SCREEN HYDRAULIC LIFT DIAGRAMS

DRAWING ISSUED

REVISION No.	DESCRIPTION	DATE	BY
A			
B			
C			
D			

CONFORMED - FOR CONSTRUCTION

PROJ No.: 155007

DESIGNED: RA	CHECKED: BD
DRAWN: JS	FINAL CHECK: RA

LINE IS 2 INCHES AT FULL SIZE

DATE: 5/2/2023 SCALE: AS NOTED

SHEET: E-10-1001

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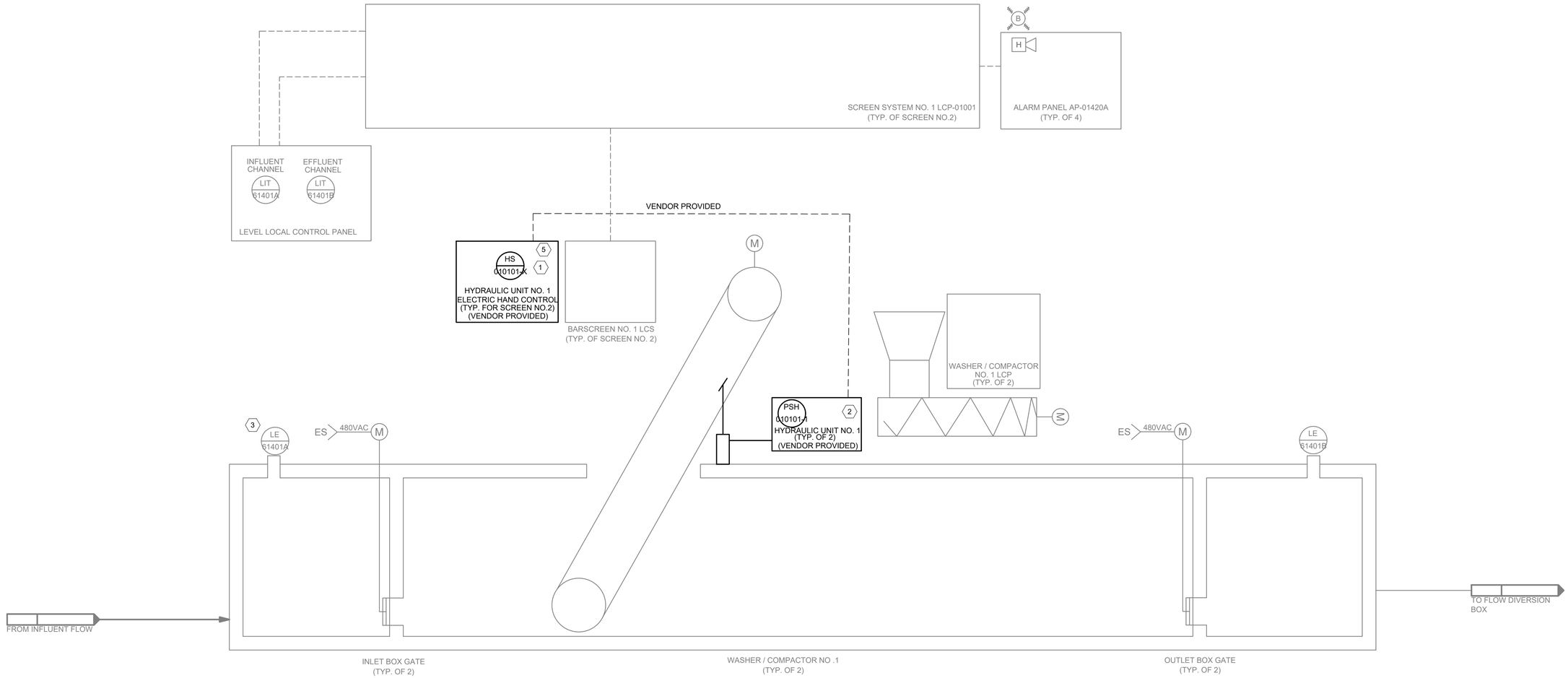
Plot Date: 5/2/2023 9:28 AM

SCADA

PLC-1



BAR SCREEN HYDRAULIC LIFT

SCALE: NTS

KEY NOTES:

1. HYDRAULIC UNIT ELECTRIC HAND CONTROL.
   POSITIONS:
   UP - MANUAL CONTROL FOR LIFTING BAR SCREEN
   STOP- MANUAL CONTROL STOP
   DOWN - MANUAL CONTROL FOR LOWERING BAR SCREEN
2. HYDRAULIC LIFTING SYSTEM POSITION / LIMIT DETECTION. PRESSURE SWITCH DETECTS SCREEN IS OUT OF THE CHANNEL. HYDRAULIC LIFT STOPS AUTOMATICALLY DUE TO PRESSURE SWITCH, OR IF ADJUSTABLE RUN TIME HAS ELAPSED. VENDOR TO SET HI PRESSURE SWITCH TRIP AS REQUIRED.
3. EXISTING DIFFERENTIAL LEVEL SENSOR IS COMMON TO BOTH BAR SCREENS.
4. (NOT USED)
5. VENDER PROVIDED ELECTRIC HAND CONTROL. CONTRACTOR TO COORDINATE LENGTH OF CORD WITH MANUFACTURER. HAND CONTROL TO BE USED/LOCATED IN SAFE AREA AWAY FROM SCREEN LIFTING AND LOWERING DIRECTION OF TRAVEL.

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BAR SCREEN MODIFICATIONS
HOLLYWOOD FLORIDA PUBLIC UTILITIES
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BAR SCREEN HYDRAULIC LIFT PROCESS AND INSTRUMENTATION DIAGRAM

DRAWING ISSUED

REVISION No.	DESCRIPTION	DATE	BY
A			
B			
C			
D			

CONFORMED - FOR CONSTRUCTION

PROJ No.: 159548

DESIGNED: HS	CHECKED: BD
DRAWN: FRP	FINAL CHECK: HS

LINE IS 2 INCHES AT FULL SIZE

DATE: 8/17/2023 SCALE: AS NOTED

SHEET: I-10-1001

Path: C:\USERS\LGUZMAN\DOWNLOADS

Plot Date: 8/17/2023
10:28 AM

EVALUATION

SRWWTP Bar Screen Modifications

Invitation For Bid

Public Utilities

82081, 89004, 89077, 89082, 90638... show all

Project ID: IFB-150-24-JJ

Release Date: Wednesday, November 22, 2023

Due Date: Thursday, December 21, 2023 3:00pm

Posted Wednesday, November 22, 2023 1:46pm

Bid Unsealed Thursday, December 21, 2023 3:00pm by OpenGov Bot

Pricing Unsealed Thursday, December 21, 2023 3:00pm by OpenGov Bot

All dates & times in Eastern Time

Question & Answer

Questions and clarifications about the project

+ Add Vendor Question | Report | Export to CSV | Active

1. Technical Specifications, Drawings *Nov 27 2023 at 10:00 AM*

Anonymous *Nov 27 2023 at 10:00 AM*
User information is private

Please provide technical specifications and drawings. Documents state technical specifications are in Appendix D. Appendix D has not been uploaded. Thank you.

Jean Joinville *Nov 27 2023 at 12:31 PM*
City of Hollywood

Appendix D has been uploaded under Attachments.

2. Several Questions *Nov 27 2023 at 2:28 PM*

Anonymous *Nov 27 2023 at 2:28 PM*
User information is private

The following Questions pertain to Spec Section 41 22 13.16:
1.- What is the adjustment in both directions (assuming it's supposed) for the 10 ton gantry crane?
2.- Is the gantry crane to be motorized? It should be at this capacity.
3.- Where is it located within the facility?
4.- Section 1.01.A calls for an electric chain hoist; Section2.03 calls for a wire rope hoist. Which is correct?
5.- If there is only a clear span of 8 feet, there will not be much side to side movement.
6.- How far is the travel distance?
7.- Section 2.02.C calls for Nylacrom casters and wheel brakes. Part d. calls for Nylcaron casters and polyurethane wheels.
Which is correct?
8.- Section 2.02.A states "gantry system shall not require no foundation or structural support", which I take to mean no rails or beams.
Section 3.01.B calls for installation and aligning of the rails. Which is correct?
9.- What is the travel distance for the gantry crane?
10.- Where is the power source for the hoist and trolley located? You can't really have a power cord draped across the floor.

Marta Alonso *Dec 13 2023 at 2:55 PM*
City of Hollywood

1. Please refer to Part 1.02 A for the requirements for the gantry.
2. The gantry crane shall have a motorized trolley and hoist. Please refer to Part 1.02 A for the requirements.
3. It shall be free standing - parallel to the bar screens.
4. It shall be electric, wire rope type hoist as mentioned in 2.03.
5. Side-to-side movement is required since there are 2 bar screens to be installed in the scope.
6. 20 feet approximately.
7. Nylacrom casters and wheel brakes
8. Gantry system shall not require a foundation or structural support – no rails or beams required.
9. 15-20 feet approximately.
10. Since the portable gantry crane is to be used as an emergency system, the power cord is considered acceptable by the city.

3. Plans *Nov 27 2023 at 2:28 PM*

Anonymous *Nov 27 2023 at 2:28 PM*
User information is private

Are there No Plans for this Bid?

Marta Alonso *Dec 13 2023 at 2:55 PM*
City of Hollywood

Please refer to Appendix D for the plans.

4. Original Bid Bond *Nov 27 2023 at 2:32 PM*

Anonymous *Nov 27 2023 at 2:32 PM*
User information is private

I know that we will have a copy of our Original Bid Bond in our Bid Submittal to you on line, but will you still want the Original Bid Bond be Sent to you as well? If you would like the Original Bid Bond sent to you as well, to Whose Attention and their Telephone Number, at What Address, and By What Time and Date should the Original Bid Bond be to you?

Marta Alonso *Dec 13 2023 at 2:55 PM*
City of Hollywood

The original bond will be requested at a later date from the selected bidder only, for contract execution.

5. Bar Screen *Nov 27 2023 at 2:53 PM*

Anonymous *Nov 27 2023 at 2:53 PM*
User information is private

Can we get a copy of the Huber proposal?

Marta Alonso *Dec 13 2023 at 3:17 PM*
City of Hollywood

A copy of the Huber proposal (quote) has been uploaded.

6. Estimate *Nov 27 2023 at 4:30 PM*

Anonymous *Nov 27 2023 at 4:30 PM*
User information is private

What is the Engineer/Project/Budget Estimate?

Marta Alonso *Dec 13 2023 at 3:17 PM*
City of Hollywood

The Engineer/Project/Budget Estimate is approximately $800,000.

7. Several Questions 2 *Nov 28 2023 at 10:09 AM*

Anonymous *Nov 28 2023 at 10:09 AM*
User information is private

1. Does only the new concrete get coated? If so, what system do we use in spec 09 90 00? There are a lot listed.
2. One screen at a time can be down correct?
3. Are the isolating gates fully operational?
4. Drawing E-10-1001 does not show Key Note #6 anywhere?
5. Is Huber also providing the Local Control Panels with PLC shown on E-10-1001? Or is it to be provided by Revere/CC Controls?
6. Drawing E-10-1001, Key Note #7 states that the cable from the LCP to the hydraulic lift is vendor provided and that a cable length was to be confirmed. Was that ever done and released?

Marta Alonso *Dec 13 2023 at 3:17 PM*
City of Hollywood

1. Yes, only new concrete is to be coated. Use system EA-4 as shown in 09 90 00 - Coating.
2. Yes, only one screen can be down at a time. Please see the revised specification sections 01 52 00 – Maintenance of Facilities and Sequence of Construction and 01 10 00 – Summary of Work for an improved construction sequence and scope of work.
3. The isolating gates appear to be functioning. However, the Contractor shall make necessary adjustments and provide means and methods to install temporary stop blocks if isolating gates do not fully close.
4. Keynote 6 is shown in the riser diagram located on the bottom right corner on sheet E-10-1001.
5. Yes, both bar screen lifting mechanism local control panels are to be provided by Huber. Please see updated specifications sections 01 10 00 – Summary of Work and 01 25 00 Measurement and Payment for an improved scope of work.
6. The cable was already released. The city has already procured the hydraulic lift and associated appurtenances.

8. Wind Speed *Nov 28 2023 at 3:13 PM*

Anonymous *Nov 28 2023 at 3:13 PM*
User information is private

1. Skylight manufacturer has a stated tested maximum wind speed of 170 mph. Sheet S-10-1003 calls out the required wind speed of 187 mph. Is the 170 mph acceptable?

Marta Alonso *Dec 13 2023 at 3:17 PM*
City of Hollywood

A maximum wind speed lower than 187 mph will not be accepted. 187 mph is required per local code.

9. Bar Screen *Nov 29 2023 at 12:54 PM*

Anonymous *Nov 29 2023 at 12:54 PM*
User information is private

There is no specification for the bar screen-we need installation specs, how much does it way, etc.

Marta Alonso *Dec 13 2023 at 3:17 PM*
City of Hollywood

A Bar screen specification will not be provided. Huber will be on-site and available during the installation of the bar screen to provide technical assistance and clarification. The specification sections 01 10 00 – Summary of Work, 01 25 00 – Measurement and Payment, and 01 52 00 Maintenance of Facilities and Sequence of Construction have been updated to better reflect the scope of work. Please see the above-mentioned updated specifications.

10. Conduit *Dec 6 2023 at 11:04 AM*

Anonymous *Dec 6 2023 at 11:04 AM*
User information is private

1. Please provide a drawing on conduit routing or a lineal footage.

Marta Alonso *Dec 13 2023 at 3:17 PM*
City of Hollywood

The contractor is welcome to visit the site to take measurements to determine the length of conduits to be installed as needed.

11. Channel Cleaning *Dec 7 2023 at 10:17 AM*

Anonymous *Dec 7 2023 at 10:17 AM*
User information is private

The assumption is only a vac truck service will be needed to clean/clear the channels. Is that true?

Marta Alonso *Dec 13 2023 at 3:17 PM*
City of Hollywood

The contractor is welcome to visit the site to determine the amount of grit to be removed and the means and method of grit removal.

12. Vendor Reference Form *Dec 13 2023 at 3:10 PM*

Anonymous *Dec 13 2023 at 3:10 PM*
User information is private

Can we reuse/submit Vendor Reference Forms from a previous City of Hollywood bid from earlier this year or do we need to have new Vendor Reference forms filled out?

Marta Alonso *Dec 13 2023 at 3:44 PM*
City of Hollywood

Yes, you can reuse/resubmit Vendor Reference Forms from a previous City of Hollywood bid from earlier this year as long as they are applicable to the project.

13. Liquidated Damages *Dec 14 2023 at 8:13 AM*

Anonymous *Dec 14 2023 at 8:13 AM*
User information is private

How much is the liquidated damages? How many days until substantial completion?

Marta Alonso *Dec 14 2023 at 2:20 PM*
City of Hollywood

Please refer to "Attachment C Supplementary Conditions - Article 3. Liquidated Damages."