

TOWN OF MEDLEY

"The perfect place for industrial development"

SANITARY SEWER LIFT STATION No. 100A UPGRADE CIP PROJECT No. WS-0102



BID No. 2014-004

Prepared by

Kimley »Horn

SANITARY SEWER LIFT STATION No. 100A UPGRADE CIP PROJECT No. WS-0102

TECHNICAL SPECIFICATIONS AND CONSTRUCTION DRAWINGS

Prepared for:



Town of Medley Utility Department

10776 NW South River Drive Medley, FL 33178 Prepared by:



Barton J. Fye, P.E. FL Registration No. 73898

Kimley»Horn

1221 Brickell Avenue, Suite 400 Miami, FL 33131 Phone: 305-673-2025 www.kimley-horn.com CA 00000696



TOWN OF MEDLEY, FLORIDA 7777 N.W. 72nd Avenue, Medley, Florida 33166 Tel: 305-887-9541, Fax: 305-882-1491 www.townofmedley.com

PROJECT DESCRIPTION

CONSTRUCTION OF:

SANITARY SEWER LIFT STATION No. 100A UPGRADE

The Contractor must furnish all supervision, labor, materials, tools, equipment, and performing all operations required to construct the Town of Medley Capital Improvements Project Number WS-0102, Sanitary Sewer Lift Station No. 100A Upgrade in accordance with the Contract Documents and as described in the Drawings, General Notes, and Technical Specifications.

Work includes, but is not limited to, the procurement and installation of new package pump station to replace existing sanitary lift station PS-100A located south of the intersection of N.W. 77th Avenue and N.W. 78th Terrace in Medley, Florida. Installation shall include: by-pass system design, installation, and operation in accordance with the "Lift Station Bypass Requirements" notes in the Drawings; demolition of the existing lift station as shown in the Drawings; installation of package pump station, associated piping, electrical wiring, lift station control panel, 2" diameter water service, backflow preventer, and concrete slab; and disposal of all construction debris, unused excavated material, and all unsuitable material. The forgoing is herein referred to as the "Project" or the "Work", as shown on the Drawings prepared by Kimley-Horn and this Project Manual.

TOWN OF MEDLEY



"The perfect place for industrial development"

SANITARY SEWER LIFT STATION No. 100A UPGRADE

CIP PROJECT No. WS-0102 BID NO. 2014-004



Notice of Award

Invitation to Bid

Part 1 - General Bid Information

Bid Addendum

Part 2 - Bid Documents, Forms & Contract

Part 3 - General Conditions

Part 4 - Technical Specifications

Construction Drawings

List of Approvals

Warranty Information

Prepared by

Kimley **»Horn**

1221 Brickell Avenue, Suite 400 Miami, FL 33131 Phone: 305-673-2025 www.kimley-horn.com CA 00000696

Notice of Award

Invitation to Bid



TOWN OF MEDLEY, FLORIDA 7777 N.W. 72nd Avenue, Medley, Florida 33166 Tel: 305-887-9541, Fax: 305-882-1491 www.townofmedley.com

BIDDER ACKNOWLEDGMENT OF INVITATION TO BID AND GENERAL CONDITIONS

SUBMIT BID TO: TOWN CLERK TOWN OF MEDLEY, FLORIDA 7777 N.W. 72nd AVENUE MEDLEY, FLORIDA 33166

THE FOLLOWING INSTRUCTIONS TO BIDDERS ARE STANDARD FOR ALL BIDS FOR COMMODITIES AND SERVICES ISSUED BY THE TOWN OF MEDLEY. THE TOWN MAY DELETE, SUPERSEDE OR MODIFY ANY STANDARD INSTRUCTIONS FOR A PARTICULAR CONTRACT BY INDICATING SUCH CHANGE IN SPECIAL INSTRUCTIONS TO BIDDERS OR IN THE BID SHEETS. ANY AND ALL SPECIAL CONDITIONS THAT MAY VARY FROM THE GENERAL CONDITIONS SHALL HAVE PRECEDENCE. BIDDER AGREES THAT THE PROVISIONS INCLUDED WITHIN THIS INVITATION FOR BID SHALL PREVAIL OVER ANY CONFLICTING PROVISION WITHIN ANY STANDARD FORM CONTRACT OF THE BIDDER REGARDLESS OF ANY LANGUAGE IN BIDDER'S CONTRACT TO THE CONTRARY.

BIDDER ACKNOWLEDGMENT MUST BE SIGNED AND RETURNED WITH YOUR BID

SEALED BIDS: This form must be executed and submitted with all Bid sheets in a sealed envelope. The face of the envelope shall contain the above address, the date and time of Bid opening and Bid number. Bids not submitted on attached Bid Form may be rejected. All Bids are subjected to the conditions specified herein. Those which do not comply with these conditions are subject to rejection.

BID TITLE: _____

BID No.:_____

BIDS WILL BE OPENED 3:00 P.M. (EST), January 28, 2015 and may not be withdrawn during the 90 calendar days following such date and time.

CORRECT LEGALNAME OF BIDDER

(SIGNATURE OF BIDDER'S AUTHORIZED AGENT)

TITLE: ______

TYPED/PRINTED NAME OF AUTHORIZED AGENT:

ADDRESS:_____

PHONE NO.:_____

FEDERAL ID NUMBER OR SOCIAL SECURITY NUMBER OF BIDDER:

I certify that this Bid acknowledgement is made without prior understanding, Agreement or connection with any corporation, firm or person submitting a Bid for the same commodities/services, and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this Bid and certify that I am authorized to sign this Bid for the Bidder. By signature on this form, Bidder acknowledges and accepts without limitation, pages 1 through 15 inclusive of the Invitation to Bid as well as any special instructions if applicable.

DATE: _____



TOWN OF MEDLEY, FLORIDA 7777 N.W. 72nd Avenue, Medley, Florida 33166 Tel: 305-887-9541, Fax: 305-882-1491 www.townofmedley.com

INVITATION TO BID

ALL INTERESTED PARTIES:

Notice is hereby given that the Town of Medley, Florida, hereinafter referred to as the Town, will receive sealed Bids at the Town Clerk's office at the Medley Municipal Services Facility, 7777 N.W. 72nd Avenue, Medley, Florida 33166, for:

CONSTRUCTION OF:

SANITARY SEWER LIFT STATION No. 100A UPGRADE

The Contractor must furnish all supervision, labor, materials, tools, equipment, and performing all operations required to construct the Town of Medley Capital Improvements Project Number WS-0102, Sanitary Sewer Lift Station No. 100A Upgrade in accordance with the Contract Documents and as described in the Drawings, General Notes, and Technical Specifications.

Work includes, but is not limited to, the procurement and installation of new package pump station to replace existing sanitary lift station PS-100A located south of the intersection of N.W. 77th Avenue and N.W. 78th Terrace in Medley, Florida. Installation shall include: by-pass system design, installation, and operation in accordance with the "Lift Station Bypass Requirements" notes in the Drawings; demolition of the existing lift station as shown in the Drawings; installation of package pump station, associated piping, electrical wiring, lift station control panel, 2" diameter water service, backflow preventer, and concrete slab; and disposal of all construction debris, unused excavated material, and all unsuitable material. The forgoing is herein referred to as the "Project" or the "Work", as shown on the Drawings prepared by Kimley-Horn and this Project Manual.

Sealed Bids must be received and time stamped by the Town Clerk, either by mail or hand delivery, no later than 3:00 p.m. local time on January 28, 2015. A public opening will take place at or before 3:05 p.m. at the Town Clerk's office at the Medley Municipal Services Facility, 7777 N.W. 72nd Avenue, Medley, Florida 33166 on the same date. Any Bids received after 3:00 p.m. local time on said date will not be accepted under any circumstances and will be returned to the Bidder unopened. The stated time and date is solely and strictly the responsibility of the Bidder. The Town is not responsible for delays caused by mail, courier service, including United States Mail, or any other occurrence. Any uncertainty regarding the time a Bid is received will be resolved against the Bidder.

Bidders may inspect the applicable Bid requirements, drawings, specifications, and other contract

documents at the office of the Town Clerk at the Medley Municipal Services Facility, 7777 N.W. 72nd Avenue, Medley, Florida 33166.

A Pre-Bid Conference will be held on January 14, 2015 at 11:00am in the Town Clerk's office at the Medley Municipal Services Facility, 7777 N.W. 72nd Avenue, Medley, Florida 33166. The purpose of the Pre-Bid Conference is to discuss the contents of this Invitation to Bid and Bidder's inquires.

Bid Documents may be obtained Monday through Thursday from 9:00am until 4:00pm (not including the Town of Medley legal holidays) on or after Monday, December 29, 2014 from the Town Clerk's office at the Medley Municipal Services Facility, 7777 N.W. 72nd Avenue, Medley, Florida 33166 for a non-refundable fee of Seventy-Five Dollars (\$75.00) per set payable in cash or check payable to the Town of Medley.

A Bid Guaranty of five percent (5%) of the bid amount will be required with the Bid. The Successful Bidder will also be required to furnish Performance and Payment Bonds, each in the amount of one hundred percent (100%) of the Contract amount.

The Town reserves the right to reject any or all Bids, to re-advertise for Bids or take such other actions as the Town Council may deem to be in the best interests of the Town.

The Town of Medley is an Equal Opportunity Employer and encourages the participation of Disadvantaged Business Enterprises (DBE) and Minority Business Enterprises (MBE).

This Notice of Bid Invitation dated at Medley, Florida this 18 day of December, 2014.

Part 1 – General Bid Information

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SECTION I INSTRUCTIONS TO BIDDERS

1. **DEFINED TERMS**

Terms used in these Instructions to Bidders are defined and have the meanings assigned to them. The term "Bidder" means one who submits a Bid directly to the Town, as distinct from a Sub-Bidder who submits a Bid to the Bidder, The term "Successful Bidder" means the lowest responsible and responsive Bidder whose Bid conforms to the requirements of the Bid Documents and is most advantageous to the Town and to whom the Town, on the basis of the Town's evaluation as hereinafter provided, makes an award. The term "Town" refers to the Town of Medley, a municipal corporation of the State of Florida, The term "Bid Documents" includes the Invitation to Bid, Instructions to Bidders, Special Conditions, Bid Form, Non-Collusive Affidavit, Certificate(s) of Insurance, Payment and Performance Bonds, Corporate Resolution, Bid Security, and the proposed Contract Documents, if any, including all Addenda issued prior to receipt of Bids and the General Conditions and Technical Specifications.

2. COPIES OF BIDDING DOCUMENTS

Complete sets of Bid Documents must be used in preparing Bids. The Town does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents. The Town, in making copies of Bid Documents available does so only for the purpose of obtaining Bids and does not confer a license or grant for any other use.

3. QUALIFICATIONS OF BIDDERS

3.1 Each Bidder shall complete the Qualifications Statement and shall submit the same with the Bid, together with other evidence of minimum qualifications, including satisfactory experience, past performance, ability to perform the Work, and financial stability. Failure to submit the Qualifications Statement and all documents required thereunder together with the Bid may constitute grounds for rejection of the Bid.

3.2 The Town reserves the right to make a pre-award inspection of the Bidder's facilities and equipment prior to award of Contract.

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

3.4 As part of the Bid evaluation process, the Town may conduct a background investigation including a record check by the Medley Police Department. Bidder's submission of a Bid constitutes acknowledgment of the process and consent to such investigation. The Town shall be the sole judge in determining Bidders qualifications.

3.5 The Town reserves the right to consider a Bidder's history of citations and/or violations of environmental regulations in determining a Bidder's responsibility, and further reserves the right to

declare a Bidder not responsible if the history of violations warrant such determination. Bidder shall submit with Bid, a complete history of all citations and/or violations, notices and dispositions thereof. The non-submission of any such documentation shall be deemed to be an affirmation by the Bidder that there are no citations or violations. Bidder shall notify the Town immediately of notice of any citation or violation that Bidder may receive after the Bid opening date and during the time of performance of any contract awarded to Bidder.

4. EXAMINATION OF BID DOCUMENTS

4.1 Before submitting a Bid, each Bidder must (a) examine the Bid Documents thoroughly; (b) 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; (c) study and carefully correlate Bidders observations with the Bid Documents; and (d) notify the Town's Contract Administrator of all conflicts, errors and discrepancies in the Bid Documents.

4.2 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Paragraph, that without exception, the Bid is premised upon performing the services and/or furnishing the commodities and materials and such means, methods, techniques, sequences or procedures as may be indicated in or required by the Bid 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.

5. <u>SPECIFICATIONS</u>

5.1 The apparent silence of the Specifications as to any detail, or the apparent omission from the Specifications of a detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and that only material and workmanship of the finest quality are to be used. All interpretations of the Specifications shall be made on the basis of this statement.

5.2 Items shown on the Engineering Drawings but not noted in the Specifications, and items noted in the Specifications but not shown on the Engineering Drawings, are to be considered as both shown on the Engineering Drawings and noted in the Specifications. Any errors or omissions in the Specifications or on the Engineering Drawings, as to the standards of the Work, shall not relieve the Successful Bidder of the obligation to furnish a satisfactory first class job in strict conformity with the best practice found in structures or in the Work of a similar type. The failure of the Bidder to direct the attention of the Contract Administrator to errors or discrepancies will not relieve the Bidder, should Bidder be awarded the Contract, of the responsibility of performing the Work to the satisfaction of the Town.

5.3 Where there appears to be a conflict between the General Conditions, Technical Specifications and any amendment issued, the order of precedence shall be the last amendment, the Specifications and then the General Conditions.

6. <u>BID FORMS</u>

6.1 The Bid Forms are included with the Bid Documents and must be used by the Bidder.

Failure to do so may cause the Bid to be rejected. The forms must be submitted in good order and all blanks must be completed.

6.2 The Bid must be signed by one duly authorized to do so and in cases where the Bid is signed by a deputy or subordinate, the principal's proper written authority to such deputy or subordinate must accompany the Bid.

6.3 Bids 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.

6.4 Bids 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.

7. MODIFICATION AND WITHDRAWL OF BIDS

7.1 Bids must be modified or withdrawn by an appropriate change or modification 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 person duly authorized to do so and, in a case where signed by a deputy or subordinate, the principal's proper written 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. After expiration of the period for receiving Bids, no Bid may be withdrawn or modified.

8. <u>REJECTION OF BIDS</u>

8.1 To the extent permitted by applicable laws and regulations, the Town reserves the right to reject any and all Bids, 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. Bids 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.

8.2 The Town reserves the right to reject the Bid of any Bidder if the Town believes that it would not be in the best interest of the Town to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the Town.

8.3 More than one Bid 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 Bids in which the Bidder is interested. If there are reasonable grounds for believing that collusion exists among the Bidders, the Bids of participants in such collusion will not be considered.

8.4 The foregoing reasons for rejection of Bids are not intended to be exhaustive.

9. OPENING OF BIDS

Bids will be opened publicly on the date at the location and time specified in the Invitation to Bid. Bids will be read aloud and an abstract of the amount of the base Bids will be made available after the opening of the Bid.

10. BIDS TO REMAIN OPEN

10.1 All Bids shall remain open for one hundred and twenty (120) days after the day of the Bid opening, but the Town may, at its sole discretion, release any Bid and return the Bid Security prior to that date. Each Bidder agrees to abide by the unit prices or lump sum amount quoted as the Total Base Bid in the Bid Forms for one hundred and twenty (120) days from the date of Bid opening.

10.2 Extensions of time when Bids shall remain open beyond the one hundred and twenty (120) day period may be made only by mutual written Contract between the Town, the successful Bidder and the surety, if any, for the successful Bidder.

11. <u>AWARD OF CONTRACT</u>

11.1 If the Contract is to be awarded, it will be awarded to the lowest responsible and responsive Bidder whose Bid conforms to the requirements of the Bid Documents and is most advantageous to the Town, and not necessarily to the lowest Bidder.

11.2 Criteria utilized by the Town for determining the qualifications of the Bidder and lowest responsible and responsive Bidder includes, but is not limited to the following:

- A. Ability, capacity and skill of Bidder to meet published Specifications.
- B. Bidder's experience and references, including but not limited to, the reputation, integrity, character, efficiency, experience, skill, ability and business judgment of the Bidder, the quality of performance of Bidder under previous contracts, any Sub-Contractors and other persons providing labor or materials to Bidder.
- C. The character, integrity, reputation, judgment, experience and efficiency of the bidder and/or its principals and/or officers.
- D. Whether or not the Bid is within the budget for the Project for which the Bid is submitted as contemplated by the Town.
- E. Bidder's qualifications and capabilities, including but not limited to, the size, financial history, strength and stability of the business to perform the Work of the Contract, the possession of necessary facilities and equipment and the quality, availability and adaptability thereof to the particular use(s) required.
- F. Past performance record and the quality and performance of Bidder on previous contracts of a similar nature.

- G. Whether Bidder can perform the Contract promptly or within the time specified, without delay or interference.
- H. Previous and existing compliance by Bidder with laws, ordinances and regulations of the Town relating to a similar Contract or Work.
- I. The sufficiency of the financial resources and capabilities and the ability of the Bidder to perform the Contract or provide the Work requested.
- J. Bidder possesses and holds all required licenses, permits and certifications required to perform the Work, including a State of Florida general contractor's license, and shall submit evidence of same with its Bid.
- K. Price.
- L. Such other information as deemed by the Town to be reasonably related to the ability of the Bidder to provide the service requested or undertakes the Work required.

11.3 The Town Mayor and/or Town Engineer will appoint a Selection Committee to review and evaluate all Bids received and establish a ranking and/or short list of qualified Bidders deemed to be qualified and the lowest responsive and responsible bidders to perform the Work in accordance with the criteria set forth in these Bid Documents. The Selection Committee during its evaluation process reserves the right to contact references and to verify information submitted by any Bidder. The Selection Committee may also request oral presentations as well as clarification or information from the Bidders. The Town Engineer may submit a recommended firm or short list or a combination of a recommended firm and the short list to the Town Council and the Town Council shall make the final selection of the Bidder and Contract award. The Town Engineer may request oral presentations to the Town Council from the Bidders

11.4 In awarding a Contract pursuant to a Bid, the Town Council shall consider all of the foregoing criteria and in addition thereto may consider other facts or circumstance in awarding a Contract. The Town Council shall not be required to award a Contract to the lowest Bidder nor shall it be required to award a Contract at all. The Town Council at all times shall have the right, in its sole and absolute discretion, to waive any informality in any Bid proposal, to increase or decrease the quantities shown in the Bid Form, or the Town may reject any and/or all Bids. The Town reserves the right to reject any or all Bids prior to award. Reasonable efforts will be made to either award the Contract or reject all Bids within one hundred and twenty (120) days after Bid opening date. A Bidder may not withdraw its Bid unilaterally nor change the Contract Price before the expiration of one hundred and twenty (120) days from the date of Bid opening. A Bidder may withdraw its Bid after the expiration of one hundred and twenty (120) days from the date of Bid opening by delivering written notice of withdrawal to the Town prior to award of the Contract by the Town Council.

11.5 Notwithstanding the foregoing, if the Project is funded, in whole or in part, by federal or Florida Department of Transportation or other federal and/or state administered funds, then the federal and state provisions for awarding a Contract shall apply.

11.6 The Successful Bidder must execute the required contracts prior to award by the Town

Council. After the Town Council award, the Successful Bidder will be issued a Notice of Award. Within fifteen (15) days thereafter, the Successful Bidder must deliver the required Bonds and certificate of insurance to the Town. Within ten (10) days thereafter, if practical, the Town shall deliver one (1) fully executed contract to Successful Bidder along with Notice to Proceed. The fully executed Contract will be accompanied by a complete set of drawings (if required).

11.7 If applicable, the Bidder to whom award is being recommended shall execute a written contract prior to contract award. If the Bidder fails to enter into a contract as herein provided the recommended award will be to the next lowest Bidder who is responsible and responsive in the opinion of the Town. Such Bidder shall fulfill every stipulation embraced herein as if it were the original party to whom the award was made.

11.8 The Town may award a Contract based on initial offers received, without discussions. Therefore, each initial offer should contain the Bidder's best efforts. The Town, at its sole discretion, reserves the right to enter into Contract negotiations with qualified and lowest responsive and responsible Bidder. If the Town and said Bidder cannot negotiate a successful Contract, the Town may terminate said negotiations and begin negotiations with the next qualified and lowest responsive and responsible Bidder. This process will continue until a Contract acceptable to the Town has been executed or all Bids are rejected. No Bidder shall have any rights against the Town rising from such negotiations or termination thereof.

12. <u>INSURANCE</u>

12.1 Bidders should submit copies of their current certificate(s) of insurance together with the Bid. Failure to do so may cause rejection of the Bid.

12.2 AT THE TIME OF EXECUTION OF THE CONTRACT, THE SUCCESSFUL BIDDER SHALL SUBMIT A CURRENT CERTIFICATE OF INSURANCE EVIDENCING THE REQUIRED COVERAGES AND SPECIFICALLY PROVIDING THAT THE TOWN OF MEDLEY IS AN ADDITIONAL NAMED INSURED WITH RESPECT TO THE REQUIRED COVERAGE AND THE OPERATIONS OF THE SUCCESSFUL BIDDER UNDER THE CONTRACT. Insurance Companies selected must be acceptable to the Town. All of the policies of insurance so required to be purchased and maintained shall include the interests of the Town, the Successful Bidder and all subcontractors at the work site (all of whom are to be listed as insured or additional insured parties) and contain a provision or endorsement that the coverage afforded shall not be canceled, materially changed or renewal refused until at least thirty (30) days written notice has been given to the Town by certified mail.

12.3 The Successful Bidder shall procure and maintain at its own expense and keep in effect during the full term of the Contract a policy or policies of insurance that must include the following coverage and minimum limits of liability:

A. Worker's Compensation Insurance for statutory Obligations imposed by Worker's Compensation or Occupational Disease Laws, including, where applicable, the United States Longshoremen's and Harbor Worker's Act, the Federal Employer's Liability Act and the Homes Act. Employer's Liability Insurance shall be provided with a minimum of One Hundred Thousand Dollars (\$100,000.00) per accident. Successful Bidder shall agree to be responsible for the employment, conduct and control of its employees and

for any injury sustained by such employees in the course of their employment.

B. Comprehensive Automobile Liability Insurance for all owned, non-owned and hired automobiles and other vehicles used by the Successful Bidder in the performance of the Work with the following minimum limits of liability:

\$1,000,000 Combined Single Limit, Bodily injury and Property Damage Liability per occurrence

C. Comprehensive General Liability with the following minimum limits of liability:

\$2,000,000 Combined Single Limit, Bodily Injury and Property Damage Liability per occurrence

Coverage shall specifically include the following with minimum limits not less than those required for Bodily Injury Liability and Property Damage:

- a. **Premises and Operations**;
- b. Independent Contractors;
- c. Product and Completed Operations Liability;
- d. Broad Form Property Damage;
- e. Broad Form Contractual Coverage applicable to the Contract and specifically confirming the indemnification and hold harmless agreement in the Contract; and
- f. Personal Injury coverage with employment contractual exclusions removed and deleted.
- g. Builder's Risk, if applicable.

12.4 The required insurance coverage shall be issued by an insurance company authorized and licensed to do business in the State of Florida, with the following minimum qualifications in accordance with the latest edition of A.M. Best's Insurance Guide, Financial Stability B+ -A+.

12.5 The Successful Bidder shall require each of its Sub-Contractors of any tier to maintain the insurance required herein (except as respects limits of coverage for employers and public liability insurance which may not be less than One Million (\$1,000,000) Dollars for each category), and the Successful Bidder shall provide verification thereof to the Town upon request of the Town.

12.6 All required insurance policies shall preclude any underwriter's rights of recovery or subrogation against the Town with the express intention of the parties being that the required insurance coverage protects both parties as the primary coverage for any and all losses covered by the above described insurance.

12.7 The Successful Bidder shall ensure that any company issuing insurance to cover the requirements contained in this Contract agrees that they shall have no recourse against the Town for

payment or assessments in any form on any policy of insurance.

12.8 The clauses "other Insurance Provisions" and "Insurers Duties in the Event of an Occurrence, Claim or Suit" as it appears in any policy of insurance in which Town is named as an additional named insured shall not apply to the Town. The Town shall provide written notice of occurrence within fifteen (15) working days of the Town's actual notice of such an event.

12.9 The Successful Bidder shall not commence the Work under the Contract until after it has obtained all of the minimum insurance herein described.

12.10 The Successful Bidder agrees to perform the Work under the Contract as an independent contractor, and not as a sub-contractor, agent or employee of the Town.

12.11 Violation of the terms of this Paragraph and its subparts shall constitute a breach of the Contract and the Town, at its sole discretion, may cancel the Contract and all rights, title and interest of the Successful Bidder shall thereupon cease and terminate.

12.12 The Bidders liability insurance policies shall be endorsed to add the Town of Medley as an additional insured. The Bidder's liability insurance shall be primary to any liability insurance policies carried by the Town. The bidder shall be responsible for all deductibles and self-insured retentions on Bidder's liability insurance policies. All of the policies of insurance so required to be purchased and maintained shall contain a provision or endorsement that the coverage afforded shall not be cancelled, materially changed or renewal refused until at least thirty (30) calendar days written notice has been given to the Town by certified mail. The Town reserves the right to make any changes additions to any insurance requirements as may be appropriate during the course of the contract.

13. <u>PUBLIC ENTITY CRIMES INFORMATION STATEMENT</u>

A person or affiliate who has been placed on the convicted vendor list following a conviction for 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 public entity, may not be awarded or perform Work as a contractor, supplier, sub-contractor or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of thirty-six (36) months from the date of being placed on the convicted vendor list. Each Bidder shall complete the Form included with these Bid Documents.

14. <u>CONTRACT TIME</u>

14.1 The Work to be performed under the Contract shall be commenced upon issuance of Notice to Proceed by the Town.

14.2 The number of days, which the Work is to be completed or goods are to be provided, is 150 consecutive calendar days for Substantial Completion and 180 consecutive calendar days for Final Completion from the date of issuance of the Notice To Proceed. 14.3 By virtue of the submission of its Bid, Bidder agrees and fully understands that the completion time of the Work of the Contract is an essential and material condition of the contract and that time is of the essence. The Successful Bidder agrees that all work shall be prosecuted regularly, diligently and uninterrupted at such rate of progress as will ensure full completion thereof within the time specified. Failure to complete the Work within the time period specified shall be considered a default.

14.4 All Bidders shall agree that a liquidated damages provision will be required in the Contract.

15. <u>SAFETY</u>

15.1 The Successful Bidder shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The Successful Bidder shall comply with the rules and regulations of the Florida Department of Commerce regarding industrial safety (Fla Statutes Section 440.56) and with the standards set forth in the Occupational Safety and Health Act of 1970 (OSHA) and its Amendments.

15.2 The Successful Bidder shall take all reasonable precautions for the safety of and shall provide all reasonable protection to prevent damage, injury or loss to:

- A. All employees on the Work site and all other persons who may be affected thereby.
- **B.** The Work and all materials and equipment incorporated therein.
- C. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, structures and utilities not designated for removal, relocation or replacement in the course of the Work.

15.3 All open excavations made in the earth shall be performed in compliance with the State of Florida Trench Safety Act, OSHA 29 CFR 1926.650, Subpart P (Chapter 90-96, Laws of Florida). The Contractor shall appoint a **competent person**, in accordance with Subpart P, who shall be present at the jobsite. **Competent person** shall mean one who is capable of identifying existing and predictable hazards I the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

16. WARRANTIES

16.1 Warranty of Title: The Successful Bidder warrants to the Town that all goods and materials furnished under the Contract will be new unless otherwise specified and that Successful Bidder possess good, clear, and marketable title to said goods and there are no pending liens, claims or encumbrances whatsoever against said goods. All Work not conforming to these requirements, including substitutions not properly approved and authorized may be considered defective.

16.2 Warranty of Specifications: The Successful Bidder warrants that all goods, materials and workmanship furnished, whether furnished by the Successful Bidder or its subcontractors and suppliers, will comply with the specifications, drawings and other descriptions supplied or adopted.

16.3 Warranty of Merchantability: The Successful Bidder warrants that the goods to be supplied pursuant to the Contract are merchantable, of good quality and free from defects, whether patent or latent in material or workmanship.

16.4 Warranty of Material and Workmanship: The Successful Bidder warrants all material and workmanship for a minimum of one (1) year from date of project completion and acceptance by the Town, if within one (1) year after acceptance by the Town, or within such larger period of time as maybe prescribed bylaw any of the Work is found to be defective or not in accordance with the Contract Documents, the Successful Bidder shall after receipt of a written notice from the Town to do so, promptly correct the Work unless the Town has previously given the Successful Bidder a written acceptance of such condition.

16.5 The Successful Bidder warrants to the Town that it will comply with all applicable federal, state and local laws, regulations and orders in carrying out its obligations under the Contract, and holds and possesses all required licenses, certifications and permits to perform the Work.

16.6 The Successful Bidder warrants to the Town that it is not insolvent, it is not in bankruptcy proceedings or receivership, nor is it engaged in or threatened with any litigation, arbitration or other legal or administrative proceedings or investigations of any kind which would have an adverse effect on its ability to perform its obligations under the Contract.

16.7 The Successful Bidder warrants to the Town that the consummation of the Work provided for in the Contract Documents will not result in the breach of any term or provision of, or constitute a default under any indenture, mortgage, contract, or agreement to which the Successful Bidder is a party.

16.8 The Successful Bidder warrants that there has been no violation of copyrights or patent rights either in the United States of America or in foreign countries in connection with the Work of the Contract.

16.9 All warranties made by the Successful Bidder together with service warranties and guarantees shall run to the Town and the successors and assigns of the Town.

17. <u>RISK OF LOSS</u>

The risk of loss, injury or destruction, regardless of the cause of the casualty, shall be on the Successful Bidder until the completion of the Project, and inspection and acceptance thereof by the Town.

18. <u>PERMITS, FEES AND NOTICES</u>

18.1 In accordance with the Public Bid Disclosure Act, Section 281.80, Florida Statutes, the Town shall disclose all Town permit fees associated with the Work. The Town will not charge for any building permits required from the Town for the Work. The Successful Bidder shall secure and be responsible for any and all permits and licenses, and pay all fees, that may be required for the proper execution and completion of the Work, as may be required from Miami-Dade County, State and federal agencies. The Successful Bidder shall use their best efforts to obtain all necessary permits as soon as possible after the date of Contract award. Any delays in obtaining permits must be brought to the

attention of the Contract Administrator without delay.

18.2 The Successful Bidder shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work. The Town shall not be responsible for monitoring the Successful Bidder's compliance with any laws or regulations.

18.3 All notices or other documents or papers required to be delivered by the Contractor to the Town shall be delivered to an address provided to the Contractor at the preconstruction conference.

18.4 The Successful Bidder shall secure, complete and file with the Clerk of Courts of Miami-Dade County, a Certified Notice of Commencement required Chapter 713, Florida Statutes. This notice must be on file with the Town, and be displayed on the job site prior to the first inspection.

19. DELAYS AND EXTENSIONS OF TIME

19.1 The Contract time may only be changed by a Change Order or a written Amendment. Any claims for an extension or shortening of Contract time shall be based upon written notice delivered by the party making the claim to the other party not more than three (3) days after the occurrence of the event giving rise to the claim and stating the general nature of the claim otherwise it shall be waived.

19.2 The Town shall have no liability to the Successful Bidder for any damages for delay or interruption of the Work. The Successful Bidder's sole and exclusive remedy for any such delay, if any, shall be an extension of the time required or allowed to complete the Work. No claim for damages or any claim other than an extension of time shall be made or asserted against the Town by reason of any delays.

20. <u>DEFAULT</u>

In the event the Successful Bidder shall default in any of the terms, obligations, restrictions or conditions in the Contract Documents, the Town shall give the Successful Bidder written notice by certified mail of the default and that such default shall be corrected or actions taken to correct such default shall be commenced within five (5) days thereof. In the event the Successful Bidder has failed to correct the condition(s) of the default or the default is not remedied to the satisfaction and approval of the Town, the Town shall have all legal remedies available to it, including, but not limited to termination of the Contact in which case the Successful Bidder shall be liable for all procurement and re-procurement costs and any and all damages permitted by law arising from the default and breach of the Contract.

21. <u>TERMINATION FOR CONVENIENCE OF THE TOWN</u>

See Construction Services General Conditions, Section XIV (11) and Contract for Construction hereafter for details.

22. ASSIGNMENT

The Successful Bidder shall not assign or transfer its rights, title or interests in this Contract nor shall Successful Bidder delegate any of the duties or obligations undertaken by Successful Bidder without the Town's prior written approval.

23. <u>APPLICABLE LAWS, ORDINANCES, RULES, CODES AND REGULATIONS</u>

Notice is hereby given that the Successful Bidder must be familiar with all federal, state and local laws, ordinances, rules, codes and regulations that may affect the Work. Ignorance on the part of the Bidder will in no way relieve him/her from the responsibility of compliance therewith.

24. EQUAL EMPLOYMENT OPPORTUNITY REQUIRMENT INFORMATION

The Town is an Equal Opportunity Employer and encourages the participation of Disadvantaged Business Enterprises and (DBE) and Minority Business Enterprises (MBE).

25. <u>BID SECURITY</u>

25.1 Each Bid must be accompanied by a certified or cashier's check or by a Bid Bond made payable to the Town of Medley on an approved form, duly executed by the Bidder as principal and having as surety thereon a surety company acceptable to the Town and authorized to write such Bid Bond under the laws of the State of Florida, in an amount not less than five percent (5%) of the amount of the Bid.

25.2 The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Contract and furnished the required Payment and Performance Bonds, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute and deliver the Contract or furnish the required Bonds within fifteen (15) days of the Notice of Award, the Town may annul the Notice of Award and the entire sum of the Bid Security shall be forfeited. The Bid Security of the three (3) lowest, responsible and responsive Bidders will be returned within seven (7) days after the Town and the Successful Bidder have executed the written Contract or if no such written Contract is executed within ninety (90) days after the date of the Bid opening, upon the demand of any Bidder at anytime thereafter, provided that it has not been notified of the acceptance of its Bid. Bid Security of all other Bidders will be returned within seven (7) days after the Bid opening. The attorney in fact or other officer who signs a Bid Bond for a surety company must file with such a Bond a certified copy of its power of attorney authorizing him/her to do so.

25.3 The Bid Security filed with the Bid shall, at the option of the Town, be forfeited in its entirety to the Town as liquidated damages if the Bidder to whom the Contract is awarded fails to execute the Contract Documents within fifteen (15) days of written notice by the Town.

26. <u>PAYMENT AND PERFORMANCE BONDS</u>

26.1 Within fifteen (15) days after the Contract Award, but in any event prior to commencing Work, the Successful Bidder shall execute and furnish to the Town a Performance Bond and a Payment Bond, each written by a corporate surety, having a resident agent in the State of Florida and having been in business with a record of successful continuous operation for at least five (5) years. The surety shall hold a current certificate of authority from the Secretary of Treasury of the United States as an

acceptable surety on federal bonds in accordance with United States Department of Treasury Circular No, 570. If the amount of the Bond exceeds the underwriting limitation set forth in the circular, in order to qualify, the net retention of the surety company shall not exceed the underwriting limitation in the circular and the excess risks must be protected by coinsurance, reinsurance, or other methods, in accordance with Treasury Circular 297, revised September 1, 1978 (31 DFR, Section 223,10, Section 223.11). Further, the surety company shall provide the Town with evidence satisfactory to the Town, that such excess risk has been protected in an acceptable manner. The surety company shall have at least the following minimum qualifications in accordance with the latest edition of A.M. Best's insurance Guide, published by Alfred M. Best Company, Inc., Ambest Road, Oldwick, New Jersey 08858: Financial Stability -A Financial size –VIII.

26.2 Two (2) separate Bonds are required and both must be approved by the Town. The penal sum stated in each Bond shall be the amount equal to the total amount payable under the terms of the contract. The Performance Bond shall be conditioned that the Successful Bidder performs the contract in the time and manner prescribed in the contract. The Payment Bond shall be conditioned that the Successful Bidder promptly make payments to all persons who supply the Successful Bidder with labor, materials and supplies used directly or indirectly by the Successful Bidder in the prosecution of the Work provided for in the contract and shall provide that the surety shall pay the same in the amount not exceeding the sum provided in such Bonds, together with interest at the maximum rate allowed by law; and that they shall indemnify and save harmless the Town to the extent of any and all payments in connection with the carrying out of said contract which the Town maybe required to make under the law.

26.3 Such Bonds shall continue in effect for one (1) year after final payment becomes due except as otherwise provided by law or regulation or by the Contract Documents with the final sum of said Bonds reduced after final payment to an amount equal to twenty-five percent (25%) of the Contract Price, or an additional Bond shall be conditioned that the Successful Bidder correct any defective or faulty Work or material which appear within one (1) year after Final Completion of the Contract, upon notification by the Town.

27. INDEMNIFICATION

27.1 The parties agree that one percent (1%) of the total compensation paid to Successful Bidders for the Work of the Contract shall constitute specific consideration to Successful Bidder for the indemnification to be provided under the Contract. To the fullest extent permitted by laws and regulations, Successful Bidder shall indemnify, defend, save and hold harmless the Town, its officers, agents and employees, from or on account of all claims, damages, losses, liabilities and expenses, direct, indirect or consequential arising out of or alleged to have arisen out of or in consequence of the operations of the Successful Bidder or its Subcontractors, agents, officers, employees or independent contractors pursuant to or in the performance of the contract.

27.2 Successful Bidder agrees to indemnify, defend, save and hold harmless the Town, its officers, agents and employees, from all claims, damages, losses, liabilities and expenses arising out of any alleged infringement of copyrights, patent rights and/or the unauthorized or unlicensed use of any material, property or other work in connection with the performance of the Contract.

27.3 Successful Bidder shall pay all claims, losses, liens, settlements or judgments of any

nature whatsoever in connection with the foregoing indemnifications including, but not limited to, reasonable attorney's fees (including appellate attorney's fees) and costs.

27.4 The Town reserves the right to select its own legal counsel to conduct any defense in any such proceeding and all costs and fees associated therewith shall be the responsibility of Successful Bidder under the indemnification. Nothing contained herein is intended nor shall it be construed to waive the Town's rights and immunities under the common law or Florida Statute 768.28 as amended from time to time.

28. <u>TAXES</u>

The Successful Bidder shall pay all applicable sales, consumer use and other similar taxes required by law.

29. INSPECTION AND AUDIT RIGHTS

The Town reserves the right to inspect and audit the records of the Successful Bidder for the Work and/or services provided under the Contract at any time during the performance and term of the Contract and for a period of five (5) years after completion and acceptance by the Town. If required by the Town, the Successful Bidder agrees to submit to an inspection and audit by an independent certified public accountant selected by the Town. The Successful Bidder shall allow the Town 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, and shall comply with Chapter 119, Florida Statutes (Public Records Law).

30. <u>CONFLICT OF INTEREST</u>

The award hereunder is subject to the provisions of Chapter 112, Florida Statutes. Bidders must disclose with their Bid the name of any officer, director, partner, proprietor, associate or agent who is also a public officer or employee of the Town or any of its agencies. Further, all Bidders must disclose the name of any public officer or employee of the Town who owns, directly or indirectly, an interest of five percent (5%) or more in the Bidder's firm or any of its branches or affiliate companies.

31. NON-COLLUSIVE AFFIDAVIT

Each Bidder shall complete the Non-Collusive Affidavit and include it with the Bid Form and shall submit this Form with the Bid. Failure of the Bidder to submit this document may be cause for rejection of the Bid.

32. <u>PUBLIC ENTITY CRIMES ACT.</u> In accordance with the Public Entity Crimes Act, (Section 287.133, Florida Statutes) a person or affiliate who is a contractor, who had 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 the Town, 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 or real property to the Town, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with the Town in excess of the threshold amount provided in Section 287.017, Florida Statutes, for

Category Two for a period of 36 months from the date of being placed on the convicted vendor list. Violation of this section by the Contractor shall result in rejection of the Bid, termination of the contract, and may cause Contractor debarment. Interested firms must complete and submit the enclosed public entity crimes form.

33. <u>EXAMINATION OF DOCUMENTS AND WORK SITE.</u> Bidders shall examine existing site(s) and surrounding areas, including but not limited to subsurface and soil conditions, utilities, and streets to determine all conditions that will affect the Work and become familiar with the nature and extent of Work to be performed and local conditions that may affect the Work.

33.1 The Bidding Documents were prepared to present an essentially accurate representation of existing conditions, interpreted from available information on site. The Bidder is not relieved, however, of the responsibility of becoming fully informed as to existing conditions at the site.

33.2 Bidders shall thoroughly examine the Bidding Documents, Plans and Specifications and any other documents which may be applicable to the Project and the Work.

33.3 A sample contract for construction has been included in the Bidding Documents. The Town is not bound by this sample document and reserves the right to modify the final contract.

33.4 Bidders should be aware that the Town is subject to hurricanes and tropical storms and therefore the Bidder shall consider such likelihood in their scheduling and construction activities.

34. LOCATION OF UTILITIES. The Successful Bidder and Contractor shall be responsible for determining the location, character and depth of all utilities. Within two (2) days before digging, if applicable, Contractor shall notify Sunshine Once Call: (800) 432-4770 to find out where buried utilities (electric, gas, telephone, cable, water, sewer facilities) are located within the Town as required by Chapter 556, Florida Statutes. At points where the Contractor's operations are adjacent to utility facilities which if damaged, might result in expense, loss and disruption of service or other undue inconvenience to the public or to the owner, Work shall not be commenced until all arrangements necessary for the protection thereof have been made by the Contractor. The Contractor shall not repair or attempt to repair utility damage but shall immediately contact the utility company to contact. The Contractor shall be solely and directly responsible to the owner and operators of such utilities for any damage, injury, expense, loss, inconvenience or delay caused by the Contractor's operations.

35. ACCESS TO PUBLIC RECORDS.

Contractor shall comply with the applicable provisions of Chapter 119, Florida Statutes. The Town shall have the right to immediately terminate the Contract for the refusal by the Contractor to comply with Chapter 119, Florida Statutes. The Contractor shall retain all records associated with this Contract for a period of five (5) years from the date of Final Payment or Termination of the Contract.

36. <u>OWNERSHIP AND REUSE OF DOCUMENTS.</u>

Ownership of all documents, including but not limited to drawings, as-builts, plans and specifications and related computerized documents utilized or prepared by Contractor in the performance of the Work shall remain with the Town. The Contractor and any Subcontractors or other person or organization performing or furnishing any of the Work under a direct or indirect contract with the Town shall not reuse any documents without prior written consent of the Town. Upon termination of the Project or the Contract, the Work product of the Contractor shall become the property of the Town and the Contractor shall transfer to the Town all Work product in its possession, including but not limited to, designs, specifications, drawings, studies, reports and all other documents and digital data in the possession of the Contractor pertaining to this Project. Contractor shall deliver the aforesaid documents to the Town as a condition precedent to obtaining Final Payment under the Contract. Contractor shall pay all taxes, licenses, fees and royalties and costs incident to the use in performance of the Work.

37. <u>SEVERABILITY.</u>

Should any provision, paragraph, sentence, word, or phrase contained in these Bid Documents or the Contract be determined by a court of competent jurisdiction to be invalid, illegal, or otherwise unenforceable under the laws of the State of Florida, such provision, paragraph, sentence, word, or phrase shall be deemed modified to the extent necessary in order to conform with such laws, then shall be deemed severable, and the Bid Documents and the Contract shall remain unmodified and in full force and effect.

38. WAIVER OF JURY TRIAL AND VENUE.

The Town and Contractor knowingly, irrevocably, voluntarily and intentionally waive any right either may have to a trial by jury in State and or Federal court proceedings in respect to any action, proceeding, lawsuit or counterclaim based upon this Bid, resulting Contract and/ arising out of, under, or in connection with the Work, or any course of conduct, course of dealing, statements or actions or inactions of any party.

39. ATTORNEYS' FEES.

If either the Town or the Successful Bidder is required to enforce the terms of this bid or resulting Contract by court proceedings or otherwise, whether or not formal legal action is required, the prevailing party shall be entitled to recover from the other party all such costs and expenses, including, but not limited to, reasonable attorneys' fees and court costs.

40. <u>CONE OF SILENCE.</u>

You are hereby advised that this Bid is subject to the "Cone of Silence," in accordance with Section 2-11.1(t) of the Code of Miami-Dade County, Florida. From the time of advertising until the Town Engineer issues his recommendation, there is a prohibition on communication with the Town's professional staff. The Cone of Silence does not apply to oral communications at pre-bid conferences, oral presentations before evaluation committees, contract discussions during any duly noticed public meeting, public presentations made to the Town Council during any duly notice public meeting, contract negotiations with the staff following the award of an RFP, RFQ, RFLI or Bid by the Town Council, or communications in writing at any time with any Town employee, official or member of the

Town Council unless specifically prohibited. A copy of all written communications must be filed with the Town Clerk. Violation of these provisions by any particular bidder or proposer shall render any RFP award, RFQ award, RFLI award, or bid award to said bidder or proposer voidable, and said bidder or proposer shall not be considered for any RFP, RFQ, RFLI or bid for a contract for the provision of goods or services for a period of one year.

41. <u>SUMMARY OF DOCUMENTS TO BE SUBMITTED BY BIDDERS</u>

41.1 The following is a summary of documents, copies of which may be included in the Bid Documents, which are to be completed and submitted by Bidders:

- A. Bidder acknowledgement
- B. Bid Form
- C. Bid Proposal
- D. Notice to All Bidders
- E. List of Major Subcontractors
- F. General Information Required of Bidder
- G. Solicitation, Giving and Acceptance of Gifts Policy
- H. Drug Free Workplace Program
- I. Bidder's Certification
- J. Certified Resolution
- K. Certification of Insurance
- L. Non-Collusive Affidavit
- M. Foreign (Non-Florida) Corporations Must Complete
- N. Qualification Statement
- 0. Acknowledgement of Conformance with OSHA Standards
- P. Trench Safety Compliance
- Q. References
- **R. Bid Bond or Security**

- S. Certified Resolution or other duly executed document evidencing authority to sign on behalf of the Bidder
- T. Public Entity Crime Affidavit

BID 2014-004

PROJECT DESCRIPTION:

SANITARY SEWER LIFT STATION No. 100A UPGRADE

The Contractor must furnish all supervision, labor, materials, tools, equipment, and performing all operations required to construct the Town of Medley Capital Improvements Project Number WS-0102, Sanitary Sewer Lift Station No. 100A Upgrade in accordance with the Contract Documents and as described in the Drawings, General Notes, and Technical Specifications.

Work includes, but is not limited to, the procurement and installation of new package pump station to replace existing sanitary lift station PS-100A located south of the intersection of N.W. 77th Avenue and N.W. 78th Terrace in Medley, Florida. Installation shall include: by-pass system design, installation, and operation in accordance with the "Lift Station Bypass Requirements" notes in the Drawings; demolition of the existing lift station as shown in the Drawings; installation of package pump station, associated piping, electrical wiring, lift station control panel, 2" diameter water service, backflow preventer, and concrete slab; and disposal of all construction debris, unused excavated material, and all unsuitable material. The forgoing is herein referred to as the "Project" or the "Work", as shown on the Drawings prepared by Kimley-Horn and this Project Manual.

SCHEDULE OF EVENTS

It is important that Bidder agrees and fully understands that <u>time is of the essence</u> in completing the following schedule of events, pertaining to the requirements of this Bid, prior to the issuance of the Notice to Proceed.

The Town reserves the right to modify or alter the Schedule of Events set forth herein, in its sole and absolute discretion. The tentative Schedule of Events, relative to the Bid shall be as follows:

<u>Event</u>		<u>Date</u> (on or by)
1.	ADVERTISEMENT OF BIDS	December 16, 2014
2.	PRE-BID CONFERENCE	January 14, 2015
3.	OPENING OF BIDS	January 28, 2015
4.	SELECTION COMMITTEE RECOMMENDATION OF AWARD	February 19,2015
5.	AWARD OF PROJECT BY THE TOWN COUNCIL	March 02, 2015

6.	NOTICE OF AWARD GIVEN TO CONTRACTOR	March 03, 2015
7.	CONTRACT DOCUMENTS EXECUTION	March 19, 2015
8.	NOTICE TO PROCEED ISSUED TO CONTRACTOR	March 28, 2015
9.	CONTRACT TIME	180 Days
10.	SUBSTANTIAL COMPLETION (150 DAYS)	August 25, 2015
11.	FINAL COMPLETION (180 DAYS)	September 24, 2015

SECTION II CONSTRUCTION SERVICES - GENERAL CONDITIONS

1. **DEFINITIONS**

Wherever used in the Project Manual, the following terms have the meanings indicated which are applicable to both the singular and plural thereof. For additional definitions refer to Section I Instructions to Bidders, Defined Terms.

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

1.2 Agreement - The written instrument which is evidence of the agreement between the Town and Contractor covering the Work.

1.3 Application for Payment - The form accepted by CEI which is to be used by Contractor in requesting progress or final payment and which is to include such supporting documentation as is required by the Contract Documents.

1.4 **Asbestos -** Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

1.5 Bid - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bidder - The individual or entity who submits a Bid directly to the Town.

1.7 Bidding Documents - The Bidding Requirements and the proposed Contract Documents (including all Addenda.)

1.8 Bidding Requirements - The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

1.9 Bonds - Bid, Performance and Payment Bonds and other instruments of security.

1.10 Change Order - A document recommended by Contractor, CEI, or the Town which is signed by Contractor, CEI and the Town and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Contract.

1.11 **Claim** - A demand or assertion by the Town or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

1.12 Contract - The written Contract between the Town and Contractor covering the Work to be performed including other Contract Documents that are attached to the Contract or made a part thereof.
1.13 Contract Administrator - The Town's Contract Administrator shall mean the individual appointed by the Mayor who shall be the Town's authorized representative to coordinate, direct, and review all matters related to the Project on behalf of the Town.

1.14 **Contract Documents** - The Contract Documents consist of the Drawings, Engineering Drawings and Specifications, Bid Form, Contractor's Bid, including documentation accompanying Bid and post Bid documentation submitted prior to the Notice of Award, Qualifications Statement, Contract, Addenda, and Notice of Award, Notice to Proceed, Payment and Performance Bonds, the Construction Services General Conditions, the Technical Specifications, any additional documents which are required to be submitted under the Contract, and all amendments, modifications and supplements issued on or after the effective date of the contract.

1.15 Contract Price - The moneys payable by the Town to Contractor under the Contract Documents as stated in the Contract (subject to the provisions of the Contract in the case of Unit Price Work).

1.16 Contract Time - The date stated in the Contract for the completion of the Work.

1.17 Contractor - The person, firm or corporation with whom the Town has entered into the Contract.

1.18 Construction Engineering and Inspection Services Company (CEI) - The person, firm or corporation contracted by the Town to ensure that the project is completed in accordance with the Drawings and Technical Specifications; including material testing and review as required.

1.19 Cost of Work - Means the sum of all direct costs necessarily incurred and paid by Contractor in the proper performance of the work.

1.20 Days - The term "days" shall mean calendar days unless otherwise specified.

1.21 Defective - An adjective which when modifying the Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to EOR's recommendation of final payment.

1.22 Drawings - The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by EOR and are referred to in the Contract Documents.

1.23 Effective Date - The date stated in the Notice to Proceed fixing the date on which the Contact Time will commence.

1.24 Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

1.25 Engineer of Record (EOR) - A Florida professional Engineer who is in responsible charge of the preparation, signing, dating, sealing, and issuing of the engineering documents for the project.

1.26 Field Order - A written order issued by EOR which orders minor changes in the Work but which does not involve a change in the Contract Price or the Contract Time.

1.27 General Requirements - Sections of Division 1 of the Specifications.

1.28 Hazardous Environmental Condition - The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

1.29 Hazardous Waste - The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

1.30 Law and Regulations; Laws or Regulations - Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

1.31 Liens - Charges, security interests, or encumbrances upon Project funds real property, or personal property.

1.32 Milestone - A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

1.33 Notice of Award - The written notice by the Town to the apparent Successful Bidder stating that upon compliance by the apparent Successful Bidder with the conditions precedent enumerated therein, within the time specified the Town will sign and deliver the Contract.

1.34 Notice to Proceed - A written notice given by the Town to Contractor (with a copy to CEI) fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform Contractor's obligations under the Contract Documents. This written notice will also state the dates of substantial and final completion of the project.

1.35 Owner - The Town of Medley which is the individual or entity with whom Contractor has entered into the Contract and for whom the Work is to be performed.

1.36 Petroleum - Petroleum, including crude oil or any fraction thereof which is liquid as standard conditions or temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

1.37 Progress Schedule - A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

1.38 Project - The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

1.39 Project Manual - The bound documentary information prepared for bidding and constructing the Work. This shall include the Contract Documents, Drawings, Technical Specifications,

and any other set of documents required for completion of the Work. A full listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the tables(s) of contents.

1.40 **Radioactive Material** - Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq) as amended from time to time.

1.41 Resident Project Representative - The authorized representative of Engineer who may be assigned to the Site or any part thereof.

1.42 **Samples** - Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

1.43 Schedule of Submittals - A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

1.44 Schedule of Values - A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.45 **Shop Drawings** - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by Contractor to illustrate material or equipment for some portion of the Work.

1.46 Site - Lands or areas indicated in the Contract Documents as being furnished by the Town upon which the Work is to be performed, including rights-of-ways and easements for access thereto, and such other lands furnished by the Town which are designated for the use of Contractor.

1.47 Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and Workmanship as applied to the Work and certain administrative details applicable thereto.

1.48 **Sub-Contractor** - An individual, firm or corporation having a direct Contract with Contractor or with any other Sub-Contractor for the performance of a part of the Work at the site.

1.49 **Substantial Completion** - Refers to the date certified by the CEI to when all conditions and requirements of permits and regulatory agencies have been satisfied, and when the Work has progressed to the point where in the opinion of the CEI, as evidenced by the Certificate of Substantial Completion/Notice of Completion as applicable, it is sufficiently complete, in accordance with the Contract Documents, so that the Work is available for beneficial occupancy and can be utilized for the purposes for which it is intended; or if there be no such certificate issued when final payment is due. A temporary Certificate of Occupancy or Certificate of Occupancy must be issued for Substantial Completion to the achieved; however, the issuance of a Temporary Certificate of Occupancy or Certificated of Occupancy of the date thereof are not to be determinative of the achievement or date of Substantial Completion. The terms "Substantially Complete" and "substantially completed" can be used interchangeably as applied to any work refer to as "substantial completion" thereof.

1.50 Successful Bidder - The Bidder submitting a responsive Bid to whom the Town makes an award.

1.51 Supplementary Conditions - The part of the Contract Documents which amends or supplements these General Conditions.

1.52 Supplier - A manufacturer, fabricator, supplier, distributor, materialman or vendor.

1.53 The Town - The Town of Medley, Florida with whom Contractor has entered into the Contract and for whom the Work is to be provided.

1.54 Town Council – The Council of the Town of Medley, FL. The Council is composed of the Town's Mayor and four councilmember all of whom have one vote in all matters before the Town Council.

1.55 Town Engineer - The engineer employed by the Town who shall represent the Town during the construction process.

1.56 Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television sewage and drainage removal, traffic or other control systems or water, and all irrigation systems on or contiguous to the worksite.

1.57 Unit Price Work - Work to be paid for on the basis of unit prices.

1.58 Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

1.59 Work Directive Change - A written directive to Contractor, issued on or after the Effective Date of the Contract and signed by the Town and recommended by the CEI and approved by the EOR and the Town Engineer ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in Section V, Paragraph 2 and 3 of the General Conditions or to emergencies under Section VI, Paragraph 13 of the General Conditions. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in Section XI.

1.60 Written Amendment - A written Amendment of the Contract Documents, signed by the Town and Contractor on or after the Effective Date of the Contract and normally dealing with the non-engineering or non-technical aspects rather than strictly work related aspects of the Contract Documents.

2. <u>ACRONYMS</u>

Wherever in these Contract Documents and the Project Manual references are made to standards, specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronyms or abbreviation only. As a guide to the user, the following acronyms and abbreviations shall have the meanings indicated herein.

- 2.1 **AASHTO** American Association of the State Highway and Transportation Officials
- 2.2 ACI American Concrete Institute
- 2.3 ANSI American National Standards Institute, Inc.
- 2.4 ASCE American Society of Civil Engineers
- 2.5 **ASTM** American Society for Testing and Materials
- 2.6 **AWWA** American Water Works Association
- 2.7 **CEI** Construction Engineering and Inspection Services Company
- 2.8 EOR Engineer of Record
- 2.9 **FDOT** Florida Department of Transportation
- 2.10 ISO International Organization for Standardization
- 2.11 MUTCD Manual of Uniform Traffic Control Devices
- 2.12 NWWA National Water Well Association
- 2.13 **OSHA** Occupational Safety and Health Administration
- 2.14 **PERA** Miami-Dade Department of Permitting, Environment, and Regulatory Affairs
- 2.15 **PCBs** Polychlorinated biphenyls
- 2.16 SSPWC Standard Specifications of Public Works Construction
- 2.17 UBC Uniform Building Code
- 2.18 WASD Water and Sewer Department

SECTION III PRELIMINARY MATTERS

1. DELIVERY OF BONDS AND INSURANCE

Prior to award of the Contract by the Town, Contractor shall deliver to the Town copies of the certificate(s) of insurance evidencing the coverages required hereunder and specifically providing that the Town of Medley is an additional named insured or additional insured. Payment and Performance Bonds which Contractor is required to furnish in accordance with this Contract must be provided to the Town within fifteen (15) days after issuance of Notice of Award.

2. <u>COMMENCEMENT OF CONTRACT TIME; EFFECTIVE DATE; NOTICE TO PROCEED</u>

2.1 The Work shall commence subsequent to the execution of this Contract by all parties and upon a written Notice to Proceed from the Town setting forth the Effective Date of the Contract upon which date the Work shall commence. No Work shall be done at the site prior to the date on which the Contract Time commences to run.

2.2 The Town shall furnish to Contractor up to three (3) copies of the Contract Documents. Additional copies will be furnished upon request, at the cost of reproduction.

3. **PRECONSTRUCTION CONFERENCE**

Within twenty (20) days after the Effective Date of the Contract, but before Contractor starts the Work at the site, a conference attended by Contractor, EOR, CEI and others as appropriate will be held to discuss the schedules referred to in Paragraph 4 below, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

4. **FINALIZING SCHEDULES**

At least ten (10) days before submission of the first Application for Payment a conference attended by Contractor, CEI and others as appropriate will be held to finalize the schedules and procedures to establish a working understanding among the parties. The finalized progress schedule will be acceptable to CEI as providing an orderly progress on of the Work to completion within the Contract time, but such acceptance will neither impose on CEI's responsibility for the progress or scheduling of the Work nor relieve Contractor from full responsibility therefore. The finalized schedule of Shop Drawing submissions will be acceptable to EOR as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to CEI as to form and substance.

SECTION IV CONTRACT DOCUMENTS; INTENT, AMENDING, REUSE

1. ENTIRE CONTRACT

The Contract Documents comprise the entire Contract between the Town and Contractor concerning the Work. The Contract Documents are complimentary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the State of Florida.

2. <u>INTENT</u>

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well known technical or trade meaning are used to describe work, materials or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code(whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the Town, Contractor, CEI or EOR, or any of their consultants, agents or employees from those set forth in the Contract Documents.

3. <u>CONFLICT, ERROR OR DISCREPANCY</u>

If during the performance of the Work, Contractor finds a conflict, error or discrepancy in the Contract Documents, Contractor shall so report to CEI in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from CEI.

4. <u>AMENDING AND SUPPLEMENTING CONTRACT DOCUMENTS</u>

4.1 The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

- A. A Change Order; or
- **B.** A formal written Amendment.

5. <u>SUPPLEMENTS, MINOR VARIATIONS OR DEVIATIONS</u>

5.1 In addition, the requirements of the Contract Documents may be supplemented and minor variations and deviations in the Work may be authorized in one or more of the following ways:

- A. EOR's approval of a Shop Drawing or sample;
- B. EOR's written interpretation or clarification; or
- C. A field order.

6. <u>REUSE OF DOCUMENTS</u>

Neither Contractor nor any Sub-Contractors or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect Contract with the Town shall have or acquire any title to or Township rights in any of the Drawings, Specifications or other Documents (or copies of any

thereof) prepared by or bearing the seal of the EOR; and they shall not reuse any of them on extensions of the Project or any other project without written consent of the Town.

SECTION V AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

1. AVAILABILITY OF LANDS

The Town shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of Contractor. Contractor shall provide at Contractor's own expense and without liability to the Town any and all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment. Contractor shall furnish to the Town copies of written permission that is obtained from the Town of such facilities. It is the responsibility of the Contractor to leave the additional lands in the same condition as prior to Work startup. Any damages caused by Contractor will be remedied at Contractors expense.

2. <u>PHYSICAL CONDITIONS</u>

2.1 Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to the Town or EOR by the Town of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

- A. The Town and/or EOR shall not be responsible for the accuracy or completeness of any such information or data; and
- B. Contractor shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the Town of such Underground Facilities during construction, for the safety and protection thereof and repairing any damage thereto resulting from the Work, the costs of all of which will be considered as having been included in the Contract Price.

2.2 Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which Contractor could not reasonably have been expected to be aware of, Contractor shall, promptly after becoming aware thereof and before performing any work affected thereby, except in an emergency as permitted by Section VI, Paragraph 13 of the General Conditions, identify the Town of such Underground Facility and give written notice thereof to the Town and EOR. EOR will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility. Contractor shall be amended or supplemented to the extent necessary. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility. Contractor shall be allowed an extension of the Contract Time to the extent that any delay is attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and of which existence Contractor could not reasonably have been expected to be aware. If the parties are unable to agree as to the appropriate length of delay, Contractor may make a claim therefore as

provided in this Contract.

3. <u>REFERENCE POINTS</u>

The Town shall provide engineering surveys to establish reference points for construction which in EOR's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work to protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the Town Contractor shall report to CEIwhenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

4. HAZARDOUS ENVIRONMENTAL CONDITIONS

4.1 If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately:

- A. Secure or otherwise isolate such condition.
- B. Stop all Work in connection with such condition and in any area affected thereby; and
- C. Notify the Town and the CEI (and promptly thereafter confirm such notice in writing).

The Town shall promptly consult with CEI concerning the necessity for the Town to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with CEI, the Town shall take such actions as are necessary to permit the Town to timely obtain required permits to continue work the area where the hazardous environmental conditions were observed.

4.2 Contractor shall not be required to resume Work in connection with such condition or in any affected area until after the Town has obtained any required permits related thereto and delivered written notice to Contractor:

- A. Specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or
- B. Specifying any special conditions under which such Work may be resumed safely.

4.3 To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless the Town, CEI, EOR, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

SECTION VI CONTRACTOR'S RESPONSIBILITIES

1. <u>SUPERVISION AND SUPERINTENDENCE</u>

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. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

2. <u>RESIDENT SUPERINTENDENT</u>

Contractor shall keep on the worksite at all times during its progress a competent resident superintendent capable of communicating in English and any necessary assistants who shall not be replaced without written notice to the Town and CEI unless the superintendent proves to be unsatisfactory to Contractor and ceases to be in its employ. The superintendent will be Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to Contractor.

3. LABOR, MATERIALS AND EQUIPMENT

3.1 Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all work at the site shall be performed during regular working hours, and Contractor will not permit overtime work or the performance of work on Saturday, Sunday or any legal holiday without the Town's written consent given after prior written notice to CEI.

3.2 Unless otherwise specified in the Bid Documents, Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

3.3 All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by EOR, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to EOR, or any of EOR's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Section IX and X of these General Conditions.

3.4 Within 10 days after the signing of the Contract, Contractor shall submit to the Town and the CEI a preliminary Progress Schedule indicating the times(number of days or dates) for starting

and completing the various stages of the Work, including any milestones specified on the Project Manual. During the performance of the Work, Contractor shall adhere to the Progress Schedule which shall provide an orderly progression of the Work to completion within the Contract Times. The Progress Schedule may be adjusted from time to time as provided below.

- A. Contractor shall submit to the CEI for acceptance the proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions described in this Project Manual.
- B. Proposed adjustments in the Progress Schedule that will change the Contract Times may only be made by Change Order. Any claim for an adjustment in Contract Times shall be based on written notice submitted by the party making the Clam to the CEI and the other party to the Contract.

4. <u>SUBSTITUTES OR "OR EQUAL" ITEMS</u>

Whenever materials or equipment are specified or described in the Contract Documents 4.1 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 maybe accepted by EOR if sufficient information is submitted by Contractor to allow EOR to determine that the material or equipment proposed is equivalent or equal to that named. Requests for review of substitute items of material and equipment will not be accepted by EOR from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make written application to EOR 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. The application must state that the evaluation and acceptance of the proposed substitute will not prejudice Contractor's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct Contract with the Town for Work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain 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, all of which shall be considered by EOR in evaluating the proposed substitute. EOR may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

4.2 If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to EOR, if Contractor submits sufficient information to allow EOR to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by EOR will be similar to that provided in Paragraph 4.1 as applied by EOR and as maybe supplemented in the Contract Documents.

4.3 EOR will be allowed a reasonable time within which to evaluate each proposed substitute. EOR will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without EOR's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. The Town may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

5. <u>CONCERNING SUB-CONTRACTORS, SUPPLIERS AND OTHERS</u>

5.1 Contractor shall be fully responsible to the Town and EOR for all acts and omissions of the Subcontractors, Suppliers and other persons directly or indirectly employed by its Subcontractors, Suppliers and of persons for whose acts any of them may be liable and any other persons and organizations performing or furnishing of the Work under a direct or indirect Contract with Contractor to the same extent that Contractor is responsible for the acts and omissions of persons directly employed by him/her. Nothing in the Contract Documents shall create any Contractual relationship between the Town or EOR and any such Sub-Contractor, Supplier or other person or organization, nor shall it create any obligation on the part of the Town or EOR to pay or to see to the payment of any moneys due any such Sub-Contractor, Supplier or other person or organization except as may otherwise be required by laws and regulations.

5.2 All work performed for Contractor by a Sub-Contractor will be pursuant to an appropriate Contract between Contractor and the Sub-Contractor which specifically binds the Sub-Contractor to the applicable terms and conditions of the Contract Documents for the benefit of the Town and EOR.

6. PATENT FEES AND ROYALTIES

Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others.

7. <u>PERMITS</u>

Contractor shall obtain and pay for all permits and licenses. Contractor shall pay all government charges and inspection fees as required by the Town. The Town reserves the right to waive as it deems appropriate all municipal permit and inspection fees related to this contract. However, the Town shall require that Contractor to pay all fees relative to re-inspections, as they may be required from time to time.

8. LAWS AND REGULATIONS

8.1 Contractor shall give all notices and comply with all laws and regulations applicable to furnishing and performance of the Work. Neither the Town nor CEI shall be responsible for monitoring Contractor's compliance with any laws and regulations.

8.2 If Contractor observes that the Specifications or Drawings are at variance with any laws or regulations, Contractor shall give EOR prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in Section IX, Paragraph 6 of the General

Conditions. If Contractor performs any Work knowing or having reason to know that it is contrary to such laws or regulations, and without such notice to EOR, Contractor shall bear all costs arising there from.

9. <u>TAXES</u>

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 which are applicable during the performance of the Work.

10. <u>USE OF PREMISES</u>

10.1 Contractor shall confine construction equipment, the storage of materials and equipment and the operations of Workers to the Project site and areas identified in and permitted by the Contract Documents and other land and areas permitted by laws and regulations, rights-of-way, permits and easements and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the Town or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against the Town or EOR by any such party or occupant because of the performance of the Work, Contractor shall promptly attempt to settle with such other party by Contract or otherwise resolve the claim. The general indemnification provided elsewhere in this Contract specifically applies to claims arising out of Contractor's use of the premises.

10.2 During the progress of the Work, 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, 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 Town. Contractor shall restore to original condition all property not designated for alteration by the Contract Documents.

10.3 Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

11. <u>RECORD DOCUMENTS</u>

Contractor shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications in good order and annotated to show all changes made during construction. Each document shall be labeled "PROJECT RECORD" and information shall be recorded concurrently with construction progress. These Record Documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to CEI for reference. Upon completion of the Work, these Record Documents, samples and Shop Drawings will be delivered to CEI for the Town.

12. SAFETY AND PROTECTION

12.1 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work to prevent damage, injury or loss to all employees on the worksite and other persons and organizations who may be affected thereby; all the work and materials and equipment to be incorporated therein, whether in storage on or off the site; and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, irrigation systems, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

12.2 Contractor shall furnish watchmen, flagmen, warning signs, cones, barricades, flashing lights and other necessary safeguards in sufficient numbers and at appropriate locations to protect and divert vehicular and pedestrian traffic from working areas closed to traffic, or to protect any new work. Such watchmen and flagmen shall be furnished on a twenty-four (24) hour basis when conditions require. Contractor and all Subcontractors shall take all necessary precautions to quard against and eliminate all possible fire hazards and prevent injury to persons or fire damage to any construction, building materials, equipment, temporary field offices, storage sheds, and all other property, both public and private, particularly when gas or arc welding and cutting is taking place. Open flames including the use of flambeaux are strictly prohibited. No additional payment will be made for signs, barricades, lights, flags, watchmen, flagmen, required fire extinguishing apparatus and personnel, and other protective devices. Contractor shall not use explosives on the site, nor allow explosives of any type or nature to be brought upon the site of the construction, without the express written approval of the Town and CEI. When the use of explosives is authorized by the Town and CEI, Contractor shall exercise the utmost care in handling and usage of such explosives for the protection of life and property. All explosives shall be stored in a safe manner and storage places shall be clearly marked -"DANGEROUS -EXPLOSIVES" and placed in the care of competent watchmen. When such use of explosives becomes necessary, Contractor shall furnish to the Town, proof of insurance coverage, adequately providing public liability and property damage insurance as a rider attached to Contractor's policies unless otherwise included.

12.3 Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for the safety or persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify the Town of Underground Facilities and utility when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused directly or indirectly by workers employed by and of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by Contractor. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and CEI has issued a notice to the Town and Contractor in accordance with Section XIV, Paragraph 7 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

12.4 Contractor shall designate a responsible representative at the worksite whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to the Town.

13. **EMERGENCIES**

13.1 In emergencies affecting the safety or protection of persons or the Work or property at

the worksite or adjacent thereto, Contractor, without special instruction or authorization from CEI to the Town, is obligated to act to prevent threatened damage, injury or loss. Contractor shall give EOR prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If EOR determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Change Order will be issued or an Amendment made through proper procedures to document the consequences of the changes or variations.

13.2 Contractor shall be required to remove all materials from the job site and provide safe storage for the same that may be blown about or become a hazard during a hurricane or windstorm. Contractor shall also take necessary precautions to remove bulkheads, dams or other structures blocking drains in the event of the threat of flooding condition. No extra pay will be allowed for this work.

- **13.3 Shop Drawings and Samples**
- A. After checking and verifying all field measurements and after complying with applicable procedures specified in the Project Specifications or Engineering Drawings, Contractor shall submit to CEI for review and approval in accordance with the accepted schedule of Shop Drawing submissions or for other appropriate action if so indicated, five (5) copies of all Shop Drawings, which will bear a stamp or specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as EOR may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable CEI to review the information as required.
- B. Contractor shall also submit to CEI for review and approval with such promptness as to cause no delay in the Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.
- C. Before submission of each Shop Drawing or sample Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.
- D. At the time of each submission, Contractor shall give CEI specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to CEI for review and approval of each such variation. Failure to point out such departures shall not relieve Contractor from its responsibility to comply with the Contract Documents.

14. <u>CONTINUING THE WORK</u>

Contractor shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the Town. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or as Contractor and the Town may otherwise agree in writing.

15. **INDEMNIFICATION**

15.1 General Indemnification: The parties agree that one percent (1%) of the total compensation paid to Contractor for the Work of the Contract shall constitute specific consideration to Contractor for the indemnification to be provided under the Contract. To the fullest extent permitted by laws and regulations, Contractor shall indemnify, save and hold harmless the Town, its officers, agents and employees, from or on account of all claims, damages, losses, liabilities and expenses, direct, indirect or consequential, including, but not limited to, fees and charges of Engineer, architects, attorney's consultants and other professionals and court and arbitration costs arising out of or resulting from the performance of the Work excluding the sole negligence of the Town. Such indemnification shall specifically include but not be limited to claims, damages, losses and expenses arising out of or resulting from:

- A. Any and all bodily injuries, sickness, death, disease;
- B. Injury to or destruction of tangible personal property, including the loss of use resulting there from;
- C. Other such damages, liabilities or losses received or sustained by any person or persons during or on account of any operations connected with the construction of this project including the warranty period;
- D. The use of any improper materials;
- E. Any construction defect including patent defects;
- F. Any act or omission of Contractor or its Sub-Contractors, agents, servants or employees;
- G. The violation of any federal, state, county or the Town laws, by-laws, ordinances or regulations by Contractor, its Sub-Contractors, agents, servants or employees; and
- H. The breach or alleged breach by Contractor of any term of the Contract, including the breach or alleged breach of any warranty or guarantee.

15.2 Patent and Copyright Indemnification: Contractor agrees to indemnify, save and hold harmless the Town, its officers, agents and employees, from all such claims and fees, and from any and all sites and actions of every name and description that may be brought against the Town, its officers, agents and employees, on account of any claims, fines, fees, royalties, or costs for any invention or patent, and from any and all suits and actions that may be brought against the Town, its officers, agents and employees for the infringement of any and all copyrights or patent rights claimed by any person, firm, or corporation.

15.3 Contractor shall pay all claims, losses, liens, settlements or judgments of any nature whatsoever, excluding only those in which the damages arose out of the sole negligence of the Town, in connection with the foregoing indemnifications, including, but not limited to, reasonable attorney's fees and costs to defend all claims or suits in the name of the Town when applicable.

15.4 The Town reserves the right to select its own legal counsel to conduct any defense in any such proceeding and all costs and fees associated therewith including any costs or fees of an appeal shall be the responsibility of Contractor under the indemnification. Such indemnification shall not be limited to the amount of comprehensive general liability insurance which Contractor is required to obtain under the Contract. Nothing contained herein is intended nor shall it be construed to waive the Town's rights and immunities under the common law or Florida Statute 768.28 as amended from time to time. This obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party described in this Paragraph 15 and its subparts.

16. LIABILITY FOR USE OF WORK FOR INTENDED PURPOSES

As an inducement for the Town's Council to enter into this Contract, Contractor has represented an expertise in the construction of and completion of like projects as described in these bid documents. In reliance upon those representations, the Town hired Contractor for specified construction services and documents. Contractor understands and agrees that the Town intends to utilize said Engineering Drawings for the stated purposes and therefore Contractor shall be liable for any defective or negligent design, whether patent or latent, as such maybe found by a court of competent jurisdiction.

SECTION VII OTHER WORK

1. <u>RELATED WORK AT SITE</u>

The Town may perform other work related to the Project at the site by the Town's own forces, have other work performed by utility or let other direct Contracts therefore which shall contain General Conditions similar to these. Written notice thereof will be given to Contractor prior to starting any such other work not previously noticed to Contractor; and, if Contractor believes that performance of work other than that already noticed will involve additional expense to Contractor or requires additional time and the parties are unable to agree as to the extent thereof, Contractor may make a claim therefore as provided in this Contract.

SECTION VIII THE TOWN'S RESPONSIBILITIES

1. The Town shall issue all communications to Contractor through the CEI or the Town Engineer.

2. The Town shall furnish the data required of the Town under the Contract Documents promptly and shall make payments to Contractor promptly after they are due.

3. The Town's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Section V, Paragraph 3 of this document.

4. The Town is obligated to execute Change Orders as indicated in Section X, Section XI and

Section XII.

5. The Town shall have such other responsibilities and rights as are expressed in the Contract Documents.

SECTION IX CEI'S STATUS DURING CONSTRUCTION

1. <u>THE TOWN'S REPRESENTATIVE</u>

CEI will be the Town's representative during the construction period and until final payment is due. The duties and responsibilities and the limitations of authority of CEI as the Town's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of the Town and EOR.

2. <u>VISITS TO SITE</u>

CEI will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. CEI's efforts will be directed toward providing for the Town a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site inspections, CEI shall keep the Town and EOR informed of the progress of the Work and shall endeavor to guard the Town against defects and deficiencies in the Work.

3. <u>TECHNICAL CLARIFICATIONS AND INTERPRETATIONS</u>

EOR will issue with reasonable promptness such written clarifications or interpretations of the technical requirements of the Contract Documents as EOR may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If Contractor believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, Contractor may make a claim therefore as provided in this Contract. Should Contractor fail to request interpretation of questionable items in the Contract Documents neither the Town nor EOR will thereafter entertain any excuse for failure to execute the Work in a satisfactory manner.

4. <u>AUTHORIZED VARIATIONS IN WORK</u>

CEI may authorize minor variations in the Work from the technical requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a field order and will be binding on the Town, and also on Contractor who shall perform the Work involved promptly. If Contractor believes that a field order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, Contractor may make a claim therefore as provided elsewhere in this Contract.

5. <u>REJECTING DEFECTIVE WORK</u>

CEI will have the authority to disapprove or reject work which CEI believes to be defective, and will

also have authority to require special inspection or testing of the work whether or not the work is fabricated, installed or completed.

6. **DECISIONS ON DISPUTES**

CEI will be the initial interpreter of the technical requirements of the Contract Documents and the acceptability of the Work there under. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Section X, Section XI and Section XII in respect of changes in the Contract Price or Contract Time will be referred initially to EOR in writing with a request for a formal decision in accordance with this Paragraph, which EOR will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to the Town promptly, but in no event later than three (3) days after the occurrence of the event giving rise thereto, and written supporting data will be submitted to EOR and the Town within seven (7) days after such occurrence unless EOR allows an additional period of time to ascertain more accurate data in support of the claim. The rendering of ${f a}$ decision by EOR with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in Section XIV, Paragraph 9) will be a condition precedent to any exercise by the Town or Contractor of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

7. CHANGE ORDERS

7.1 The Town and Contractor shall execute appropriate Change Orders recommended by the CEI covering:

- 7.2 Changes in the Work which are:
- A. ordered by the Town which do not invalidate the Contract and without notice to any surety.
- B. required because of acceptance of defective Work as describes in Section XIII or the Town's correction of defective Work, or
- C. agreed to by the parties.

7.3 Changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive.

7.4 Changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by EOR; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule.

8. DETERMINATIONS FOR UNIT PRICE WORK

CEI will determine the actual quantities and classification of Unit Price Work performed on such matters before rendering a written decision thereon (by recommendation of a Application for Payment or otherwise). CEI's written decision thereon will be final and binding (except as modified by CEI to reflect changed factual conditions or more accurate data) upon the Town and Contractor.

9. DECISION ON REQUIREMENTS OF CONTRACT DOCUMENTS AN ACCEPTABILITY OF WORK

9.1 CEI will be the initial interpreter of the requirements of the Project Manual and judge of the acceptability of the Work thereunder. All matters in question and other matters between the Town and Contractor arising prior to the date final payment is due relating to acceptability of the Work, and the interpretation of the requirements of the Project Manual pertaining to the performance of the Work, will be referred initially to the CEI in writing within 30 days of the event giving rise to the question.

9.2 CEI will, with reasonable promptness, render a written decision on the issued referred. If the Town or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a claim may be made. The date of CEI's decision shall be the date of the event giving rise to the issues referenced.

9.3 CEI's written decision on the issue referred will be final and binding on the Town and Contractor.

9.4 When functioning as interpreter and judge, CEI will not show partially to the Town or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

10. LIMITATIONS ON CEI'S RESPONSIBILITIES

10.1 Neither CEI's authority to act under this Paragraph 7 or elsewhere in the Contract Documents nor any decision made by CEI in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of CEI or Contractor, any Sub-Contractor, any supplier, or any other person or organization performing any of the Work, or to any surety for any of them except as such duties and responsibilities are included within the Contract Documents.

10.2 CEI will not be responsible for the acts or omissions of Contractor or of any Sub-Contractor, any supplier, or of any other person or organization performing or furnishing any of the Work. CEI shall not be responsible for safety measures on the Project. This is the responsibility of the Contractor.

SECTION X CHANGES IN THE WORK

1. The Town, without invalidating the Contract, may order changes in the Work which do not materially alter the scope and character of the Work of the Contract or the completion date. All such changes in the Work shall be authorized by a Change Order. Any individual Change Order which decreases the cost of the Work to the Town or increases the cost of the Work by an amount not in

excess of Twenty Five Thousand Dollars (\$25,000.00) must be authorized and approved by the Town Council prior to their issuance. Any individual Change Order which increases the cost of the Work to the Town by an amount which exceeds Twenty Five Thousand Dollars (\$25,000.00) must be formally authorized and approved by the Town Council prior to their issuance and before Work may begin. No claim against the Town for extra work in furtherance of such Change Order shall be allowed unless prior approval has been obtained.

2. If the Town and Contractor are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefore as provided in Section X or Section XI.

3. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified and supplemented except in the case of an emergency and except in the case of uncovering work as those situations are addressed herein.

4. The Town and Contractor shall execute appropriate Change Orders or written Amendments covering:

4.1 Changes in the Work which are ordered by the Town pursuant to this Section, and are required to correct defective work or are agreed to by the parties; and

4.2 Changes in the Contract Price or Contract Time which are agreed to by the parties. Provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable laws and regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the progress schedule. Proposed Change Orders shall be prepared by Contractor on forms approved by the Town. When submitted for approval to the Town they shall early the signature of the applicable Contract Administrator, Town Engineer, and Contractor.

5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice shall be Contractor's sole responsibility, and the amount of each applicable Bond shall be adjusted accordingly.

SECTION XI CHANGE OF CONTRACT PRICE

1. <u>GENERAL</u>

1.1 The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at its expense without change in the Contract Price,

1.2 The Contract Price may only be changed by a Change Order or by a written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered to CEI promptly (but in no event later than three (3) days after the occurrence of the event giving rise to the amount of the claim with supporting data to be delivered within seven (7) days and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. No resolution of a claim for adjustment in the Contract Price shall be effective until approved by the Town in writing. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this Paragraph.

1.3 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. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
- B. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit including any Sub-Contractor fees) which shall not exceed twenty-five percent (25%) of the original Contract Price as defined herein or Contract Price as modified by an acceptable Change Order or written Amendment executed by all parties.
- C. On the basis of the Cost of the Work determined as provided in Paragraph 4 below plus a Contractor's Fee for overhead and profit determined as provided in Paragraph 6 below.

2. <u>COST OF THE WORK</u>

2.1 The term "Cost of the Work" means the sum of all direct costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by the Town 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 this Section.

- A. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by the Town and Contractor. Payroll costs for employees not employed full time on the Work 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, Worker's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing work after regular working hours, on Saturday, Sunday or legal holidays, shall not be included in the above unless authorized in writing by the Town.
- B. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and suppliers field services required in connection therewith. All cash discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to the Town, and Contractor shall make provisions so that they may be obtained.

- C. Supplemental costs including the following:
 - a. 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 brokers, which are consumed in the performance of the Work.
 - b. Rentals of all construction equipment and machinery and the parts thereof, whether rented from Contractor or others in accordance with rental Contracts approved by the Town with the advice of CEI, and the costs, of transportation, loading, unloading, installation, dismantling and removal thereof, all in accordance with terms of said rental Contracts. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work
 - c. Sales, consumer, use or similar taxes related to the Work and for which Contractor is liable, imposed by laws and regulations.
 - d. Royalty payments and fees for permits and licenses.
 - e. The cost of utilities, fuel and sanitary facilities at the site.
 - f. Minor expenses such as Internet services, cell phone service, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.
 - g. Cost of premiums for additional Bonds and insurance required because of changes in the Work.

3. <u>NOT INCLUDED IN THE COST OF THE WORK</u>

- 3.1 The term Cost of the Work shall NOT include any of the following:
- A. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks and other personnel employed by Contractor whether at the site or in Contractor's 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 Paragraph 6 below, all of which are to be considered administrative costs covered by Contractor's fee.
- **B.** Expenses of Contractor's principal and branch offices other than Contractor's office at the site.
- C. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

- D. Costs due to the negligence of Contractor, any Sub-Contractor, 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.
- E. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 6 below.

4. <u>CONTRACTOR'S FEE</u>

4.1 Contractor's fee allowed to Contractor for overhead and profit shall be determined as a mutually acceptable negotiated fee:

- A. For costs incurred under this Section shall not exceed ten percent (10%).
- **B.** No fee shall be payable on the basis of costs itemized under Paragraphs 4.1 (C.)(a-g), 5 and 6 of this Section XI.
- C. The amount of credit to be allowed by Contractor to the Town for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in Contractor's fee by an amount equal to ten percent (10%) for the net decrease.
- D. When both additions and credits are involved in any one change the combined overhead and profit shall be figured on the basis of net increase if any, however, profit will not be paid on any Work not performed.

5. <u>COST BREAKDOWN REQUIRED</u>

Whenever the cost of any work is to be determined pursuant to Section XI, Paragraphs 4, 5 and 6 Contractor will submit in a form acceptable to CEI an itemized cost breakdown together with supporting data.

SECTION XII CONTRACT TIME

1. <u>COMMENCEMENT</u>

1.1 The Date of Commencement of the Work is the date established in the Notice to Proceed.

- **1.2 Time of Substantial Completion:**
- A. The date of Substantial Completion of the Work or designated portion thereof is the date certified by CEI when construction is sufficiently complete, in accordance with the Contract Documents, so the Town can occupy or utilize the Work or designated portion thereof for the purposes for which it is intended.

2. <u>CHANGE OF CONTRACT TIME</u>

2.1 All time limits stated in the Contract Documents are of the essence of the Contract. NO CLAIM FOR DAMAGES OR ANY CLAIM OTHER THAN FOR AN EXTENSION OF TIME SHALL BE MADE OR ASSERTED AGAINST THE TOWN BY REASON OF ANY DELAYS. Contractor shall not be entitled to an increase in the Contract Price or payment or compensation of any kind from the Town for direct, indirect, consequential, impact or other costs, expenses or damages including but not limited to costs of acceleration or inefficiency, arising because of delay, disruption, interference or hindrance from any cause whatsoever, whether such delay, disruption, interference be reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable; provided, however, that this provision shall not preclude recovery of damages by Contractor for hindrances or delays due solely to fraud, bad faith or active interference on the part of the Town or its agents. Otherwise, Contractor shall be entitled only to extensions of the Contract Time as the sole and exclusive remedy for such resulting delay, in accordance with and to that extent specifically provided above. No extension of time shall be granted for delays resulting from normal weather conditions prevailing in the area as defined by the average of the last ten (10) years of weather data as recorded by the United States Department of Commerce, National Oceanic and Atmospheric Administration at the National Weather Service Miami-South Florida Forecast Office.

2.2 No recovery for early completion. If the Contractor submits a schedule or expresses an intention to complete the Work earlier than any required milestone or completion date, the Town shall not be liable to the Contractor for any costs incurred because of delay or hindrance should the Contractor be unable to complete the Work before such milestone or completion date. The duties, obligations and warranties of the Town to the Contractor shall be consistent with and applicable only to the completion of the Work and completion dates set forth in these Construction Services General Conditions.

2.3 The Contract Time may only be changed by a Change Order or a written Amendment. Any claim for extension of time shall be made in writing to CEI not more than three (3) days after the detection or beginning of the occurrence of the event giving rise to the delay and stating the general nature of the claim; otherwise, it shall be waived. In the case of a continuing delay only one (1) claim is necessary. Contractor shall provide an estimate of the probable effect of such delay on the progress of the Work.

3. LIQUIDATED DAMAGES

Upon failure of Contractor to complete the Work within the time specified for Final Completion, (plus approved extensions if any) Contractor shall pay to the Town the sum of Three Hundred Dollars (\$300.00) for each day that the Substantial Completion of the Work is delayed beyond the time specified in the Contract for Substantial Completion, as fixed and agreed liquidated damages and not as a penalty. After Substantial Completion, if Contractor neglects, fails or refuses to complete the remainder of the Work within the Contract Time or any approved extension thereof, Contractor shall pay to the Town the sum of Three Hundred Dollars (\$300.00) for each calendar day (plus approved extensions if any) after the time specified in the Contract for Final Completion and readiness for final payment as fixed and agreed liquidated damages and not as a penalty. Liquidated-damages are hereby fixed and agreed upon between the parties, recognizing the impossibility of precisely ascertaining the amount of damages that will be sustained by the Town as a consequence of such delay and both parties desiring to obviate any guestion of dispute concerning the amount of said damages and the cost and

effect of the failure of Contractor to complete the Contract on time. Regardless of whether or not a single Contract is involved, the above-stated liquidated damages shall apply separately to each portion of the Work for which a time of completion is given. The Town shall have the right to deduct from and retain out of moneys which may be then due or which may become due and payable to Contractor, the amount of such liquidated damages and if the amount retained by the Town is insufficient to pay in full such liquidated damages, the Contractor shall pay in full such liquidated damages. Contractor shall be responsible for reimbursing the Town, in addition to liquidated damages or other per day damages for delay, for all costs of engineering, architectural fees, and inspection and other costs incurred in administering the construction of the project beyond the completion date specified or beyond an approved extension of time granted to Contractor whichever is later.

SECTION XIII WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

1. WARRANTY AND GUARANTEE

Contractor warrants and guarantees to the Town and CEI 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 Contractor. All defective work, whether or not in place, may be rejected, corrected or accepted. Contractor warrants to the Town that the consummation of the Work provided for in the Contract Documents will not result in the breach of any term or provisions of, or constitute a default under any indenture, mortgage, Contract, or Agreement to which Contractor is a party. Contractor warrants that there has been no violation of copyrights or patent rights in connection with the Work of the Contract.

2. ACCESS TO WORK

CEI and other representatives of the Town, testing agencies and governmental agencies with jurisdictional interests shall have access to the Work at reasonable times for their observation, inspecting and testing. Contractor shall provide proper and safe conditions for such access.

3. TESTS AND INSPECTION

3.1 Contractor shall give CEI and Contract Administrator Inspector timely notice of readiness of the Work for all required inspections, tests or approvals.

3.2 Contractor shall assume full responsibility, pay all costs in connection therewith and furnish CEI the required certificates of inspection, testing or approval for all materials, equipment or the Work or any part thereof unless otherwise specified herein.

3.3 If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of CEI, it must, if requested by CEI, be uncovered for examination and properly restored at Contractor's expense. Such uncovering shall be at Contractor's expense unless Contractor has given CEI timely notice of Contractor's intention to cover the same and CEI has not acted with reasonable promptness in response to such notice.

3.4 Neither observations by CEI nor inspections, tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract

Documents.

4. UNCOVERING THE WORK

4.1 If any work is covered contrary to the written request of CEI, it must, if requested by CEI or Town Representative, be uncovered for CEI's observation and replaced at Contractor's expense.

4.2 If CEI or Town Representative considers it necessary or advisable that covered work be observed by CEI of inspected or tested by others, Contractor, at CEI's request, shall uncover, expose or otherwise make available for observation, inspection or testing as CEI 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, Contractor shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction (including but not limited to fees and charges of engineers, architects, attorneys and other professional(s), and the Town shall be entitled to an appropriate decrease in the Contract Price, and if the parties are unable to agree as to the amount thereof, may make a claim therefore as provided in the Contract Documents. If, however, such work is found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the contract time, or both, directly attributable to such uncovering and, if the parties are unable to agree as to the amount or extent thereof, Contractor may make a claim therefore as provided in the Contract Documents.

5. <u>THE TOWN MAY STOP THE WORK</u>

If the Work is defective, or Contractor fails to supply sufficient skilled Workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, the Town may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Town to stop the Work shall not give rise to any duty on the part of the Town to exercise this right for the benefit of Contractor or any other party.

6. <u>CORRECTION OR REMOVAL OF DEFECTIVE WORK</u>

If required by CEI or Town Representative, Contractor shall promptly, as directed, either correct all defective work, whether or not fabricated, installed or completed, or, if the Work has been rejected by CEI, remove it from the site and replace it with non-defective Work. Contractor shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

7. ONE YEAR CORRECTION PERIOD

If within one (1) year after the date of completion or such longer period of time as may be prescribed by laws or regulations or 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, Contractor shall promptly, without cost to the Town and in accordance with the Town's written instructions, either correct such defective Work, or, if it has been rejected by the Town, remove it from the site and replace it with non-defective Work. If 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 Town may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by Contractor. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by written Amendment.

SECTION XIV PAYMENTS TO CONTRACTOR AND COMPLETION

1. <u>SCHEDULE OF VALUES</u>

The schedule established as provided in Article 5 of the Contract will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to CEI.

2. <u>APPLICATION FOR PROGRESS PAYMENT</u>

At least ten (10) days before each progress payment is scheduled (but not more often than once a month), Contractor shall submit to CEI for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. 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 a bill of sale, invoice or other documentation warranting that the Town has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the Town's interest therein, all of which will be satisfactory to the Town. The amount of retainage with respect to progress payments will be as stipulated in the Contract.

3. <u>CONTRACTOR'S WARRANTY OF TITLE</u>

Contractor warrants and guarantees that title to all Work, materials and equipment covered by an Application for Payment, whether incorporated in the Project or not, will pass to the Town no later than the time of final payment free and clear of all Liens.

4. <u>REVIEW OF APPLICATIONS FOR PROGRESS PAYMENTS</u>

CEI will, within ten (10) days after receipt of each Application for Payment, either indicate in writing a recommendation of payment, or return the Application to Contractor indicating in writing CEI's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application. The Town shall make payment to Contractor within thirty (30) days after approval by the CEI of Contractor's requisition for payment.

5. <u>GROUNDS FOR REFUSAL</u>

5.1 CEI may refuse to recommend the whole or any part of any payment if, in his/her opinion, it would be incorrect to make such representation to the Town. CEI 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 CEI's opinion to protect the Town from loss because:

- A. The Work is defective, or completed Work has been damaged requiring correction or replacement.
- **B.** The Contract Price has been reduced by written Amendment or Change Order.
- C. Of CEI's actual knowledge of the occurrence of any of the events outlined elsewhere in the Contract Documents that represent grounds for refusal of payment in whole or part the Town may refuse to make payment of the full amount recommended by CEI because claims have been made by the Town on account of Contractor's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling the Town to a set-off against the amount recommended, but the Town must give Contractor written notice stating the reasons for such action within a reasonable time from receipt of CEI's recommendation for payment on that matter.
- **D. Final Inspection**:

Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, CEI will make a final inspection with the Town and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

6. FINAL APPLICATION FOR PAYMENT

After Contractor has completed all such corrections to the satisfaction of CEI and the Town and delivered all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, marked up Record Documents and other Documents, all as required by the Contract Documents, and after CEI has indicated that the Work is acceptable, 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 Town) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by the Town, Contractor may furnish receipts or releases in full; an affidavit of 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 Town or the Town'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 Sub-Contractor or supplier fails to furnish a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to the Town to indemnify the Town against any lien. In addition, Contractor shall also submit with the final application for payment, the completed set of "As-Built" prints for review and approval. Final payment to Contractor shall not be made until said prints have been reviewed and approved by CEI. Prior to approval, if necessary, the prints may be returned to Contractor for changes or modifications and if in the opinion of CEI they do not represent correct or accurate "AS-BUILTS".

7. FINAL PAYMENT AND ACCEPTANCE

7.1 If, on the basis of CEI's observation of the Work during construction and final inspection, and CEI's review of the Final Application for Payment and accompanying documentation all as required by the Contract Documents, CEI is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, CEI will, within ten (10) days after receipt of the Final Application for Payment, indicate in writing CEI's recommendation of payment and present the Application to the Town for payment. Thereupon CEI will give written notice to the Town and Contractor that the Work is acceptable. Otherwise, CEI will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. Thirty (30) days after presentation to the Town of the Application and accompanying documentation, in appropriate form and substance, and with CEI's recommendation and notice of acceptability, the amount recommended by CEI will become due and will be paid by the Town to Contractor.

7.2 If, through no fault of Contractor, Final Completion of the Work is significantly delayed and if CEI so confirms, the Town shall, upon receipt of Contractor's Final Application for Payment and recommendation of CEI, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by the Town for Work not fully completed or corrected is less than the retainage stipulated in the Contract, and if Bonds have been furnished as required, 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 Contractor to CEI 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.

7.3 Any moneys not paid by the Town when claimed to be due to Contractor under this Contract shall <u>not</u> be subject to interest, including but not limited to pre-judgment interest.

8. <u>CONTRACTOR'S CONTINUING OBLIGATION</u>

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 CEI, nor any payment by the Town to Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by the Town, nor any act of acceptance by the Town 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 CEI, nor any correction of defective Work by the Town will constitute an acceptance of Work not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents.

9. WAIVER OF CLAIMS

The acceptance of final payment shall constitute a waiver of all claims by Contractor against the Town other than those previously made in writing and still unsettled as of the date of final payment.

10. <u>THE TOWN MAY SUSPEND WORK</u>

The Town 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 Contractor and CEI which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if Contractor makes an approved claim therefore as provided in the Contract Documents.

11. <u>THE TOWN MAY TERMINATE</u>

- **11.1** Upon the occurrence of any one or more of the following events:
- A. If Contractor commences a voluntary case under any chapter of the Bankruptcy Code as now or hereafter in effect, or if 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.
- **B.** If a petition is filed against 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 Contractor under any other federal or state law in effect at the time relating to bankruptcy or insolvency.
- C. If Contractor makes a general assignment for the benefit of creditors.
- D. If a trustee, receiver, custodian or agent of Contractor is appointed under applicable law or under Contract, whose appointment or authority to take charge of property of 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 Contractor's creditors.
- E. If Contractor admits in writing an inability to pay its debts generally as they become due.
- F. If Contractor fails to timely begin the Work, or fails to perform the Work with sufficient workers and equipment or with sufficient materials to insure the prompt completion of the Work within the Contract Time, or fails to adhere to the Progress Schedule as same may be revised from time to time, or shall perform the Work unsuitably, or cause it to be rejected as defective and unsuitable, or shall discontinue the prosecution of the Work pursuant to the Contract Time, or if the Contractor shall fail to perform any material term set forth in the Contract Documents, or from any other cause whatsoever shall not carry on the Work in an acceptable manner in accordance with the Contract Documents.
- G. If Contractor disregards laws or regulations of any public body having jurisdiction.
- H. If Contractor disregards the authority of CEI.
- I. If Contractor otherwise violates in any substantial way any provisions of the Contract Documents, the Town may, after giving Contractor and the surety seven (7) days written notice and to the extent permitted by laws and regulations, terminate the

services of Contractor, exclude Contractor from the site and take possession of the Work and of all Contractor's tools, appliances, construction equipment and machinery at the site and use the same to full extent they could be used by Contractor without liability to Contractor for trespass or conversion, incorporate in the Work all materials and equipment stored at the site or for which the Town has paid Contractor but which are stored elsewhere, and finish the Work as the Town may deem expedient. In such case 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 Contractor. If such costs incurred by the Town will be approved as to reasonableness by CEI and incorporated in a Change Order, but when exercising any rights or remedies under this Paragraph the Town shall not be required to obtain the lowest price for the Work performed.

J. Where Contractor's services have been so terminated by the Town, the termination will not affect any rights or remedies of the Town against Contractor then existing or which may thereafter accrue any retention or payment of moneys due Contractor by the Town will not release Contractor from liability.

12. <u>TERMINATION FOR CONVENIENCE OF THE TOWN</u>

Upon seven (7) days written notice delivered by certified mail to Contractor, the Town may, without cause and without prejudice to any other right or remedy, terminate the Contract for the Town's convenience whenever the Town determines that such termination is in the best interests of the Town. Where the Contract is terminated for the convenience of the Town, the notice of termination to Contractor must state that the Contract is being terminated for the convenience of the Town under the termination clause, the effective date of the termination and the extent of termination. Upon receipt of the notice of termination for convenience, Contractor shall promptly discontinue all Work at the time and to the extent indicated on the notice of termination, terminate all outstanding Subcontractors and purchase orders to the extent that they relate to the terminated portion of the Contract, and refrain from placing further orders and subcontracts, except as they may be necessary, and complete any continued portions of the Work.

13. TERMINATION BY CONTRACTOR

If the Work should be stopped under an order of any court of other public authority for a period of more than ninety (90) days through no act or fault of Contractor or of anyone employed by him/her, or if CEI fails to review and approve or state in writing reasons for non-approval of any application for payment within thirty (30) days after it is submitted or if the Town fails to pay Contractor within thirty (30) days after presentation by CEI of any sum determined to be due, then Contractor (after written notice to the Town and an opportunity to cure provided to the Town) may, upon ten (10) days written notice to the Town and CEI stop Work or terminate this Contract and recover from the Town, payment for all Work executed and any expense sustained. The provisions of this Paragraph shall not relieve Contractor of the obligations to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with the Town.

SECTION XV NOTICES & COMPUTATION OF TIME

1. <u>GIVING NOTICE</u>

All notices required by any of the Contract Documents shall be in writing and shall be deemed delivered upon mailing by certified mail, return receipt requested to the following:

Contractor:

The business address of Contractor is: as stated in the Contract with the Town

The business address of the Town is:

Town of Medley 7777 N.W. 72 Avenue Medley, FL 33166

2. <u>COMPUTATION OF TIME</u>

When any period of time is referred to in the Contract Documents by days it will such calendar days and it will be computed to exclude the first and include the last day of such period. If the last day of the final amended contract time falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation. A calendar day of twenty-four (24) hours measured from midnight to the next midnight shall constitute a day.

SECTION XVI MISCELLANEOUS

1. Should the Town or Contractor suffer injury or damage to 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 will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this Paragraph shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

2. The duties and obligations imposed by these Construction Services General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guaranties and obligations imposed upon Contractor and all of the rights and remedies available to the Town and CEI thereunder, are in addition to, and are not to be construed in any way as a limitation of any rights and remedies available to any or all of them which are otherwise imposed or available to any or all of them which are otherwise imposed or available to any or guarantee or by other provisions of the Contract Documents, and the provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents, and the provisions of this Paragraph will survive final payment and termination or completion of the Contract.

3. Contractor shall not assign or transfer the Contract or its rights, title or interests therein without the Town's prior written approval. The obligations undertaken by Contractor pursuant to the Contract shall not be delegated or assigned to any other person or firm unless the Town shall first

consent in writing to the assignment. Violation of the terms of this Paragraph shall constitute a breach of Contract by Contractor and the Town may, at its discretion, cancel the Contract and all rights, title and interest of Contractor shall thereupon cease and terminate.

SECTION XVII BONDS AND INSURANCE

1. <u>CONSTRUCTION, PAYMENT AND PERFORMANCE BONDS</u>

Within fifteen (15) days after issuance of Notice of Award, but in any event prior to 1.1 commencing Work, Contractor shall execute and furnish to the Town a Performance Bond and a Payment Bond, each written by a corporate surety authorized to do business in the State of Florida and having been in business with a record of successful continuous operation for at least five (5) years. The surety shall hold a current certificate of authority from the Secretary of Treasury of the United States as an acceptable surety on federal bonds in accordance with United States Department of Treasury Circular No. 570. If the amount of the Bond exceeds the underwriting limitation set forth in the circular, in order to qualify, the net retention of the surety company shall not exceed the underwriting limitation in the circular and the excess risks must be protected by coinsurance, reinsurance, or other methods, in accordance with Treasury Circular 297, revised July 1, 1997 (31 DFR, Section 223.10, Section 223,11). Further, the surety company shall provide the Town with evidence satisfactory to the Town, that such excess risk has been protected in an acceptable manner. The surety company shall have at least the following minimum gualifications in accordance with the latest edition of A.M. Best's Insurance Guide, published by Alfred M. Best Company, Inc., Ambest Road, Oldwick, New Jersey08858:

- **1.2 Financial Stability** A
- **1.3 Financial Size VIII**

1.4 Two (2) separate Bonds are required and both must be approved by the Town. The penal sum stated in each Bond shall be the amount equal to the total amount payable under the Contract. The Performance Bond shall be conditioned that Contractor perform the Contract in the time and manner prescribed in the Contract. The Payment Bond shall be conditioned that Contractor promptly make payments to all persons who supply Contractor with labor, materials and supplies used directly or indirectly by Contractor in the prosecution of the Work provided for in the Contract and shall provide that the surety shall pay the same in the amount not exceeding the sum provided in such Bonds, together with interest at the maximum rate allowed by law; and that they shall indemnify and save and hold harmless the Town to the extent of any and all payments in connection with the carrying out of said Contract which the Town maybe required to make under the law.

2. BONDS, REDUCTION AFTER FINAL PAYMENT

Such Bonds shall continue in effect for one (1) year after final payment becomes due except as otherwise provided by law or regulation or by the Contract Documents with the final sum of said Bonds reduced after final payment to an amount equal to twenty-five percent (25%) of the Contract Price, or an additional Bond shall be conditioned that Contractor shall correct any defective or faulty Work or material which appears within one (1) year after Final Completion of the Contract, upon notification by the Town except in Contracts which are concerned solely with demolition work, in

which case the twenty-five percent (25%) shall not be applicable.

3. DUTY TO SUBSTITUTE SURETY

If the surety on any Bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in the State of Florida or it ceases to meet the requirements of other applicable laws or regulations, Contractor shall within five (5) days thereafter substitute another Bond and surety, both of which must be acceptable to the Town.

4. <u>INSURANCE</u>

See Invitation to Bid, Section I, Paragraph 12 for details.

5. <u>THE TOWN'S LIABILITY AND INSURANCE</u>

The Town shall not be responsible for purchasing and maintaining any insurance to protect the interests of Contractor, Sub-Contractors or others on the Work. The Town specifically reserves all statutory and common law rights and immunities and nothing herein is intended to limit or waive same including, but not limited to, the procedural and substantive provisions of Florida Statute 768.28 and Florida Statute 95.11.

Bid Addendum
Part 2 – Bid Documents, Forms & Contract

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BID FORM

FOR BID NO. 2014-004

SANITARY SEWER LIFT STATION No. 100A UPGRADE

Date:_____, 2014

Honorable Roberto Martell Mayor Town of Medley 7777 N.W. 72nd Avenue Medley, FL 33166

Mr. Martell,

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Town to perform all Work as specified in the Bid Documents for the price(s) and within the time indicated in this Bid, and in accordance with the terms and conditions of the Bid Documents.

2. Bidder accepts and hereby incorporates by reference in this Bid Form all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those pertaining to the disposition of Bid Security.

3. Bidder has examined the site of the Project and has become fully informed concerning the local conditions, and nature and extent of Work. Bidder has examined the indemnification and liquidated damages provisions, if any, and the Bond and insurance requirements of the Bid, and accepts and agrees to abide by those terms and conditions without exception or limitation of any kind.

4. Bidder hereby declares that the only person or persons interested in this Bid, as principal or principals, is or are named herein and that no other person than herein mentioned has any interest in the Contract to which the work pertains; that this Bid is made without connection or arrangement with any other person, company, or parties making a bid and that the Bid is in all respects fair and made in good faith without collusion or fraud.

5. Bidder further represents that from personal knowledge and experience, or that he has made sufficient observations of the conditions of the Project or that to satisfy himself that such site is a correct and suitable one for this Work and he assumes full responsibility therefore, that he has examined the Drawings and Project Manual for the Work and from his own experience or from professional advice that the Drawings and Project Manual are sufficient for the work to be done, and he has examined the other Contractual Documents relating thereto, including the Notice of Bid Invitation, Instructions to Bidders, Proposal, Contract, General and Special Conditions, Technical Specifications, Drawings and has read all addenda prior to the receipt of bids, and that he has satisfied himself fully, relative to all matters and conditions with respect to the work to which this Proposal

pertains.

6. Bidder proposes and agrees, if this Proposal is accepted, to contract with the Town, in the form of contract specified, to furnish all necessary materials, all necessary equipment, all necessary machinery, tools, apparatus, means of transportation, and labor necessary to complete the work specified in the Proposal and the Contract, and called for by the Drawings, General Notes and Technical Specifications and in the manner specified.

7. Bidder further proposes and agrees to comply in all respects with the time limits for commencement and completion of the work as stated in the Contract.

8. Bidder has given the Town written notice of all conflicts, errors or discrepancies that it has discovered in the Bid and/or Project Manual and the written resolution thereof by the Town or its representative is acceptable to Bidder.

9. Bidder further agrees to execute a Contract and furnish satisfactory Performance and Payment Bonds each in the amount of one-hundred percent of the Contract price, within ten (10) consecutive calendar days after written notice being given by the Town of the award of the Contract, and the undersigned agrees that in case of failure on his part to execute the said Contract and Performance and Payment Bonds within the fifteen (15) consecutive calendar days after the award of the Contract, the cashier's check or Bid Bond accompanying his bid and the money payable thereon shall be paid to the Town as liquidation of damages sustained by the Town; otherwise, the check accompanying the Bid shall be returned to the undersigned after the Contract is signed and the Performance and Payment Bonds are filed. (Note: should the tenth consecutive calendar day fall on a Saturday, Sunday or legal holiday observed by the Town or Bidder, then the final day to execute a contact and furnish satisfactory Performance and Payment Bonds shall be extended to the next immediate following business day).

10. The undersigned agrees to accept in full compensation therefore the total of the lump sum prices for the items named in the Bid Proposal, based on the quantities actually constructed as determined by the applicable measurement and payment portion of the Technical Specifications.

Bidder's Certificate of Competency No. _____

Bidders Occupational License No._____

Acknowledgement is hereby made of the following Addenda (identified by number) received since issuance of the Invitation to Bid:

Addendum No	Date
Addendum No	Date
Addendum No	Date

Attached hereto is (check one) a:

_____ Cashier's check for the sum of \$_____ U.S. Dollars or

_____ Bid Bond for the Sum of \$_____ U.S. Dollars

Made payable to the Town of Medley, Florida

(Name of Bidder)

(Affix Seal)

Signature of Officer

(Title of Officer)

PLEASE HAVE YOUR INSURANCE REPRESENTATIVE CAREFULLY REVIEW THE INSURANCE COVERAGE REQUIREMENTS CONTAINED IN THE INSTRUCTIONS TO BIDDERS PRIOR TO SUBMITTING YOUR BID TO ENSURE COMPLIANCE WITH ALL INSURANCE REQUIREMENTS.

Communications concerning this Bid shall be addressed to:

Name: Address:

. . . .

E-mail Address:

Telephone No.:

Fax No.:

The following documents are attached to and made as a condition to this Bid:

- (a) Attachment 1: List of Major Sub Contractors
- (b) Attachment 2: Bid Proposal
- (c) Attachment 3: Notice to all Bidders
- (d) Attachment 4: List of Sub-Contractors
- (e) Attachment 5: General Information Required of Bidder
- (f) Attachment 6: Solicitation, Giving, and Acceptance of Gift Policy
- (g) Attachment 7: Drug-Free Workplace Program
- (h) Attachment 8: Bidder's Certification
- (i) Attachment 9: Certified Resolution (corporation, partnerships)
- (j) Attachment 10:Certificate(s) of Insurance
- (k) Attachment 11:Non-Collusive Affidavit
- (l) Attachment 12:Bidder's Foreign (Non-Florida) corporate statement References
- (m) Attachment 13:Bidder's Qualification Statement
- (h) Attachment 14:Conformance with OSHA Standards
- (i) Attachment 14:Trench Safety Act Compliance
- (j) Attachment 15: Construction Engineering and Inspection Services Company Notice
- (k) Attachment 16: References
- (l) Attachment 17: Bid Bond

BID PROPOSAL

FOR BID NO. 2014-004

SANITARY SEWER LIFT STATION No. 100A UPGRADE

Bid prices stated in the proposal include all costs and expenses for labor, equipment, materials, contractor's overhead, and profit. Payment for this project will be based upon completion of the entire project as a unit price contract, in accordance with the Project Manual.

Item No.	Description of Work	Unit	Quantity	Unit Price (\$)	Written Unit Price (\$)	Extended Cost (\$)
	FURNISH AND INSTALL PACKAGE PUMP STATION:					
1	Item includes: Package pump station, inclusive of 2 submersible pumps with power cables, lifting cables, fiberglass wet well, discharge couplings, conduit stub-outs, inlet fitting, wet well hatch cover with access door, guide rail assembly, cable hanging rack, and internal piping; valve box assembly, including check valves, gate valves, by-pass system piping, fittings, pressure gauges, snubber, petcock, and fiberglass box with aluminum hatch cover; odor/gas scrubber; control center, including mercury level controls with cables, control panel, NEMA 4X stainless steel enclosure with high water alarm, light, horn, silence, circuit breakers, lightning arrestor, phase monitor, surge capacitor, H-O-A switches, run lights, elapsed time meters, alternating circuit, emergency generator receptacle, and control panel; control center mounting assembly, including guide posts, unistrut, bolting, end caps, and top pipe caps; disconnect switch with properly sized fuses mounted on control center assembly with connection nipple; R.P.Z. backflow preventer assembly with support brackets; anti-flotation flange; and Rigid Explosion-Proof Conduit System & Seal-off Fittings					

Name of Bidder

Signature of Bidder

BID PROPOSAL

FOR BID NO. 2014-004

SANITARY SEWER LIFT STATION No. 100A UPGRADE

Item No.	Description of Work	Unit	Quantity	Unit Price (\$)	Written Unit Price (\$)	Extended Cost (\$)
	FURNISH AND INSTALL ELECTRICAL AND CONTROL ITEMS		· · · · · ·			
2	All electrical wiring and equipment not included in Item 1, such as: pump station controls, transmitters, terminals, pedestals, level sensors and/or transducers shown in the design drawings not included with the package pump station					
	FURNISH AND INSTALL PUMP STATION TRIM-OUT:					
3	Demolition of Existing Pump Station and Surrounding Features as Shown in Drawings and Disposal of Demolished Materials					
4	Excavation of existing material for demolition and installation of pump station					
5	Pump Station temporary by-pass system					
6	Backfill (Previously Excavated Clean Fill)					
7	Imported Backfill (Imported Clean Fill)					
8	Concrete Anti-Float Collar					
9	Disposal of unsuitable excavated material					
10	New water service and water meter					

Name of Bidder

Signature of Bidder

BID PROPOSAL

FOR BID NO. 2014-004

SANITARY SEWER LIFT STATION No. 100A UPGRADE

Item No.	Description of Work	Unit	Quantity	Unit Price (\$)	Written Unit Price (\$)	Extended Cost (\$)
	FURNISH AND INSTALL PUMP STATION TRIM-OUT	:				
11	Pavement restoration including sub-base, base, asphalt, and temporary asphalt, if necessary					
12	Gravel surface including stabilized subgrade, gravel, landscape timber and rebar					
13	8' high chain link fence and gate					
14	Topsoil and Sod (min. 4" top soil and sod to restore surrounding area to existing condition)					
	OTHER COSTS					
15	Bonds and Insurance					
16	Mobilization / Demobilization					
17	Maintenance of Traffic					
A. SUB-TOTAL (Add Items 1 through 17)						

B. 10% Contingency Allowance (10% of A)

GRAND TOTAL (Add A+B)

Written Bid Amount:

The total contract time is 180 calendar days to Final Completion from Notice to Proceed.

Name of Bidder

Signature of Bidder

NOTICE TO ALL BIDDERS

THE TOWN OF MEDLEY RESERVES THE RIGHT TO WAIVE ANY INFORMALITY IN ANY BID, TO REJECT ANY AND ALL BIDS, AND TO DELETE ANY PART OF ANY OF ABOVE ITEMS.

AMOUNTS SHALL BE SHOWN IN BOTH WORDS AND FIGURES. IN CASE OF DISCREPANCIES, THE AMOUNT SHOWN IN WORDS SHALL GOVERN FOR EACH BID ITEM.

The Bidder further proposes and agrees to begin work with an adequate force and with sufficient equipment and facilities on the date stated in the written Notice issued and served upon him by the Owner and to complete the work included in this Proposal within the time stipulated in the Agreement, including delivery time for materials and equipment, installation, start-up and inspections.

BIDDER HEREBY ACKNOWLEDGES RECEIPT OF ADDENDA BY NUMBER AND DATE ON THIS PAGE.

ADDENDUM NO.	DATE
ADDENDUM NO.	DATE

LIST OF MAJOR SUB-CONTRACTORS

Bidders are required to list with the Proposal, on this attached sheet all major sub-contractors included for the prosecution of the work. Failure to complete the list may be cause for declaring the Proposal irregular.

The successful bidder shall employ the sub-contractors listed hereunder for the class of work indicated, which list shall not be modified in any way without the written consent of the Town of Medley.

The Bidder expressly agrees that:

1. If awarded a contract as a result of this Proposal, the major sub-contractors used in the prosecution of the work shall be those listed below.

2. The Bidder represents that the sub-contractors listed below are financially responsible and are qualified to do the work required.

CATEGORY OR CLASS	NAME OF SUB-CONTRACTOR	ADDRESS
OF WORK		
*************	***************************************	*****

LIST OF SUBCONTRACTORS

CONTRACTOR_____

Name Under Which Subcontractor	License	Address of Office, Mill, or	Percent of Total	Specific Description of
is Licensed	No.	Shop	Contract	Subcontract

GENERAL INFORMATION REQUIRED OF BIDDER

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

	(1)	Contractor's name and address:						
Fax:_	(2)	Contractor	's telephone:					
	(3)	Primary E-	mail Address:					
	(4)	Contractor	's license: Primary class	sification:				
		Dade Coun	ty License No.:					
		Supplemer	ntal classifications held,	if any:				
	(5)	Number of	years as a Contractor in	n construction work of t	уре:			
	(6)	Name of person who inspected site of proposed work for your firm:						
		Date of inspection:						
	(7)	Three proj	ects of this type and cor	nplexity recently constr	ucted by bidder:			
	Contrac	t Amount	Type of Project	Date Completed	Owner's Name & Address			

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

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, 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, 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 Town of Medley policy prohibits all public officers, elected or appointed, all employees, and their families from accepting gifts of any value, either directly or indirectly, from any contractor, vendor, consultant, or business with whom the Town does business. Only advertising office stationery or supplies of small value are exempt from this policy - e.g. calendars, note pads, pencils.

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 an indebtedness.
- Transportation, lodging, or parking.
- 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.

To this list, the Town of Medley has added food, meals, beverages, and candy.

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 statute and policy.

Signature

Company Name

Print Name / Title

Date

DRUG-FREE WORKPLACE PROGRAM

IDENTICAL BIDS - 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. 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 Paragraph 1.
- 4. In the statement specified in Paragraph 1, notify the employees 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 this section.

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

Signature

Company Name

Print Name / Title

BIDDER'S CERTIFICATION

WHEN BIDDER IS AN INDIVIDUAL

In witness whereof, the Bidder has executed this Bid Form this ___day of ______, 20____.

By: ______ Signature of Individual/Title

Witness: ______

ACKNOWLEDGEMENT

STATE OF FLORIDA

COUNTY OFMIAMI-DADE

The foregoing instrument was acknowledged before me this _____day of _____, 20___,

by who is personally known to me or who has produced ______ as identification and who did (did not) take an oath.

WITNESS my hand and official seal.

NOTARY PUBLIC

Name of Notary Public: Print, Stamp, or type as Commissioned

BIDDER'S CERTIFICATION

WHEN BIDDER IS A CORPORATION, PARTNERSHIP OR FIRM

In witness whereof, the Bidder has executed this Bid Form this _____ day of ______, 20___. Printed Name of Corporation, Partnership, Firm Signature of Town _____ Witness: _____ **Business Address** Town/State/Zip Business Phone Number:_____ ACKNOWLEDGEMENT Signed, sealed and delivered in the presence of: By: _____ Printed Name: _____ STATE OF FLORIDA COUNTY OFMIAMI-DADE The foregoing instrument was acknowledged before me this day _____of _____, 20____, by ______ of ______ who is personally known to one or who has produced _______ as identification and who did (did not) take an oath. WITNESS my hand and official seal.

NOTARY PUBLIC

Name of Notary Public:
Print, Stamp, or type as Commissioned

ACKNOWLEDGEMENT

Signed, sealed and delivered in the presence of:

By:_____ Printed Name: _____

STATE OF FLORIDA

COUNTY OFMIAMI-DADE

The foregoing instrument was acknowledged before me this day ____of _____, 20____, by ______ of ______ who is personally known to one or who has produced _______ as identification and who did (did not) take an oath.

WITNESS my hand and official seal.

NOTARY PUBLIC

Name of Notary Public: Print, Stamp, or type as Commissioned

CERTIFIED RESOLUTION

I, ______ (Name), the duly elected Secretary of ______ (Corporate Title), a corporation organized and existing under the laws of the State of Florida, do hereby certify that the following Resolution was unanimously adopted and passed by a quorum of the Board of Directors of the said corporation at a meeting held in accordance with law and the by-laws of the said corporation.

IT IS HEREBY RESOLVED THAT ______ (Name) the duly elected ______ (Title of Officer) of ______ (Corporate Title) be and is hereby authorized to execute and submit a Bid and Bid Bond, if such Bond is required, to the Town of Medley and such other instruments in writing as maybe necessary on behalf of the said corporation; and that the Bid, Bid Bond, and other such instruments signed by him/her shall be binding upon the said corporation as its own acts and deeds. The secretary shall certify the names and signatures of those authorized to act by the foregoing Resolution.

The Town of Medley shall be fully protected in relying upon such certification of the secretary and shall be indemnified and saved harmless from any and all claims, demands, expenses, loss or damage resulting from or growing out of honoring, the signature of any person so certified or for refusing to honor any signature not so certified.

I further certify that the above Resolution is in force and effect and has not been revised, revoked or rescinded.

I further certify that the following are the name, titles and official signatures of those persons authorized to act by the foregoing resolution.

NAME	TITLE	SIGNATURE
		<u> </u>
Given under my hand and th	e Seal of the said corporation th	isday of, 20
(SEAL)	By:	
	Secre	etary
	Corp	orate Title

NOTE:

The above is a suggested form of the type of Corporate Resolution desired. Such form need not be followed explicitly, but the Certified Resolution submitted must clearly show to the satisfaction of the Town of Medley that the person signing the Bid and Bid Bond for the corporation has been properly empowered by the corporation to do so in its behalf.

CERTIFICATE OF INSURANCE

This is to certify that the		
(Insurance)	Company)	
Address		
of		
has issued policies of insurance, as described be insured named below; and to certify that such policies agreed that none of these policies will be cance	elow and identified by a olicies are in full force a eled or changed so as to	a policy number, to the nd effect at this time. It affect the interest(s) of
the		
(hereinafter sometimes called the Town) until cancellation or change has been delivered to the	thirty (30) days after CEI.	written notice of such
Insured		
Address		
Status of Insured: Corporation	Partnership	Individual
Location of Operations Insured		
Description of Work:		
SANITARY SEWER LIFT STA	ATION No. 100A UPGRAI	DE
INSURANCE POLICIES IN FORCE:	Policy Number	Even Data
* Monhana Comm / Employees Lighility	Folicy Nulliber	<u>Exp. Date</u>
Workers comp./ Employers Liability		
+ Comprehensive Automobile Liability		
^o Comprehensive General Liability		
+Excess Liability		
Other (Please specify type:)		

POLIC	Y INCLUDES COVERAGE FOR:	YES	NO
1.	Additional Insured: Town, EOR, and CEI		
2.	*Liability under the United States		
	Longshoremen's and Harbor Workers		
	Compensation Act		
3.	+ All owned, hired or non-owned automotive		
	Equipment used in connection with work		
	Done for the Town.		
4.	o Contractual Liability		
5.	^o Damage caused by explosion, collapse or		
	Structural injury and damage to underground		
	Utilities		
6.	o Products/Completed Operations		
7.	o Town's and Contractors Protective Liability		
8.	º Personal injury Liability		
	+ Excess Liability applies excess of:		
	(a) Employers Liability		
	(b) Comprehensive General Liability		
	(c) Comprehensive Automobile Liability		
9.	Builder's Risk		

TYPES OF POLICY	FORMS OF COVERAGE	LIMITS OF LIABILITY	
Workers' Compensation	Bodily Injury	\$	Statutory
Employers Liability	Bodily Injury	\$	Each Accident
	Disease	\$	Each Person
	Disease	\$	Policy Limit
Comprehensive Auto Liability	Combined Single Limit BI/PD	\$	Each Accident
Comprehensive General Liability	Bodily Injury	\$	Each Occurrence
5		\$	Aggregate
	Property Damage	\$	Each Occurrence
		\$	Aggregate

	OR	
	Combined Single Limit BI/PD	\$ Each
		\$ Aggregate
Excess Liability	Combined Single Limit BI/PD	\$ Aggregate
Builder's Risk	Property Damage/	
	Replacement	\$

Other

The Insurance Company hereby agrees to deliver, within ten (10) days from the date hereof, two (2) certified copies of the above policies to the CE when so requested and two (2) certified copies of the above policies to the Town Attorney when so requested.

Note: Entries on this certificate are limited to the Authorized Agent or Insurance Company Representative.

Date:

(SEAL)_____Insurance Company

Issued at _____

Authorized Representative

Insurance Agent or Company

- Send three (3) copies to:

Town of Medley 7777 N.W. 72nd Avenue Medley, FL 33166 Attention: Herlina Taboada, Town of Medley Clerk

NON-COLLUSIVE AFFIDAVIT

STATE OF FLORIDA

that:

COUNTY OFMIAMI-DADE

_____ being first duly sworn, deposes and says

(1) He/she is the ______,(Partner, Officer, Representative or Agent) of ______ the Bidder that has submitted the attached Bid;

(2) He/she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, Town's agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm, or person to submit a collusive or sham Bid in connection with the Work for which the attached Bid has been submitted; or to refrain from bidding in connection with such Work; or have in any manner, directly or indirectly, sought by Contract or collusion, or communication, or conference with any Bidder, firm, or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit, or cost elements of the Bid price or the Bid price of any other Bidder, or to secure trough any collusion, conspiracy, connivance, or unlawful Contract any advantage against (Recipient), or any person interested in the proposed Work; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful Contract on the part of the Bidder or any other of its agents, representatives, Towns, employees or parties in interest, including this affiant.

ACKNOWLEDGEMENT

Signed, sealed and delivered in the presence of:

By:	
Printed Name:	

STATE OF FLORIDA

COUNTY OF MIAMI-DADE

The foregoing instrument was acknowledged before me this day _____of _____, 20____, by ______ of ______ who is personally known to one or who has produced as identification and who did (did not) take an oath.

WITNESS my hand and official seal.

NOTARY PUBLIC

Name of Notary Public: Print, Stamp, or type as Commissioned

FOREIGN (NON-FLORIDA) CORPORATIONS MUST COMPLETE THIS FORM

DEPARTMENT OF STATE CORPORATE CHARTER NO.

If your corporation is exempt from the requirements of Section 607.1501, Florida Statutes, <u>YOU</u> <u>MUST CHECK BELOW</u> the reason(s) for the exemption. Please contact the Department of State, Division of Corporations at (850) 245-6051 for assistance with corporate registration or exemptions.

Section 607.1501 Authority of foreign corporation to transact business required.

(1) A foreign corporation may not transact business in this state until it obtains a certificate of authority from the Department of State.

(2) The following activities, among others, do not constitute transacting business within the meaning of subsection (1);

- _____ (a.) Maintaining, defending, or settling any proceeding.
- (b.) Holding meetings of the board of directors or shareholders or carrying on other activities concerning internal corporate affairs.
- _____ (c.) Maintaining bank accounts.
- (d.) Maintaining officers or agencies for the transfer, exchange, and registration of the corporation's own securities or maintaining trustees or depositaries with respect to those securities.
- _____ (e.) Selling through independent contractors.
 - (f.) Soliciting or obtaining orders, whether by mail or through employees, agents, or otherwise, if the orders require acceptance outside this state before they become contracts.
- _____ (g.) Creating or acquiring indebtedness, mortgages, and security interests in real or personal property.
- (h.) Securing or collecting debts or enforcing mortgages and security interests in property securing the debts.
- _____ (i.) Transacting business in interstate commerce.
- _____ (j.) Conducting an isolated transaction that is completed within thirty (30) days and that is not one in the course of repeated transactions of a like nature.
 - (k.) Owning and controlling a subsidiary corporation incorporated in or

transacting business within this state or voting the stock of any corporation which it has lawfully acquired.

- (l.) Owning a limited partnership interest in a limited partnership that is doing business within this state, unless such limited partner manages or controls the partnership or exercises the powers and duties of a general partner.
- _____ (m.) Owning, without more, real or personal property.
- (3) The list of activities in subsection (2) is not exhaustive.

(4) This section has no application to the question of whether any foreign corporation is subject to service of process and suit in this state under any law of this state.

Please check one of the following if your firm is <u>NOT</u> a corporation:

- (I) [__] Partnership, Joint Venture, Estate or Trust.
- (II) [__] Sole Proprietorship or Self-Employed.

<u>NOTE</u>: This sheet <u>MUST</u> be enclosed with your Bid if you claim an exemption or have checked I or II above. If you do not check I or II above, your firm will be considered a corporation and subject to all requirements listed herein.

BIDDER'S CORRECT LEGAL NAME

SIGNATURE OFAUTHORIZED AGENT OF BIDDER

QUALIFICATION STATEMENT

The undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter:

SUE	BMITTED T	O: Town of Medley (Contract Administrator)
ADI	ORESS:	7777 N.W. 72 nd Avenue Medley, Florida 33166
SUE	BMITTED B	Y: <u>CIRCLE ONE</u> Corporation Partnership Individual Other
NAN	ME:	
ADI	ORESS:	
TEL	EPHONE N	NO.:
FAX	K NO.:	
E-M	IAIL ADDR	ESS:
1. or fi	State tł ictitious na	he true, exact, correct and complete name of the partnership, corporation, trade ame under which you do business and the address of the place of business.
The	correct na	me of the Bidder is:
The	address of	f the principal place of business is:
2.	If Bidde	er is a corporation, answer the following:
	a.	Date of Incorporation:
	b.	State of Incorporation:
	C.	President's name:
	d.	Vice President's name:
	e.	Secretary's name:
	f.	Treasurer's name:
	g.	Name and address of Resident Agent:

3. If Bidder is an individual or a partnership, answer the following:

a. Date of organization: _____

b. Name, address and Township units of all partners: _____

c. State whether general or limited partnership: _____

4. If Bidder is other than an individual, corporation or partnership, describe the organization and give the name and address of principals:

5. If Bidder is operating under a fictitious name, submit evidence of compliance with the Florida Fictitious Name Statute.

6. How many years has your organization been in business under its present business name?

a. Under what other former names has your organization operated?

7. Indicate registration, license numbers or certificate numbers for the businesses or professions that are the subject of this Bid, Please attach certificate of competency and/or state registration,

8. Do you have a complete set of documents, including drawings and addenda?

(Y) _____ (N) _____

9. Have you personally inspected the site of the proposed Work? ____Yes ____No

10. Did you attend the Pre-Bid Conference if such conference was held? ____Yes ____No

11. Have you ever failed to complete any work awarded to you? If so, state when, where and why?

THE BIDDER ACKNOWLEDGES AND UNDERSTANDS THAT THE INFORMATION CONTAINED IN RESPONSE TO THIS QUALIFICATIONS STATEMENT SHALL BE RELIED UPON BY THE TOWN IN AWARDING THE CONTRACT AND SUCH INFORMATION IS WARRANTED BY BIDDER TO BE TRUE. THE DISCOVERY OF ANY OMISSION OR MISSTATEMENT THAT MATERIALLY AFFECTS THE BIDDER'S QUALIFICATIONS TO PERFORM UNDER THE CONTRACT SHALL CAUSE THE TOWN TO REJECT THE BID, AND IF AFTER THE AWARD, TO CANCEL AND TERMINATE THE AWARD AND/OR CONTRACT.

Signature

STATE OF FLORIDA

COUNTY OF MIAMI-DADE

The f	oregoing instrument was acknowledged before me this day of _	, 20,
by _	of	, who is
perso who o	nally known to me or who has produced did (did not) take an oath.	_ as identification and

WITNESS my hand and official seal.

NOTARY PUBLIC

Name of Notary Public Print, Stamp, or type as Commissioned

ACKNOWLEDGMENT OF CONFORMANCE WITH OSHA STANDARDS

TO THE TOWN OF MEDLEY:

We,_____, hereby acknowledge and agree that as Contractors for the construction of

SANITARY SEWER LIFT STATION No. 100A UPGRADE

ATTEST

CONTRACTOR

BY: _____

NAME

ATTEST

DATE

TRENCH SAFETY ACT COMPLIANCE

Bidder acknowledges that the Florida Trench Safety Act, Section 553.60 <u>et. seq</u>. which became effective October 1, 1990, shall be in effect during the period of construction of the project. The Bidder, by signing and submitting the bids, in writing, assuring that it will perform any trench excavation in accordance with applicable trench safety standards. The Bidder further identifies the following separate item of costs of compliance with the applicable trench safety standards as well as the methods of compliance:

Methods of Compliance

(fill in methods)

Total \$_____

Bidder acknowledges that this cost is included in the applicable items of the Proposal and in the Grand Total Bid Price. Failure to complete the above will result in the bid being declared non-responsive.

The Bidder is, and the Town, EOR and CEI are not, responsible to review or assess Bidder'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 <u>et. seq</u>. cited as the "Trench Safety Act". Bidder is, and the Town, CEI and EOR are not, responsible to determine if any safety or safety related standards apply to the project, including but not limited to, the "Trench Safety Act".

Signature of Authorized Representative (Manual)

Name of Authorized Representative (Typed or Printed)

Sworn to and subscribed before me in the State and County first mentioned above on the _____day of ______, 20____.

_____(affix seal)

Notary Public

My Commission Expires:

REFERENCES

In order to receive Bid Award consideration on the proposed Bid, <u>it is a requirement that the following "Information Sheet" be completed and returned with your Bid.</u> This information may be used in determining the Bid Award for this Contract.

Bidder (cor	npany name):			
Address:				
Telephone	No:			
Contact per		Title:		
Number of	years in business:	Years		
Address of	Address of nearest facility:			
List three (the last 3 ye	3) companies or governmental agenc ears:	ies where these services have been provided in		
1.	Company Name:			
	Address:			
	Telephone No:			
	Contact Person:	Title:		
	E-mail Address:			
2.	Company Name:			
	Address:			
	Telephone No:			
	Contact Person:	Title:		
	E-mail Address:			
3.	Company Name:			
	Address:			
	Telephone No:			
	Contact Person:	Title:		
	E-mail Address:			

BID BOND

STATE OF FLORIDA

COUNTY OF MIAMI-DADE

KNOW ALL MEN BY THESE PRESENTS, that we, ________ as Principal and as Surety are held and firmly bound unto the Town of Medley, a municipal corporation of the State of Florida in the penal sum of ______ Dollars (\$______), lawful money of the United States, for the payment of which sum well and truly to be made, 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 Bid, dated ______, 20____ for:

SANITARY SEWER LIFT STATION No. 100A UPGRADE

The Contractor must furnish all supervision, labor, materials, tools, equipment, and performing all operations required to construct the Town of Medley Capital Improvements Project Number WS-0102, Sanitary Sewer Lift Station No. 100A Upgrade in accordance with the Contract Documents and as described in the Drawings, General Notes, and Technical Specifications.

Work includes, but is not limited to, the procurement and installation of new package pump station to replace existing sanitary lift station PS-100A located south of the intersection of N.W. 77th Avenue and N.W. 78th Terrace in Medley, Florida. Installation shall include: by-pass system design, installation, and operation in accordance with the "Lift Station Bypass Requirements" notes in the Drawings; demolition of the existing lift station as shown in the Drawings; installation of package pump station, associated piping, electrical wiring, lift station control panel, 2" diameter water service, backflow preventer, and concrete slab; and disposal of all construction debris, unused excavated material, and all unsuitable material. The forgoing is herein referred to as the "Project" or the "Work", as shown on the Drawings prepared by Kimley-Horn and this Project Manual.

NOW, THEREFORE,

1. If said Bid shall be rejected, or in the alternate.

2. If said Bid shall be accepted and the Principal shall properly execute and deliver to said Town the appropriate Contract Documents, and shall in all respects fulfill all terms and conditions attributable to the acceptance of said Bid, then this obligation shall be void; otherwise, it shall remain in force and effect, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the amount of this obligation as herein stated.

The Surety, for value received, hereby agrees that the obligations of the said Surety and its

Bond shall be in no way impaired or affected by any extension of time within which said Town may accept such Bid; and said Surety does hereby waive notice of any extension.

IN WITNESS WHEREOF, the above bonded parties have executed this instrument under their several seals this _____ day of ______, 20____, the name and the corporate seal of each corporate party being hereto affixed and these presents being duly signed by its undersigned representative.

IN PRESENCE OF:

(Individual or Partnership Principal)

(SEAL)

(Business Address)

(Town/State/Zip)

(Business Phone)

ATTEST:

Secretary

(Corporate Principal)*

By: _____

(Title)

ATTEST:

Secretary

(Corporate Surety)*

By: _____

*Impress Corporate Seal

<u>IMPORTANT</u> Surety companies executing Bonds must appear on the Treasury
Department's most current list (circular 570 as amended) and be authorized to transact business in the State of Florida.

NOTICE OF AWARD

Dated, 20)
TO:	
	(Bidder -Use Full Name)
	(Street Address)
	(Town, State, Zip Code)
BID NAME:	
BID NUMBER:	
DESCRIPTION OF WORK:	

SANITARY SEWER LIFT STATION No. 100A UPGRADE

The Contractor must furnish all supervision, labor, materials, tools, equipment, and performing all operations required to construct the Town of Medley Capital Improvements Project Number WS-0102, Sanitary Sewer Lift Station No. 100A Upgrade in accordance with the Contract Documents and as described in the Drawings, General Notes, and Technical Specifications.

Work includes, but is not limited to, the procurement and installation of new package pump station to replace existing sanitary lift station PS-100A located south of the intersection of N.W. 77th Avenue and N.W. 78th Terrace in Medley, Florida. Installation shall include: by-pass system design, installation, and operation in accordance with the "Lift Station Bypass Requirements" notes in the Drawings; demolition of the existing lift station as shown in the Drawings; installation of package pump station, associated piping, electrical wiring, lift station control panel, 2" diameter water service, backflow preventer, and concrete slab; and disposal of all construction debris, unused excavated material, and all unsuitable material. The forgoing is herein referred to as the "Project" or the "Work", as shown on the Drawings prepared by Kimley-Horn and this Project Manual.

You are notified that your Bid dated ______, 20____, 20____ for the above Work has been awarded by the Town of Medley's Town Council on ______.

The Contract Price is ______ Dollars (\$______).

- 1) Submit two (2) copies of the Performance and Payment Bonds to this office. Instructions to the Surety and the Principal for execution of the Bonds are as follows:
 - a) Where the Contractor is a Corporation, the Contract and any Bonds must be executed

by the President or the Chairman of the Board of the Corporation. The Contract, or Bond, is accompanied by a statement certified by a Secretary of the Corporation. The signatures of the persons executing the Bond on behalf of the Principal and of the surety, respectively, shall each be dated on the signature line. If the Bond is executed by an Attorney-in-Fact for the Surety, the accompanying Power of Attorney must be executed by persons whose authority to do so is plainly identified on the face of the Power of Attorney.

- b) Neither signatures nor the Corporate Seal may appear by facsimile unless the authority for them to appear in that form is plainly disclosed on the face of the document. The Secretary, or other properly authorized Officer, must certify and seal a statement declaring that the authority granted by the Power of Attorney remained in force on the date that the Bond was executed by the Attorney-in-Fact.
- 2) Include two (2) copies of you current Certificate of Insurance. The Certificate must name the Town as an additional insured and the standard cancellation clause must read as follows:

"Should any of the above described policies it canceled or changed by restricted Amendment before the expiration date thereof, the issuing Company will give thirty(30) days written notice to the below named certificate holder".

Failure to comply with these conditions within the time specified will entitle the Town to consider your Bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

Within twenty (20) days after you comply with the above conditions, the Town will return to you one fully signed counterpart of the Contract Documents.

If you have any questions, or if we can be of any further assistance, please do not hesitate to contact the Contract Administrator's office at (___)

_____, Contract Administrator

FORM OF PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That, pursuant to the requirement of Florida Statute 255.05, we, ______, as Principal, hereinafter called Contractor, and , ______ as Surety, are bound to the Town of Medley, Florida, as Obligee, hereinafter called the Town, in the amount of _____ Dollars (\$ _____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

WHEREAS, Contractor has by written Contract entered into a Contract, Bid/Contract No. ____, awarded the _____ day of ______, 20____ with the Town for in accordance with drawings (plans) and specifications prepared by which Contract is by reference made a part hereof, and is hereafter referred to as the Contract;

THE CONDITION OF THIS BOND IS THAT IF THE CONTRACTOR:

1. Fully performs the Contract between the Contractor and the Town for construction of, within _____ calendar days after the date of contract commencement as specified in the Notice to Proceed and in the manner prescribed in the Contract; and

2. Indemnifies and pays the Town all losses, damages, specifically including, but not limited to, damages for delay and other consequential damages caused by or arising out of the acts, omissions or negligence of Contractor, expenses, costs and attorney's fees and costs, including attorney's fees incurred in appellate proceedings, that the Town sustains because of default by Contractor under the Contract; and

3. Upon notification by the Town, corrects any and all defective or faulty Work or materials which appear within one (1) year after final acceptance of the Work.

4. Performs the guarantee of all Work and materials furnished under the Contract for the time specified in the Contract, then this Bond is void, otherwise it remains in full force.

Whenever Contractor shall be, and declared by the Town to be, in default under the Contract, the Town having performed the Town's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

4.1 Complete the Contract in accordance with its terms and conditions; or

4.2 Obtain a Bid or Bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the best, lowest, qualified, responsible and responsive Bidder, or, if the Town elects, upon determination by the Town and Surety jointly of the best, lowest, qualified, responsible and responsive Bidder, arrange for a Contract between such Bidder and the Town, and make available as Work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this Paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price, but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first Paragraph hereof. The term "balance of the Contract Price," as used in this Paragraph, shall mean the total amount payable by the Town to Contractor under the Contract and any Amendments thereto, less the amount properly paid by the Town to Contractor.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Town named herein and those persons or corporations provided for in Section 255.05, Florida Statutes, or their heirs, executors, administrators or successors.

Any action under this Bond must be instituted in accordance with the Notice and Time Limitations provisions prescribed in Section 255.05(2), Florida Statutes.

The Surety hereby waives notice of and agrees that any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.

Signed and sealed this day of	, 20
WITNESS:	
(Name of Corporation)	
Secretary (Signature and Title)	– By:
(CORPORATE SEAL)	
	(Type Name &Title signed above)
IN THE PRESENCE OF:	INSURANCE COMPANY:
By:	
	Agent and Attorney-in-Fact
	Printed name
	Address:(Street)
	(Town/State/Zip Code)
	Telephone No

STATE OF FLORIDA

COUNTY OF MIAMI-DADE

On this, the ____day of ______, 20___, before me, the undersigned Notary Public of the State of Florida, the foregoing instrument was acknowledged by ______ (name of corporate officer), ______ (title), of ______ (name of corporation), a ______ (state of corporation) corporation, on behalf of the corporation.

WITNESS my hand and official seal

Notary Public, State of Florida

Printed, typed or stamped name of Notary Public exactly as commissioned

Personally known to me, orProduced identification:

(type of identification produced)

Did take an oath, orDid not take an oath

Bonded by: _____

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, ______, certify that I am the Secretary of the Corporation named as Principal in the foregoing Performance Bond; that ______, who signed the Bond on behalf of the Principal, was then ______ of said corporation; that I know his/her signature; and his/her signature thereto is genuine; and that said Bond was duly signed, sealed and attested to on behalf of said corporation by authority of its governing body.

(CORPORATE SEAL)

(Name of Corporation)

FORM OF PAYMENT BOND

KNOW ALLMEN BY THESE PRESENTS:

That, pursuant to the requirements of Florida Statute 255.05, we, ______, as Principal, hereinafter called Contractor, and ______, as Surety, are bound to the Town of Medley, Florida, as Obligee, hereinafter called the Town, in the amount of ______ Dollars (\$) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

WHEREAS, Contractor has by written Contract entered into a Contract, Bid No. _____, awarded the ____ day of ______, 20____, with the Town for ______ in accordance with drawings (plans) and specifications prepared by ______ which Contract is by reference made a part hereof, and is hereafter referred to as the Contract;

THE CONDITION OFTHIS BOND IS THAT IF THE CONTRACTOR:

- 1. Indemnifies and pays the Town all losses, damages (specifically including, but not limited to, damages for delay and other consequential damages caused by or arising out of the acts, omissions or negligence of Contractor), expenses, costs and attorney's fees including attorney's fees incurred in appellate proceedings, that the Town sustains because of default by Contractor under the Contract; and
- 2. Promptly makes payments to all claimants as defined by Florida Statute 225.05(1) supplying Contractor with all labor, materials and supplies used directly or indirectly by Contractor in the prosecution of the Work provided for in the Contract, then its obligation shall be void; otherwise, it shall remain in full force and effect subject, however, to the following conditions:
 - a. A claimant, except a laborer, who is not in privity with the Contractor and who has not received payment for its labor, materials, or supplies shall, within forty five (45) days after beginning to furnish labor, materials, or supplies for the prosecution of the Work, furnish to the Contractor a notice that it intends to look to the Bond for protection.
 - b. A claimant who is not in privity with the Contractor and who has not received payment for its labor, materials, or supplies shall, within ninety (90) days after performance of the labor or after complete delivery of the materials or supplies, deliver to the Contractor and to the Surety, written notice of the performance of the labor or delivery of the materials or supplies and of the non-payment.
 - c. Any action under this Bond must be instituted in accordance with the Notice and Time Limitations provisions prescribed in Section 255.05(2), Florida Statutes.

The Surety hereby waives notice of and agrees that any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect the Surety's obligation under this Bond.

Signed and sealed this _____ day of ______, 20_____,

WITNESS:

(Name of Corporation)

Secretary

By: ____

(Signature and Title)

(CORPORATE SEAL)

IN THE PRESENCE OF:

(Type Name & Title signed above)

INSURANCE COMPANY:

By: _____ Agent and Attorney-in-Fact

Address:

Telephone No.: _____

STATE OF FLORIDA

COUNTY OFMIAMI-DADE

On this, the ____ day of _____, 20___, before me, the undersigned Notary Public of the State of Florida, the foregoing instrument was acknowledged by ______ (name of corporate officer), ______ (title), of ______ (name of corporation), a _____ (state of corporation) corporation, on behalf of the corporation.

WITNESS my hand and official seal

Notary Public, State of Florida

Printed, typed or stamped name of Notary

Public exactly as commissioned

[_] Personally known to me, or [_] Produced identification:

(type of identification produced)

[]	Did take an oath, or
[]	Did not take an oath

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, ______, certify that I am the Secretary of the corporation named as Principal in the foregoing Payment Bond; that ______, who signed the Bond on behalf of the Principal, was then ______ of said corporation; that I know his/her signature; and his/her signature thereto is genuine; and that said Bond was duly signed, sealed and attested to on behalf of said corporation by authority of its governing body.

(CORPORATE SEAL)

(Name of Corporation)

SWORN STATEMENT PURSUANT TO SECTION 287.133 (3) (a), <u>FLORIDA STATUTES</u>, 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	sworn stateme	ent is s	ubmitted				
То								
		[prir	nt nam	e of public	entity]			
By								
		[prir	nt indiv	vidual's nar	ne and title]			
For								
		[prir	nt nam	e of entity s	submitting sw	vorn statement]		
Whos	e busi	ness address is						
and is	(if	applicable)	its	Federal	Employer	Identification	Number	(FEIN)
If the	entity	y has no FEIN	, inclu	de the Soc	ial Security N	lumber of the in	dividual sig	ning this

If the entity has no FEIN, include the Social Security Number of the individual signi sworn statement:

_____).

2. I understand that a "public entity crime" as define in Paragraph 287.133(1)(g), <u>Florida</u> <u>Statutes</u>, 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 of United States, including, but not limited to, any Proposal or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

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 and adjudication of guilt, in any 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, non-jury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), <u>Florida Statutes</u>, 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 a "person" as defined in Paragraph 287.133(1)(e), **Florida Statutes**, means any natural person or 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 Proposals or applies to Proposal on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, 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. **[indicate which statement applies.]**

____Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in neither 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 has been charged with and convicted of a public entity 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 subsequent to July 1, 1989. However, there has been subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer 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 SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPGH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VAILD THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC

ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, <u>FLORIDA STATUTES</u> FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

	[Signature]
Sworn to and subscribed before me this	day of, 2014.
Personally known	
OR Produced identification	Notary Public – State of
M	ly commission expires
(Type of Identification)	

(Print, typed, or stamped commissioned name of notary public)

Contractor's Application For Payment No.

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer)
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

APPLICATION FOR PAYMENT

	Change Order Summary		
Approved Change Orders			1. ORIGINAL CONTRACT PRICE \$
Number	Additions	Deductions	2. Net change by Change Orders \$
			3. CURRENT CONTRACT PRICE (Line 1 ± 2) \$
			4. TOTAL COMPLETED AND STORED TO DATE
			(Column F on Progress Estimate)
			5. RETAINAGE:
			a% x \$ Work Completed \$
			b% x \$ Stored Material \$
			c. Total Retainage (Line 5a + Line 5b) \$
			6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c) \$
TOTALS			7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application) \$
			8. AMOUNT DUE THIS APPLICATION \$
NET CHANGE BY			9. BALANCE TO FINISH, PLUS RETAINAGE
CHANGE ORDERS			(Column G on Progress Estimate + Line 5 above)\$

CONTRACTOR'S CERTIFICATION

By:

The undersigned Contractor certifies that: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Date:

Payment of:	(Line 8 or other - attach explanation of other amount)	
is recommended by:	(Engineer)	(Date)
Payment of:	\$(Line 8 or other - attach explanation of other amount)	
is approved by:	(Owner)	(Date)
Approved by:	Funding Agency (if applicable)	(Date)

EJCDC No. C-620 (2002 Edition) Page 1 of 3 Prepared by the Engineers' Joint Contract Documents Committee and endorsed by the Associated General Contractors of America and the Construction Specifications Institute.

Progress Estimate

Contractor's Application

For (contract):		Application Number:						
Application Period:					Application Date:			
A B Work Compl					eted E F G			
	ltem	10 00 040 00 U	С	D		Total Completed	%	Balance to
Specification	Description	Scheduled	From Previous	This Period	Materials Presently	and Stored to Date	(<u>F</u>)	Finish
Section No.		Value	Application (C + D)		Stored (not in C or D)	(C + D + E)	В	(B - F)
	Totals							

Page 2 of 3

Progress Estimate

Contractor's Application

For (contract):	⁼ or (contract):					Application Number:				
Application Period: Application Date:										
	A			В	C	D	E	F		G
Bid Item No.	Item Description	Bid Quantity	Unit Price	Bid Value	Estimated Quantity Installed	Value	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (<u>F</u>) B	Balance to Finish (B - F)
	Tatala									
	Iotais									

Stored Material Summary

Contractor's Application

For (contract):					Application Number:				
Application P	eriod:				Application Date:				
A B C D						F F			
	Shop Drawing		Stored Prev	iously	Stored this Month		Incorporated in Work		
Invoice No.	Transmittal No.	Materials Description	Date (Month/Year)	Amount (\$)	Amount (\$)	Subtotal	Date (Month/Year)	Amount (\$)	Materials Remaining in Storage (\$) (D + E - F)
		Totals							
		10000							

Change Order

No._____

Date of Issuance:		Effective	Date:
Project:	Owner:		Owner's Contract No.:
Contract:			Date of Contract:
contractor:			Engineer's Project No.:
The Contract Documents are modified as foll	ows upo	n execution of this Change	Order:
Attachments: (List documents supporting chang	ge):		
CHANGE IN CONTRACT PRICE: Driginal Contract Price:		Original Contract Times:	EIN CONTRACT TIMES:
\$		Substantial completion (d Ready for final payment (ays or date):days or date):
Increase] [Decrease] from previously approved Drders No to No	Change :	[Increase] [Decrease] from Noto No Substantial completion (di Ready for final payment (previously approved Change Orders
Contract Price prior to this Change Order:		Contract Times prior to this Substantial completion (d	Change Order: ays or date):
۵		Ready for final payment (days or date):
Increase] [Decrease] of this Change Order:		[Increase] [Decrease] of this Substantial completion (d	Change Order: ays or date):
\$		Ready for final payment (days or date):
Contract Price incorporating this Change Order:		Contract Times with all appr Substantial completion (d	oved Change Orders: ays or date):
\$		Ready for final payment (days or date):
RECOMMENDED: ACC	EPTED:		ACCEPTED:
Ву: Ву:			_ Ву:
Engineer (Authorized Signature) Date: Date:	Own	er (Authorized Signature)	Contractor (Authorized Signature)
Approved by Funding Agency (if applicable):	147		Date:
EJCDC No. C-941 (2002 Edition) Prepared by the Engineers' Joint Contract Docum Associated General Contractors of America and ti	ients Com he Constr	mittee and endorsed by the uction Specifications Institute.	Page 2

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

Page 2 of 2

NOTICE TO PROCEED

Dated:		 , 20	
TO:			
	(Bidder)		

Project No.: _____

PROJECT:

SANITARY SEWER LIFT STATION No. 100A UPGRADE

The Contractor must furnish all supervision, labor, materials, tools, equipment, and performing all operations required to construct the Town of Medley Capital Improvements Project Number WS-0102, Sanitary Sewer Lift Station No. 100A Upgrade in accordance with the Contract Documents and as described in the Drawings, General Notes, and Technical Specifications.

Work includes, but is not limited to, the procurement and installation of new package pump station to replace existing sanitary lift station PS-100A located south of the intersection of N.W. 77th Avenue and N.W. 78th Terrace in Medley, Florida. Installation shall include: by-pass system design, installation, and operation in accordance with the "Lift Station Bypass Requirements" notes in the Drawings; demolition of the existing lift station as shown in the Drawings; installation of package pump station, associated piping, electrical wiring, lift station control panel, 2" diameter water service, backflow preventer, and concrete slab; and disposal of all construction debris, unused excavated material, and all unsuitable material. The forgoing is herein referred to as the "Project" or the "Work", as shown on the Drawings prepared by Kimley-Horn and this Project Manual.

TOWN'S CONTRACT NO:_____

CONTRACT FOR: _____

You are notified that the Contract time under the above Contract will commence to run on ______, 20____, 20____, the Effective Date.

By that date, you are to start performing the Work and your other obligations under the Contract Documents. The dates of Substantial Completion and Final Completion are set forth in the Contract Document; they are ______ 2014 and ______ 2014, respectively.

Before you may start any Work at the site, you must deliver to the Town, the Policies of Insurance and Payment and Performance Bonds which you are required to purchase and maintain in accordance with the Contract Documents.

Work at the site must be started by ______, 2014, as indicated in the Contract Documents.

(Town)

By: _____

(Authorized Signature)

(Title)

CONTRACT FOR CONSTRUCTION

THIS CONTRACT FOR CONSTRUCTION (the "Contract") is dated as of the _____ day of _____2014 by and between TOWN OF MEDLEY, FLORIDA, a Florida municipal corporation (hereinafter called the "TOWN") and ______ (hereinafter called CONTRACTOR), with its principal place of business at

TOWN and **CONTRACTOR**, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

1.1 Project/Work. CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Contractor shall furnish all of the labor, materials, equipment, transportation, supplies and services necessary to perform all of the Work required by the Contract Documents for:

SANITARY SEWER LIFT STATION No. 100A UPGRADE

The Contractor must furnish all supervision, labor, materials, tools, equipment, and performing all operations required to construct the Town of Medley Capital Improvements Project Number WS-0102, Sanitary Sewer Lift Station No. 100A Upgrade in accordance with the Contract Documents and as described in the Drawings, General Notes, and Technical Specifications.

Work includes, but is not limited to, the procurement and installation of new package pump station to replace existing sanitary lift station PS-100A located south of the intersection of N.W. 77th Avenue and N.W. 78th Terrace in Medley, Florida. Installation shall include: by-pass system design, installation, and operation in accordance with the "Lift Station Bypass Requirements" notes in the Drawings; demolition of the existing lift station as shown in the Drawings; installation of package pump station, associated piping, electrical wiring, lift station control panel, 2" diameter water service, backflow preventer, and concrete slab; and disposal of all construction debris, unused excavated material, and all unsuitable material. The forgoing is herein referred to as the "Project" or the "Work", as shown on the Drawings prepared by Kimley-Horn and this Project Manual.

Article 2. TOWN'S REPRESENTATIVE, ARCHITECT AND ENGINEER

2.1. It is understood that the TOWN will designate a representative for the Work. The TOWN'S **REPRESENTATIVE** referred to in any of the Contract Documents designated herein is: _______.

2.2 The TOWN'S **ARCHITECT** referred to in any of the Contract Documents designated herein is N/A.

2.3 The TOWN's **ENGINEER** referred to in any of the Contract Documents designated herein is: _______.

Article 3. TERM

3.1 Contract Times. The Work shall be Substantially Complete within One Hundred and Fifty **(150)** calendar days after the date specified in the Notice to Proceed and achieve Final Completion completed and ready for final payment in accordance with the Contract Documents within One Hundred and Eighty **(180)** calendar days after the date specified in the Notice to Proceed. Failure to achieve timely Final Completion shall be regarded as a breach of this Contract and subject to the appropriate remedies including but not limited to, liability for liquidated damages in accordance with Section XII(3) of the General Conditions.

3.2. Term. The term of the Contract shall be from the date of execution through the date of final payment unless terminated earlier pursuant to the General Conditions or otherwise indicated in the Contract Documents..

3.3 Survival of Obligations. Any obligations by the Contractor, including but not limited to Document 00700, Article 12, Contractor's General Warranty and Guarantee, that would or could occur after the date of expiration or termination of the Contract shall survive the termination or expiration of the Contract.

3.4. Liquidated Damages. TOWN and CONTRACTOR recognize that time is of the essence in this Contract and that the TOWN will suffer financial loss if the Work is not completed within the Contract Time specified in Section 3.1 for the Work, plus any approved extensions thereof allowed in accordance with the General Conditions. The **CONTRACTOR** also recognizes the delays, expense and difficulties involved in proving the actual loss suffered by **TOWN** if the Work is not completed on time. Accordingly, instead of requiring any such proof, TOWN and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) **CONTRACTOR** shall pay **TOWN <u>Three Hundred Dollars (\$300.00)</u>** for each calendar day that expires after the time specified in Section 3.1 for Substantial Completion of the Work. After Final Completion, if **CONTRACTOR** shall neglect, refuse or fail to complete the remaining Work within the time specified in Section 3.1 for completion and readiness for final payment or any proper extension thereof granted by TOWN, CONTRACTOR shall pay TOWN Three Hundred **Dollars (\$300.00)** for each calendar day that expires after the time specified in Section 3.1 for completion and readiness for final payment.

3.5. Should the Final Completion and acceptance of Work, together with any modification or additions, be delayed beyond the time for performance set in Section 3.1 above because of lack of performance by the **CONTRACTOR**, it is understood and agreed that aside from any other liquidated damages, all actual additional costs incurred by the **TOWN** for professional services will be the responsibility of the **CONTRACTOR**.

3.6. Monies due to the **TOWN** under Sections 3.4 and 3.5 shall be deducted from any monies due the **CONTRACTOR**, or if no money is due or the amount due is insufficient to cover the amount charged, the **CONTRACTOR** shall be liable for said amount.

Article 4. CONTRACT SUM

4.1 The TOWN shall pay the Contractor in current funds for the performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, the Contract Sum of ______ Dollars (\$______). **TOWN** shall pay **CONTRACTOR** for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Sections 4.1.1 below:

4.1.1 For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this Section 4.1.1, and in accordance with the Contractor's Bid Proposal incoprortated herein and made a part hereof. Estimated quantities are not guaranteed, and determination of actual quantities and classification are to be made by ENGINEER as provided in the Contract Documents.

4.2. The **CONTRACTOR** agrees that all specific cash allowances are included in the above Contract Sum and have been computed in accordance with the Contract Documents.

Article 5. PAYMENT PROCEDURES

5.1 CONTRACTOR shall submit Applications for Payment in accordance with the General Conditions, Article 14, Payments to Contractor and Completion. Applications for Payment will be processed by **TOWN** as provided in the General Conditions.

5.2 Progress Payments, Retainage. TOWN shall make progress payments, deducting the amount from the Contract Sum above, on the basis of **CONTRACTOR'S** Applications for Payment as recommended by the **TOWN'S REPRESENTATIVE**, on or about the last day of each month during construction as provided herein. All such payments will be made in accordance with the schedule of values established in the General Conditions or, in the event there is no schedule of values, as provided in the General Conditions.

5.2.1 No progress payment shall not be made until the CONTRACTOR delivers to the TOWN complete original partial releases of all liens and claims signed by all Subcontractors, materialmen, suppliers, and vendors, indicating amount of partial payment, on a form approved by the TOWN, and an affidavit that so far as the CONTRACTOR has knowledge or information, the releases include and cover all Materials and Work for which a lien or claim could be filed for Work completed to date.

5.3. Ten percent (10%) of all monies earned by the Contractor shall be retained by the Town until the Work is totally completed as specified and accepted by the Town. After fifty percent (50%) of the Work has been completed, the Town may reduce the retainage to five percent (5%) of all monies earned.

5.3.1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated above, but, in each case, less the aggregate of payments previously made and less such amounts as TOWN'S **REPRESENTATIVE** shall determine, or **TOWN** may withhold, in accordance with the General Conditions.

5.4. The payment of any Application for Payment by TOWN, including the Final Request, does not constitute approval or Acceptance by **TOWN** of any item of the Work in such Request for Payment, nor shall it be construed as a waiver of any of TOWN'S rights hereunder or at law or in equity.

5.5. The Final Application for Payment by **CONTRACTOR** shall not be made until the **CONTRACTOR** delivers to the TOWN complete original releases of all liens and claims signed by all Subcontractors, materialmen, suppliers, and vendors on a form approved by the **TOWN**, and an affidavit that so far as the **CONTRACTOR** has knowledge or information, the releases include and cover all Materials and Work for which a lien or claim could be filed. The **CONTRACTOR** may, if any Subcontractor, materialmen, supplier or vendor refuses to furnish the required Final Waiver of Lien, furnish a bond satisfactory to TOWN to defend and indemnify TOWN and any other property owner, person or entity TOWN may be required to indemnify against any lien or claim.

5.6. Final Payment. Upon final completion and acceptance of the Work in accordance with the General Conditions, **TOWN** shall pay the remainder of the Contract Sum and any retainage as recommended by the **TOWN'S REPRESENTATIVE**.

5.7 The Contractor may requisition payments for Work completed during the Project at intervals of not more than once a month. The Contractor's requisition shall show a complete breakdown of the Project components, the quantities completed and the amount due, together with properly executed releases of liens by all Sub-Contractors, suppliers and material men who were included in the Contractor's current and previous applications for payment and any other supporting documentation as may be required by the CEI or Contract Documents. Each requisition shall be submitted in triplicate to the CEI for approval. The Town shall make payment to the Contractor within thirty (30) days after approval by the CEI of the Contractor's requisition for payment,

5.8 The Town may withhold in whole or in part, payment to such extent as may be necessary to protect itself from loss on account of:

5.8.1 Defective Work not remedied.

5.8.2 Claims filed or reasonable evidence indicating the probable filing of claims by other parties against the Contractor.

5.8.3 Failure of the Contractor to make payment to Sub-Contractors or suppliers for materials or labor.

5.8.4 Damage to another Contractor not remedied.

5.8.5 Liability for liquidated damages has been incurred by the Contractor.

5.8.6 Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum.

5.8.7 Reasonable evidence that the Work will not be completed within the Contract Time.

5.8.8 Persistent failure to carry out the Work in accordance with the Contract Documents.

When the above grounds are removed or resolved or the Contractor provides a Surety Bond or consent of surety satisfactory to the Town which will protect the Town in the amount withheld, payment maybe made in whole or in part.

Article 6. INSURANCE/INDEMNIFICATION.

6.1. Insurance. The **CONTRACTOR** shall secure and maintain throughout the duration of this Contract, insurance of such type and in such amounts necessary to protect its interest and the interest of the **TOWN** against hazards or risks of loss as specified in the General Conditions and the Contract Documents.

6.2. Indemnification. The **CONTRACTOR** shall indemnify, defend and hold harmless the TOWN, their officials, agents, employees, and volunteers as set forth in General Conditions and the Contract Documents.

Article 7. CONTRACTOR'S REPRESENTATIONS

In order to induce **TOWN** to enter into this Contract, **CONTRACTOR** makes the following representations:

7.1. CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda) and the other related data identified in the Bidding Documents including "technical data."

7.2. CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3. CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

7.4. CONTRACTOR has made, or caused to be made, examinations, investigations, tests and/or studies as necessary to determine surface and subsurface conditions at or on the site. **CONTRACTOR** acknowledges that **TOWN** does not assume responsibility for the

accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to underground facilities at or contiguous to the site. **CONTRACTOR** has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by **CONTRACTOR** and safety precautions and programs incident thereto. **CONTRACTOR** does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

7.5. The **CONTRACTOR** is aware of the general nature of Work to be performed by **TOWN** and others at the site that relates to the Work as indicated in the Contract Documents.

7.6. The **CONTRACTOR** has correlated the information known to **CONTRACTOR**, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.7. The **CONTRACTOR** has given the **TOWN'S REPRESENTATIVE** written notice of all conflicts, errors, ambiguities or discrepancies that **CONTRACTOR** has discovered in the Contract Documents and the written resolution thereof by the **TOWN'S REPRESENTATIVE** is acceptable to **CONTRACTOR**, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

- **7.8**. The **CONTRACTOR** warrants the following:
 - **7.8.1. Anti-Discrimination:** The **CONTRACTOR** agrees that it will not discriminate against any employees or applicants for employment or against persons for any other benefit or service under this Contract because of race, color, religion, sex, national origin, or physical or mental handicap where the handicap does not affect the ability of an individual to perform in a position of employment, and to abide by all federal and state laws regarding non-discrimination.
 - **7.8.2. Anti-Kickback:** The **CONTRACTOR** warrants that no person has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, and that no employee or officer of the **TOWN** has any interest, financially or otherwise, in the Project. For breach or violation of this warranty, the TOWN shall have the right to annul this Contract without liability or, in its discretion, to deduct from the Contract price or consideration,

the full amount of such commission, percentage, brokerage or contingent fee.

- **7.8.3.** Licensing and Permits: The CONTRACTOR warrants that it shall have, prior to commencement of Work under this Contract and at all times during said Work, all required licenses and permits whether federal, state, County or TOWN.
- **7.8.4. Public Entity Crime Statement:** The **CONTRACTOR** warrants that it has not been place on the convicted vendor list following a conviction for public entity crime, as specified in the Instructions to Bidders.
- **7.8.5 Compliance with Applicable Laws.** The **CONTRACTOR** warrants that CONTRACTOR is familiar with and is satisfied as to all federal, state and local laws, regulations and permits that may affect cost, progress, performance and furnishing of the Work. The **CONTRACTOR** warrants and agrees that it will at all times comply with all requirements of the foregoing laws, regulations and permits.

Article 8. CONTRACT DOCUMENTS.

8.1 The Contract Documents listed below, which are listed in their order of precedence for the purpose of resolving conflicts, errors and discrepancies, by this reference shall become a part of the Contract as though physically attached as a part thereof:

- 8.1.1 Change Orders.
- 8.1.2 Field Orders.
- 8.1.3 Contract for Construction.
- 8.1.4 Exhibits to this Contract.
- 8.1.5 General Conditions.
- 8.1.7 Technical Specifications.
- 8.1.9. Drawings consisting of a cover sheet and sheets numbered _____with each sheet bearing the following general title:
- 8.1.10. Bid Documents/Project Manual, including but not limited to: Addendum, Invitation to Bid, Instructions to Bidders, Bid Form provided by CONTRACTOR, Notice of Award and Notice to Proceed.

- 8.1.11. Addenda subject matter takes the same precedence of the respective subject matter that it is modifying. Furthermore, each subsequent addendum takes precedence over previous addenda.
- 8.1.12. The documents listed above shall be incorporated into this Contract (except as expressly noted otherwise above).
- 8.1.13. There are no Contract Documents other than those listed above in this Article. The Contract Documents may only be amended, modified or supplemented as provided in the General Conditions.
- 8.1.14. The Contract Documents shall remain the property of the TOWN. The CONTRACTOR shall have the right to keep one record set of the Contract Documents upon completion of the Project; provided; however, that in no event shall the CONTRACTOR use, or permit to be used, any or all of such Contract Documents on other Projects without the TOWN's prior written authorization.
- 8.1.15. The General Conditions discuss the bond and surety requirements of the TOWN. This Contract requires bonds, which must be required before the commencement of any Work.

Article 9. DEFAULT AND TERMINATION

Events of Default by the parties and termination rights shall be in accordance with Section XIV (11 and 12) of the General Conditions.

Article 10. MISCELLANEOUS.

10.1. Terms used in this Contract which are defined in the other Contract Documents shall have the meanings indicated in the Contract Documents and shall apply to this Contract.

10.2. Except as otherwise provided in the Contract Documents with respect to Subcontractors, no assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party thereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.3. TOWN and **CONTRACTOR** each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

10.4. Severability: Should any provision, paragraph, sentence, word, or phrase contained in this Contract be determined by a court of competent jurisdiction to be invalid, illegal, or otherwise unenforceable under the laws of the State of Florida, such provision, paragraph, sentence, word, or phrase shall be deemed modified to the extent necessary in order to conform with such laws, then shall be deemed severable, and in this Contract, shall remain unmodified and in full force and effect.

10.5. Remedies: If and when any default of this Contract occurs, the **TOWN** may avail itself of any legal or equitable remedies that may apply, including, but not limited to, actual damages and specific performance. Such remedies may be exercised in the sole discretion of the **TOWN**. Nothing contained in this Contract shall limit the **TOWN** from pursuing any legal or equitable remedies that may apply.

10.6. Access to Public Records: The **CONTRACTOR** shall comply with the applicable provisions of Chapter 119, Florida Statutes. The **TOWN** shall have the right to immediately terminate this Contract for the refusal by the Contractor to comply with Chapter 119, Florida Statutes. The Contractor shall retain all records associated with this Contract for a period of five (5) years from the date of Final Payment or Termination of this Contract.

10.7. Inspection and Audit: During the term of this Contract and for five (5) years from the date of Termination, the **CONTRACTOR** shall allow **TOWN** representatives access during reasonable business hours to **CONTRACTOR'S** records related to this Contract for the purposes of inspection or audit of such records. If upon an audit of such records, the **TOWN** determines the **CONTRACTOR** was paid for services not performed, upon receipt of written demand by the **TOWN**, the **CONTRACTOR** shall remit such payments to the **TOWN**.

10.8. Counterparts: This contract may be signed in one or more counterparts, each of which when executed shall be deemed an original and together shall constitute one and the same instrument.

10.9. Notices: Whenever any party is required to give or deliver any notice to any other party, or desires to do so, such notices shall be sent via certified mail or hand delivery to:

FOR CONTRACTOR:

FOR TOWN:

Town of Medley		
7777 N.W. 72 nd Avenue		
Medley, Florida 33166		

ATTN: TOWN Mayor

WITH COPY TO:

Weiss Serota Helfman Cole Bierman & Popok, P.L.2525 Ponce de Leon Blvd, Suite 700Coral Gables, FL 33134ATTN: TOWN Attorney

10.10. Waiver Of Jury Trial And Venue: The **TOWN** and **CONTRACTOR** knowingly, irrevocably, voluntarily and intentionally waive any right either may have to a trial by jury in State and or Federal court proceedings in respect to any action, proceeding, lawsuit or counterclaim based upon the Contract, arising out of, under, or in connection with the Work, or any course of conduct, course of dealing, statements or actions or inactions of any party. This Contract shall be construed in accordance with and governed by the laws of the State of Florida and venue for any lawsuit arising out of this Contract shall be in Miami-Dade County, Florida.

10.11. Attorneys' Fees; Prevailing Party: If either the **TOWN** or **CONTRACTOR** is required to enforce the terms of the Contract by court proceedings or otherwise, whether or not formal legal action is required, the prevailing party shall be entitled to recover from the other party all such costs and expenses, including, but not limited to, court costs, and reasonable attorneys' fees.

9.12. Amendments: This Contract may only be amended by the prior written approval of the parties or by execution of a Change Order in the form approved by the Town.

IN WITNESS WHEREOF, the parties hereto have made and executed this Contract on the

respective dates under each signature: TOWN OF MEDLEY, FLORIDA, signing by and through its

Mayor, authorized to execute same by Council action on the _____ day of _____

_____, 2014, and by ______ (Contractor), signing by and

through its **<u>President</u>**, duly authorized to execute same.

TOWN:

ATTEST :

TOWN OF MEDLEY, FLORIDA, a Florida municipal corporation

Town Clerk

Roberto Martell, Mayor

Executed: _____

2014.

APPROVED AS TO FORM AND LEGALITY FOR THE USE AND BENEFIT OF TOWN OF MEDLEY ONLY:

Town Attorney	
	CONTRACTOR:
WITNESS	
By:	
	By (Signature and Title)
(Corporate Seal)	
	(Type Name/Title signed above)
	Executed:, 2014.

(*) In the event that the Contractor is a corporation, there shall be attached to each counterpart a certified copy of a resolution of the board of the corporation, authorizing the officer who signs the contract to do so in its behalf.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am of the ______ ____, and that ______, who signed the Bid with the TOWN OF MEDLEY, FLORIDA for _____, is ______ of said Corporation with full authority to sign said Bid on behalf of the Corporation.

Signed and sealed this ____ day of _____, <u>2014</u>.

(SEAL)_____Signature

Typed w/Title

STATE OF FLORIDA COUNTY OF MIAMI-DADE

SWORN TO AND SUBSCRIBED before me this ____ day of ______, <u>2014</u>.

My Commission Expires:

Notary Public

CERTIFICATE AS TO AUTHORIZED CORPORATE PERSONNEL

I, _____, certify that Ι am the of ____, who signed the Bid with Town of Medley, Florida Miami-Dade County, Florida, for the project titled Sanitary Sewer Lift Station Upgrade No. 100A Upgrade, and that the following persons have the authority to sign payment requests on behalf of the Corporation:

> (Typed Name w/Title) (Signature)

(Signature) (Typed Name w/Title)

(Signature) (Typed Name w/Title)

Signed and sealed this ____ day of _____, 2014.

(SEAL)______Signature

Typed w/Title

STATE OF FLORIDA COUNTY OF MIAMI-DADE

SWORN TO AND SUBSCRIBED before me this ____ day of ______, <u>2014</u>.

My Commission Expires:

Notary Public

Part 3 – General Conditions
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POLLUTION CONTROL

PART 1 - GENERAL

1.01 EROSION CONTROL AND SEDIMENTATION

The work consists of installing measures or performing work to control erosion and minimize the production of sediment and other pollutants to water and air from construction activities. A Generic Permit for Stormwater Discharge from Large and Small Construction Activities (CGP) from the Florida Department of Environmental Protection (FDEP) may be required. FDEP Document 62-621.300(4)(a). The measures and works shall include, but are not limited to, the following:

- A. **Staging of earthwork activities** the excavation and moving of soil materials shall be scheduled to minimize the size of areas disturbed and unprotected from erosion for the shortest reasonable time.
- B. **Seeding** seeding to protect disturbed areas shall occur as soon as reasonably possible following completion of that earthwork activity.
- C. **Mulching** mulching to provide temporary protection of the soil surface from erosion.
- D. **Diversions** temporary diversions to divert water from work areas and to collect water from work areas for treatment and safe disposition. When the diversions are no longer required or when permanent measures are installed the area shall be restored to its near original condition.
- E. **Stream crossings** culverts or bridges where equipment must cross streams. They are temporary and shall be removed and the area restored to its original condition when the crossings are no longer required or when permanent measures are installed.
- F. **Sediment basins** sediment basins collect, settle, and eliminate sediment from eroding areas from impacting properties and streams below the construction site(s). These basins are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.
- G. **Sediment filters** straw bale filters or geotextile sediment fences trap sediment from areas of limited runoff. Sediment filters shall be properly anchored to prevent erosion under or around them. These filters are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.

H. **Waterways** — waterways for the safe disposal of runoff from fields, diversions, and other structures or measures. These works are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.

1.02 CHEMICAL POLLUTION

A. The contractor shall provide watertight tanks or barrels or construct a sump sealed with plastic sheets to dispose of chemical pollutants, such as drained lubricating or transmission fluids, grease, soaps, concrete mixer wash water, or asphalt, produced as a by-product of the construction activities. At the completion of the construction work, sumps shall be removed and the area restored to its original condition. Sump removal shall be conducted without causing pollution. Sanitary facilities, such as chemical toilets or septic tanks shall not be located next to live streams, wells, or springs. They shall be located at a distance sufficient to prevent contamination of any water source. At the completion of construction activities, facilities shall be disposed of without causing pollution.

1.03 AIR POLLUTION

A. The burning of brush or slash and the disposal of other materials shall adhere to state and local regulations. Fire prevention measures shall be taken to prevent the start or spreading of wildfires that may result from project activities. Firebreaks or guards shall be constructed and maintained at locations shown on the drawings. All public access or haul roads used by the contractor during construction of the project shall be sprinkled or otherwise treated to fully suppress dust. All dust control methods shall ensure safe construction operations at all times. If chemical dust suppressants are applied, the material shall be a commercially available product specifically designed for dust suppression and the application shall follow manufacturer's requirements and recommendations. A copy of the product data sheet and manufacturer's recommended application procedures shall be provided to the engineer 5 working days before the first application. All pollution control measures and temporary works shall be adequately maintained in a functional condition for the duration of the construction period. All temporary measures shall be removed and the site restored to near original condition.

1.04 NOISE POLLUTION

A. Provide methods, means and facilities to minimize noise produced by construction operations.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

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SUMMARY OF WORK

PART 1 - GENERAL

1.01 LOCATION OF WORK

Work is located in the Town of Medley, FL. Exact location is shown on the Drawings.

1.02 WORK TO BE PERFORMED

The Work to be performed under this Contract shall consist of providing equipment, materials, supplies, and manufactured articles; and for furnishing transportation and services, including fuel, power, water, and essential communications; and for the performance of labor, work, or other operations in strict accordance with this Project Manual.

Wherever the Project Manual address a third party, i.e., subcontractor, manufacturer, vendor, etc., it is to be considered as the Contractor through the third party. Wherever a reference to number of days is noted, it shall mean calendar days.

1.03 SEQUENCE OF CONSTRUCTION

- A. Following receipt of Notice to Proceed with the Work, the Contractor shall notify the Town at least 5-days before he is ready to start actual construction to allow the Town time to make arrangements for inspection of the Work.
- B. Work under the Contract shall be scheduled and performed in such a manner as to result in the least possible disruption to residents.
- C. Submit a sequence of construction schedule for the entire project.
- D. The Contractor shall note that some areas of the Work may require deep excavation and dewatering, which may require sheeting and by-pass pumping. The Contractor shall be responsible for adhering to all permit requirements.
- E. Cancellation of Planned Shutdown: A planned shutdown may be cancelled by the Town upon 24-hour notification by the Town/CEI to the Contractor. Such cancellation shall be expected due to wet weather conditions or other conditions beyond the control of the Town, CEI, or Contractor. All efforts shall be taken to check weather forecasts and the like prior to scheduling shutdowns. However, if a cancellation must occur, the Town shall not be responsible for any additional costs associated with mobilization and demobilization.

1.04 DEMOLITION AND SALVAGE OF EXISTING FACILITIES

Coordinate any demolition activities with CEI.

1.05 REHABILITATION

The Contractor shall be responsible for the restoration of driveway approaches, and others areas affected by the work necessary to complete this Work.

1.06 DISPOSAL OF DEBRIS

All debris, materials, piping, and miscellaneous waste products from the Work described in the section shall be removed from the project as soon as possible. They shall be disposed of in accordance with applicable federal, state, and local regulations. The Contractor is responsible for determining these regulations and shall bear all costs or retain any profit associated with disposal of these items.

1.07 CONTRACTOR USE OF PROJECT SITE

The Contractor's use of the project site shall be limited to its construction operations, including on-site storage of materials, on-site fabrication facilities, and field offices, as noted on Drawings.

1.08 TOWN USE OF THE PROJECT SITE

The Town may utilize all or part of the existing facilities during the entire period of construction for the conduct of the Town's normal operations. The Contractor shall cooperate with the Town to minimize interference with the Contractor's operations and to facilitate the Town's operations.

1.09 COORDINATION WITH OTHER CONTRACTS

The Contractor shall coordinate the construction work and activities with the construction activities of any adjacent contractors.

1.10 PARTIAL UTILIZATION OF THE WORK BY THE TOWN

The Contractor is hereby advised that the Town may accept the responsibility for the maintenance and protection of a specific portion of the Project if utilized prior to Completion. However, the Contractor shall retain full responsibility for satisfactory completion of the project.

1.11 PERMITS

- A. It shall be the Contractor's responsibility to secure all permits required to complete the work under this contract, except permits obtained by the Town.
- B. No separate or direct payment will be made to the Contractor for permits and inspection requirements, but all such costs shall be included in the bid proposal. The Town will furnish signed and sealed sets of Contract Documents for permit use as required.

1.12 LAND SURVEYING

The Contractor shall employ a Land Surveyor registered in the State of Florida and acceptable to the Town. The Contractor shall locate and protect survey control and reference points.

1.13 LOCATIONS OF EXISTING UTILITIES

Where the existing utilities such as electric conduits, force mains, water mains, sewer pipes, gas main and other utilities are in conflict with the new works, the Contractor shall verify the location in the field and notify the CEI immediately.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

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SAFETY REQUIREMENTS AND PROTECTION OF PROPERTY

PART 1 - GENERAL

1.01 CONTRACTOR'S RESPONSIBILITY FOR SAFETY

Conduct whatever work is necessary for safety and be solely and completely responsible for conditions of the job site, including safety of all persons (including employees) and property during the construction of the project. This requirement shall apply continuously and not be limited to normal working hours.

1.02 FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS

- A. Safety provisions shall conform to the Federal and State Departments of Labor Occupational Safety and Health Act (OSHA), and all other applicable Federal, State, County, and local laws, ordinances, codes, the requirements set forth herein, and any regulations that may be specified in other parts of these specifications. Where any of these are in conflict, the more stringent requirements shall prevail. Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.
- B. All open excavations made in the earth shall be performed in compliance with the State of Florida Trench Safety Act, OSHA 29 CFR 1926.650, Subpart P (Chapter 90-96, Laws of Florida). The Contractor shall appoint a "competent person", in accordance with Subpart P, who shall be present at the jobsite. A "competent person" shall mean one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- C. The Contractor shall familiarize himself with the "Underground Facility Damage Prevention and Safety Act", Florida Statute 556. The Contractor shall contact the Sunshine State One-Call Center, at 1-800-432-4770, forty-eight hours prior to any excavation. Failure to familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.
- D. Conduct operations in such a manner utilizing warning devices, such as traffic cones, barricades and warning lights that traffic, pedestrian and Town personnel are given adequate warning of hazards of the worksite as may be deemed necessary by the Town, Engineer of Record, and governing agency having jurisdiction over the work or political subdivision.

1.03 SAFE ACCESS BY FEDERAL, STATE, AND LOCAL GOVERNMENT OFFICIALS

The Contractor shall at all times provide proper facilities for safe access to the work by authorized government officials.

1.04 CONSTRUCTION SAFETY PROGRAM

- A. Develop and maintain for the duration of this project, a safety program that will effectively incorporate and implement all required safety provisions. The Contractor shall appoint an employee who is qualified and authorized to supervise and enforce compliance with the safety program.
- B. Certain products specified in these specifications contain warnings by the manufacturers that under certain conditions, if instructions for use are not followed, a hazardous condition may exist. It is the Contractor's responsibility to instruct his workmen in the safe use of the product, or any product substitution.
- C. The duty of the Engineer of Record to conduct construction review of the Contractor's performance is not intended to include a review or approval of the adequacy of the Contractor's safety supervisor, the safety program, or any safety measures taken in, on, or near the construction site.

1.05 SAFETY EQUIPMENT

- A. As part of the safety program, maintain at office or other well-known place at the jobsite, safety equipment applicable to the work as prescribed by the governing safety authorities, all articles necessary for giving first-aid to the injured, and establish the procedure for the immediate relocation to a hospital or a doctor's care of any person who may be injured on the jobsite.
- B. Perform all necessary work to protect the general public from hazards, including, but not limited to, surface irregularities or unramped grade changes in pedestrian walkway or sidewalk, and trenches or excavations in roadway. Furnish barricades, lanterns, and proper signs to safeguard the public and work.
- C. The performance of all work and all completed construction, particularly with respect to ladders, platforms, structure openings, scaffolding, fall protection devices, shoring, logging, machinery guards and the like, shall be in accordance with the applicable governing safety authorities.
- D. During construction, construct and at all times maintain satisfactory and substantial temporary chain link fencing, solid fencing, railings, barricades or steel plates, as applicable, at all openings, obstructions, or other hazards in streets and walkways. All such barriers shall have adequate warning lights as necessary, or required, for safety.

1.06 STORAGE OF HAZARDOUS MATERIALS

- A. The Contractor is hereby cautioned that he cannot store any environmentally hazardous materials such as solvents, greases, lubricants or any other type of chemical substances at the project site. The Contractor shall be allowed to keep such materials at the site which is to be used for immediate use only.
- B. The materials shall be stored and handled in a proper and safe manner and upon its use immediately dispose of the containers, cans, rags and remnants of the materials in a manner approved by PERA at the Contractor's own cost. The Contractor cannot store empty containers at the site. In case of any violation, the Town will report such violation to PERA and the Contractor shall be subject to all the penalties and fines as required by State and County regulations.

1.07 TRAFFIC SAFETY AND ACCESS TO PROPERTY

- A. Comply with all rules and regulations of the city, state, and county authorities regarding closing or restricting the use of public streets or highways. No public or private road shall be closed, except by express permission of the Town. Conduct the work so as to assure the least possible obstruction to traffic and normal commercial pursuits. Protect all obstructions within traveled roadways by installing approved barricades, signs, and lights where necessary for the safety of the public. The convenience of the general public and residents and the protection of persons and property are of prime importance and shall be provided for in an adequate and satisfactory manner.
- B. Where traffic will pass over backfilled trenches before they are paved, the top of the trench shall be maintained in a condition that will allow normal vehicular traffic to pass over. Temporary access driveways must be provided where required. Cleanup operations shall follow immediately behind backfilling and the worksite shall be kept in an orderly condition at all times.
- C. When flagmen and guards are required by regulation or when deemed necessary for safety, they shall be furnished with approved orange wearing apparel and other regulation traffic control devices.

1.08 FIRE PREVENTION AND PROTECTION

A. Perform all work in fire-safe manner. Furnish and maintain on the site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable federal, local, and state fire-prevention regulations. Where these regulations do not apply, applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241) shall be followed. B. The Contractor shall have a Hot Work Permit Program and shall complete a permit prior to cutting or welding. A Fire Watch shall be designated to help monitor the hot work operation.

1.09 TRAFFIC CONTROL AND USE OF PUBLIC STREETS

- A. The Contractor shall be responsible for traffic control as specified hereinafter. Any reference to Miami-Dade County, its departments, or its published regulations, permits and data, shall be synonymous and interchangeable with other recognized governing bodies over particular areas of streets or their departments, published regulations, permits, or data. Abide by all applicable laws, regulations and codes thereof, pertaining to maintenance of public streets, detour of traffic, traffic control and other provisions as may be required for this project.
- B. The Contractor shall be fully responsible for the maintenance of public streets, detour of traffic (including furnishing and maintaining regulatory and informative signs along the detour route), traffic control and other provisions, throughout the project as required by the Town and the Miami-Dade County Department of Public Works, Traffic Engineering Division (Traffic Division). Traffic shall be maintained according to corresponding typical traffic control details as outlined in the Dade County Public Works Manual. No street shall be completely blocked nor blocked more than one-half at any time, keeping the other half open for traffic without specific approval.
- C. If required by the Town, employ the required number of uniformed off-duty policemen to maintain and regulate the flow of traffic through the construction area. The number of men required and the number of hours on duty necessary for the maintenance and regulation of the traffic flow shall be subject to their approval. If required for traffic control permits or agencies, the Contractor shall work odd or night hours, as required for traffic control reasons, and the cost of such work shall be considered as incidental to construction.
- D. The Contractor shall provide all barricades and/or flashing warning lights necessary to warn motorist of the construction throughout the project.
- E. Excavated or other material stored adjacent to or partially upon a roadway pavement shall be adequately marked for traffic safety at all times. Provide necessary access to all adjacent property during construction.
- F. The contractor shall be responsible for the provision, installation and maintenance of all traffic control and safety devices, in accordance with specifications outlined in the Dade County Public Works Manual. In addition, provide for the resetting of all traffic control and information signing removed during the construction period.
- G. Where excavations are to be made in the vicinity of signalized intersections, attention is directed to the fact that vehicle loop detectors may have been embedded in the pavement.

Verify these locations by inspecting the site of the work and by contacting the Sunshine State One-Call Center at 1-800-432-4770. Any loop detector which is damaged, whether shown on the Drawings or not, shall be repaired or replaced to the satisfaction of the Town.

- H. Notify the Town 24 hours in advance of the construction date, and 48 hours in advance of construction within any signalized intersection.
- I. Temporary pavement will be required over all cuts in pavement areas, and also where traffic is to be routed over swale or median areas. When the temporary pavement for routing traffic is no longer necessary, it shall be removed and the swale or median area restored to their previous condition.

1.10 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE

- A. Where the Contractor's operation could cause damage or inconvenience to railway, telephone, fiber optic, television, electrical power, oil, gas, water, sewer, or irrigation systems, the Contractor shall make all arrangements necessary for the protection of these utilities and services or any other known utilities.
- B. Notify all utility companies that are affected by the construction operation at least 48 hours in advance. Under no circumstance expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for all existing underground utilities and utility poles where necessary.
- C. The Contractor and his subcontractors shall be solely and directly responsible to the owner and operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage which may result from the construction operations under this project.
- D. Neither the Town nor its officers or agents shall be responsible to the Contractor for damages as a result of the Contractor's failure to protect utilities encountered in the work.
- E. In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to construction operations, promptly notify the proper authority. Cooperate with said authority in restoration of service as promptly as possible and bear all costs of repair. In no event shall interruption of any utility service be allowed outside working hours unless granted by the owner of the utility.
- F. In the event water service lines that interfere with trenching are encountered, the Contractor may, by obtaining prior approval of the water utility, cut the service, dig through, and restore the service with similar and equal materials at the Contractor's expense and as approved by the Town.

- G. Drainage culverts that are at or near right angles to a pipeline and are removed by the Contractor shall be replaced in kind at the expense of the Contractor unless otherwise noted.
- H. Replace, with material approved by the Town, at Contractor's expense, any and all other laterals, existing utilities or structures removed or damaged during construction, unless otherwise provided for in these specifications and as approved by the Town.

1.11 HURRICANE PREPAREDNESS

A. General

During such periods of time as are designated by the United States Weather Bureau as being a hurricane alert, the Contractor shall perform all precautions as necessary to safeguard the work and property, including the removal of all small equipment and materials from the site, lashing all other equipment and materials to each other and to rigid construction, and any other safety measures as may be directed by the Engineer.

B. Upon Notification of a Hurricane Watch

The Contractor should prepare or have in place a Plan of Action for the specific actions to be taken on their particular projects.

- C. Upon Notification of a Hurricane Warning
 - 1. The Contractor shall implement their Plan of Action to protect the project and the public.
 - 2. For construction projects within the public right-of-ways, the Contractor shall suspend his construction operations, backfill all open trenches, remove all construction equipment and materials from the right-of-way, remove unnecessary traffic barricades and signs and secure remaining barricades by "half burial" or "double sand bags".

1.12 WORKING IN CONFINED SPACES

Where a Contractor needs to work in a confined space, the Contractor must comply with the General Industry, OSHA Confined Space Standard, CFR 1910.146 or the equivalent Confined Space Standard in DFR 1926, Construction Standards.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

ENVIRONMENTAL CONTAMINATION

PART 1 - GENERAL

1.01 ENVIRONMENTAL CONSIDERATIONS

A. For any work conducted in a contaminated area within the project boundaries where hazardous materials or hydrocarbons have been encountered, were previously known to exist, or is suspected by the Contractor or the CEI, the Contractor must comply with all applicable requirements of OSHA, EPA, FEDP and Miami-Dade County PERA.

1.02 SPECIALIZED CONSTRUCTION AREA

- A. Specialized construction areas are defined as areas where contaminants are discovered and require construction by personnel qualified by training and equipped for such work.
- B. Work in specialized construction areas shall be carried out by personnel qualified by training and equipped for such activities. These personnel shall be either subcontractors with licensing and certification as specialists in this type of construction or the Contractor's own personnel who have taken and been certified as having passed the required training course(s). Licensing and certifications shall be submitted to the Town for verification and shall in all cases be satisfactory to both the Town and other authorities with jurisdiction. The field Health and Safety Technician furnished by the Certified Industrial Hygienist (CIH) shall be present on the site during all construction in specialized construction areas unless the nature of the work is non-hazardous such that either the Site Specific Health and Safety Plan or the CIH authorizes his absence.
- C. Disposal of any contaminated soils and/or groundwater must comply with all applicable federal, state, and local requirements.

PART 2 - PRODUCTS

2.01 REQUIREMENTS

A. The CEI shall consult with the Town regarding its requirement for material type (including pipe, fitting, gasket, valve interior coating, and the like) to be installed in contaminated areas.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

- A. When potable water mains are to be installed in an area of hydrocarbon contamination, each joint gasket shall be protected from possible hydrocarbon permeation which would in turn contaminate the drinking water.
- B. The requirements of this Section shall be closely adhered to in all cases where proposed mains are to be installed in an area of hydrocarbon contamination. These requirements and those imposed by Miami-Dade County PERA or any agency having jurisdiction an addition to, and take precedence over the Town's standard specifications and standard details for ductile iron water mains.
- C. The Town may require gasketed joints be protected by encasing the entire joint with a hydrocarbon impermeable material. In this case, all joint gaskets shall be protected including those on pipe, fittings, valves, fire hydrants and specialty items.

QUALITY CONTROL

PART 1 - GENERAL

1.01 QUALITY ASSURANCE -CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence. Should manufacturers' instructions conflict with Contract Documents, request clarification from EOR before proceeding.
- C. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- D. Conform to Florida Building Code requirements for wind loads.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.02 TOLERANCES

- A. A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work.
- B. Do not permit tolerances to accumulate.
- C. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, the Contractor shall request clarification from Engineer before proceeding.
- D. Adjust Products to appropriate dimensions; position before securing Products in place.

1.03 REFERENCES AND STANDARDS

A. For Products or workmanship specified by association, trades, or other consensus

standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

- B. Work under the Contract shall be scheduled and performed in such a manner as to result in the least possible disruption to residents.
- C. Submit a sequence of construction schedule for the entire project.
- D. The Contractor shall note that some areas of the Work may require deep excavation and dewatering, which may require sheeting and by-pass pumping. The Contractor shall be responsible for adhering to all permit requirements.
- E. Cancellation of Planned Shutdown: A planned shutdown may be cancelled by the Town upon 24-hour notification by the Town/CEI to the Contractor. Such cancellation shall be expected due to wet weather conditions or other conditions beyond the control of the Town, CEI, or Contractor. All efforts shall be taken to check weather forecasts and the like prior to scheduling shutdowns. However, if a cancellation must occur, the Town shall not be responsible for any additional costs associated with mobilization and demobilization.

1.04 DEMOLITION AND SALVAGE OF EXISTING FACILITIES

Coordinate any demolition activities with CEI.

1.05 REHABILITATION

The Contractor shall be responsible for the restoration of driveway approaches, and others areas affected by the work necessary to complete this Work.

1.06 DISPOSAL OF DEBRIS

All debris, materials, piping, and miscellaneous waste products from the Work described in the section shall be removed from the project as soon as possible. They shall be disposed of in accordance with applicable federal, state, and local regulations. The Contractor is responsible for determining these regulations and shall bear all costs or retain any profit associated with disposal of these items.

1.07 CONTRACTOR USE OF PROJECT SITE

The Contractor's use of the project site shall be limited to its construction operations, including on-site storage of materials, on-site fabrication facilities, and field offices, as noted on Drawings.

1.08 TOWN USE OF THE PROJECT SITE

The Town may utilize all or part of the existing facilities during the entire period of construction for the conduct of the Town's normal operations. The Contractor shall cooperate with the Town to minimize interference with the Contractor's operations and to facilitate the Town's operations.

1.09 COORDINATION WITH OTHER CONTRACTS

The Contractor shall coordinate the construction work and activities with the construction activities of any adjacent contractors.

1.10 PARTIAL UTILIZATION OF THE WORK BY THE TOWN

The Contractor is hereby advised that the Town may accept the responsibility for the maintenance and protection of a specific portion of the Project if utilized prior to Completion. However, the Contractor shall retain full responsibility for satisfactory completion of the project.

1.11 PERMITS

It shall be the Contractor's responsibility to secure all permits required to complete the work under this contract, except permits obtained by the Town.

No separate or direct payment will be made to the Contractor for permits and inspection requirements, but all such costs shall be included in the bid proposal. The Town will furnish signed and sealed sets of Contract Documents for permit use as required.

1.12 LAND SURVEYING

The Contractor shall employ a Land Surveyor registered in the State of Florida and acceptable to the Town. The Contractor shall locate and protect survey control and reference points.

1.13 LOCATIONS OF EXISTING UTILITIES

Where the existing utilities such as electric conduits, force mains, water mains, sewer pipes, gas main and other utilities are in conflict with the new works, the Contractor shall verify the location in the field and notify the CEI immediately.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

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CLEANING

PART 1 - GENERAL

1.01 SCOPE OF WORK

This Section specifies the maintenance of the work site in a clean, orderly, hazard-free condition.

1.02 QUALITY ASSURANCE

- A. Conduct cleaning and disposal operations in accordance with local ordinances and antipollution laws. Rubbish, volatile wastes, and other construction wastes shall be neither burned nor buried on the work site, and shall not be disposed of into storm drains, sanitary drains, streams or other waterways.
- B. Final cleaning shall be accomplished either by workmen experienced in cleaning operations or by professional cleaners.

PART 2 - PRODUCTS

2.01 ON-SITE WASTE CONTAINERS

Provide on-site waste containers for collection of waste materials, debris and rubbish. See Section 01016 regarding storage requirements for environmentally hazardous materials.

2.02 CLEANING MATERIALS

Cleaning materials shall be as recommended by the manufacturer of the surface to be cleaned.

PART 3 - EXECUTION

3.01 SAFETY REQUIREMENTS

- A. Maintain work site in accordance with local ordinances and anti-pollution laws applicable to work site cleanliness, and in a neat, orderly and hazard-free condition until final acceptance of the work. Catwalks, accessible underground structures, work site sidewalks and walkways adjacent to the work site shall be kept free from hazards caused by construction activities.
- B. Store volatile wastes including rags in covered metal containers, and remove from work site daily.
- C. Prevent accumulations of wastes which create hazardous conditions.

D. Artificially ventilate spaces which are not naturally ventilated when volatile and noxious substances are being used in those spaces.

3.02 INTERIM CLEANING

- A. Perform cleaning every workday for duration of the Work. Structures, grounds, and areas of the work site and public and private properties shall be maintained free from accumulations of waste materials and rubbish caused by construction operations on the work site. Place waste materials and rubbish in on-site containers.
- B. Remove or secure loose material on open decks and on other exposed surfaces at end of each day's work or more often to maintain work site in hazard-free condition. Prevent dislodgement of materials due to wind and other forces.
- C. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- D. Empty on-site waste containers whenever necessary, so that trash overflow does not occur. Legally dispose of contents at either public or private dumping areas.
- E. Control the handling of materials, debris and rubbish; do not drop or throw from heights.
- F. Immediately remove spillage of on-site fuels, oil or construction-related material from hauling routes.
- G. Perform cleaning operations so dust and other contaminants resulting from cleaning processes will not fall on wet, newly painted surfaces.

3.03 FINAL CLEANING

- A. In preparation for final acceptance or occupancy, conduct final inspection of exposed interior and exterior surfaces, and of concealed spaces.
- B. Remove grease, dust, dirt, rust stain on concrete floors, labels, fingerprints and other foreign materials from exposed interior and exterior finished surfaces. Flush down all parking level areas and stairs leaving such surfaces clean of all sand, laitances, etc.
- C. Maintain cleaning operations until project has been finally accepted.

MAINTENANCE OF TRAFFIC AND PUBLIC STREETS

PART 1 - GENERAL

1.01 SCOPE OF WORK

The Contractor shall furnish all equipment, supplies, personnel, labor and services to accomplish maintenance of traffic at all locations required to complete this project and as authorized by the Engineer.

The intent is to maintain safe and expeditious movement of traffic around every work area where the public may be exposed to the potential hazards of the contract operations.

1.02 REGULATIONS

As used herein, any reference to Miami-Dade County, its departments, or its published regulations, permits and data, shall be synonymous and interchangeable with other recognized governing bodies over particular areas or streets, or their departments, published regulations (i.e., Manual of Uniform Traffic Control Devices (MUTCD), Florida Department of Transportation (FDOT) Roadway and Bridge Standard Index Drawing Book), permits or data. The Contractor shall abide by all applicable laws, regulations, and codes thereof pertaining to Maintenance of Traffic on public streets, detour of traffic, traffic control and other provisions as may be required for this Project.

1.03 MAINTENANCE OF TRAFFIC (M.O.T.)

- A. The Contractor shall be fully responsible for the M.O.T. on public streets, detour of traffic (including furnishing and maintaining regulatory and informative signs along the detour route), traffic control, and other provisions, throughout the Project, as required by the Miami-Dade County Department of Public Works, Traffic Engineering Division (Traffic Division) or FDOT and the above noted standards. Traffic shall be maintained according to corresponding typical traffic control details as outlined in the Miami-Dade County Public Works Manual and the above noted standards. No street shall be completely blocked, nor blocked more than one-half at any time, keeping the other one-half open for traffic, without specific approval.
- B. Supervision of traffic control and safety by a Uniformed Police Officer from the Town of Medley Police Department, if required, shall be furnished by the Contractor without cost to the Town. The Contractor is required to retain the services of the Town of Medley Police Officers for the Supervision. Further, any and all additional traffic measures deemed necessary by such offices shall be carried out by the Contractor without cost to the Town.

- C. The Contractor shall provide all barricades with warning lights, necessary arrow boards and signs, to warn motorists of the work throughout the Project. Adequate approved devices shall be erected and maintained by the Contractor to detour traffic.
- D. Excavated or other material stored adjacent to or partially upon a roadway pavement shall be adequately marked for traffic safety at all times. The Contractor shall provide necessary access to all adjacent property during construction.
- E. The Contractor shall be responsible for the provision, installation and maintenance of all M.O.T. and safety devices, in accordance with specifications outlined in the Miami-County Public Works Manual and the above noted standards. In addition, the Contractor shall be responsible for providing the Town, the Town of Medley Police Department and the CEI with M.O.T. plans for lane closures and/or detours for approval. These plans (sketches) shall be produced by an individual employed by the Contractor and certified as "Work Zone Traffic Safety Supervisor" by the International Municipal Signal Association.
- F. Where excavations are to be made in the vicinity of signalized intersections, attention is directed to the fact that vehicle loop detectors may have been embedded in the pavement.
- G. The Contractor shall notify the Town and the Town of Medley Police Department 24 hours in advance of the construction date or 48 hours in advance of construction within any signalized intersection.
- H. Temporary pavement or steel plates will be required over all cuts in pavement areas, and also where traffic is to be routed over swale or median areas. When the temporary pavement and/or steel plates for routing traffic is no longer necessary, it shall be removed and the swale or median areas restored to their previous condition.
- I. Pavement markings damaged during construction shall be remarked, as required by the Town.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

Part 4 – Technical Specifications

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TRENCHING AND BACKFILLING FOR PIPING SYSTEMS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The work included under this Section consists of excavating, backfilling and compaction as required for the construction of the piping systems as specified herein.
- B. All excavations shall be executed in accordance with the Town's requirements, South Florida Building Codes, the State of Florida Trench Safety Act (TSA), OSHA requirements and all applicable requirements of Section 01016, including notifiying Sunshine State One-Call Center (1-800-432-4770),48 hours prior to any excavation.

PART 2 - PRODUCTS

2.01 BACKFILL MATERIAL

- A. Granular soil backfill materials shall be utilized. Suitable backfill material shall be clean, shall not be expansive nor have high organic content, shall be free of clay, marl, unstable materials, debris, lumps and clods, and shall meet the following requirements:
 - 1. Maximum Liquid Limit shall not exceed 12 as determined by ASTM D 423.
 - 2. Maximum Plasticity Index shall not exceed 35 as determined by ASTM D 424.
 - 3. Not more than 10 percent of weight shall be finer than 74 micron (No. 200) U.S. Standard Sieve.
- B. Backfill material containing limerock shall have sufficient sand to fill the voids in the limerock. No stones or rocks larger than 6-inches in diameter will be permitted in any backfill. Backfill material placed to a point at least one foot (1 ft) above pipe and appurtenances shall be select backfill material not exceeding 2 inches in diameter. Above this point, but up to the upper 6 inches of the trench, backfill shall be of material not exceeding 6 inches in diameter.
- C. Debris, broken paving or broken concrete shall not be used.
- D. Material for backfill may be material resulting from excavation, only if it meets the above mentioned requirements, or if suitable in the opinion of the CEI. If sufficient suitable backfill material, including select backfill material, is not available from the site, additional material shall be furnished.

2.02 SELECT BACKFILL MATERIAL

Select backfill material specified in this Project Manual or required by the Drawings shall meet all the general requirements for backfill material set forth above, and in addition, shall be free of any rocks or stones larger than 2 inches in diameter.

2.03 BEDDING MATERIAL

- A. Pipe bedding material shall consist of one of the following types of material:
 - 1. Select backfill material, as specified above, if approved by the CEI and the EOR.
 - 2. Crushed stone (or drainfield limerock) consisting of hard, durable, sub-angular particles of proper size and gradation, and shall be free from organic material, wood, trash, sand, loam, clay, excess fines and other deleterious materials. The stone shall conform to the requirements of ASTM C 33, Size No. 57 (3/4-inch rock) and be graded within the following limits:

Sieve Size Percent Finer by Weight

1 ½-inch	100
1-inch	95 to 100
¹⁄₂-inch	25 to 60
No. 4	0 to 10
No. 8	0 to 5

- B. Limerock screenings, sand or other fine material shall not be used for bedding.
- C. All pipe bedding material shall be new, unless otherwise approve by the CEI and EOR.
- D. Existing pipe bedding material may not be used.

PART 3 - EXECUTION

- 3.01 CLEARING
 - A. The Contractor shall perform all clearing necessary for the proper installation of all piping and appurtenances in the locations shown in the Drawings.
 - B. Where required, all existing shrubbery, trees, grass, sprinklers, fences, signs, mail boxes, structures, sidewalks, curbs, utility poles or structures subject to damage resulting from the excavation should be transplanted, relocated, braced, shored, or otherwise protected and preserved.

3.02 EXCAVATION

- A. The Contractor shall perform all excavation of every description and of whatever substances encountered, to the dimensions and depth shown on the Drawings. All excavations shall be made by open cut.
- B. When the walls of the excavations are to be kept vertical and in order to protect the safety of workmen, the general public, this or other work or structures, or excavation walls, or pipe installation including materials encountered in the excavation which have a tendency to slough or flow into the excavation, undermine the banks, weaken the overlying strata, or are otherwise rendered unstable by the excavation operation shall be retained by steel sheeting, stabilization, grouting or approved methods. Said methods shall comply with the Trench Safety Act (TSA). Sheeting and shoring or other approved method shall be designed by a Professional Engineer licensed to practice in the State of Florida.
- C. In areas where trench widths are not limited by right-of-way or easement widths, property line restrictions, existing adjacent improvements including pavements, structures, and other utilities, and maintenance of traffic, the trench sides may be sloped to a suitable angle of repose of the excavated material, but only from a point one foot above the crown of the pipe.
- D. A substantially and safely constructed moveable shield or box, as approved by the EOR, may be used in place of sheeting. Where a moveable shield or trench box, is used in place of sheeting and shoring, the trench shall be opened immediately ahead of the shield as pipe laying proceeds inside the shield.
- E. Ladders or steps shall be provided for and used by workmen to enter and leave trenches.
- F. Materials removed from the trenches shall be stored and disposed of in such a manner that they will not interfere unduly with traffic on public streets and sidewalks. In congested areas, such materials, cannot be stored adjacent to the trench nor used immediately as backfill, shall be removed to convenient places of storage. If any material is creating a public hazard or other unsafe condition, it shall be removed immediately to a storage area.
- G. Materials suitable for use as backfill shall be hauled to and used in areas where not enough suitable material is available from the excavation. Material unsuitable for use in backfill shall be removed promptly and disposed of by the Contractor at the Contractor's expense.
- H. Excavation for Pipes and Piping Appurtenances:
 - 1. Clear, as stated above, all existing items or structures in the way of the proposed pipeline or structures and excavate as necessary to the lines and grades shown on the Plans.

- 2. Where pavements or sidewalks are cut they shall be cut by means of a mechanical pavement saw to form true and straight edges which shall in general be either parallel or at right angles with the centerline of the pipe.
- 3. In order to protect himself from being held liable for any existing damaged pavement, including detour routes, the Contractor is advised to notify in writing the authority having jurisdiction over the street where such defective pavement exists prior to proceeding with any work in the vicinity. A copy of all such notices shall be forwarded to the Town and the CEI.
- 4. Excavate pipe trenches to a minimum of 6-inches below the outside bottom of the proposed pipe barrel to provide for the installation of the bedding material.
- 5. If, in the opinion of the CEI, the soil at that depth is unsatisfactory as foundation material because it contains unsuitable marl, muck, organic matter, or other unsuitable material, the excavation shall be continued 2 feet deeper, except if a suitable foundation material is exposed at a lesser depth, further excavation will not be required.
- 6. If the soil is still unsuitable after the additional excavation as prescribed above, the trench bottom shall be excavated further in one foot increments in accordance with "Trench Overcut", below.
- 7. Sheeting and shoring shall be installed where necessary to control trench width, protect the workmen and the general public, and prevent damage to this or adjacent work, or structures.
- 8. Where wood sheeting or certain designs of steel sheeting are used, the CEI may require the sheeting to be cut off at a level 2-feet above the top of the installed pipe and that portion below that level shall be left in place.
- 9. If interlocking steel sheeting is used, the CEI may permit its complete removal in lieu of cut-off, providing removal can be accomplished without disturbing the bedding, pipe or alignment of the pipe. Any damage to the pipe bedding, pipe or alignment of the constructed utility caused by removal of sheeting shall be cause for rejection of the affected portion of the work. Not more than 100-feet of trench shall be opened ahead of pipe laying operations at one time unless a greater length of open trench is approved by the CEI.
- 10. Trench widths, when measured at a point 12 inches above the top of the pipe, shall provide a 12-inch maximum clearance on each side, between the outside of the pipe barrel and the face of the excavation, or sheeting if used. Minimum trench width shall provide at least 6-inches clearance on each side, between the outside of the pipe barrel and the face of the excavation, or sheeting if used.
- 11. Excavation for appurtenances, such as valves and hydrants, shall be sufficient to provide a clearance between their outer surfaces and the face of the excavation or sheeting, if used, of not less than 12-inches.

- 12. Excavation for thrust block shall be made in such a manner so that, when concrete is placed, it will bear against a firm, undisturbed, vertical trench wall with bearing are in accordance with the schedule shown in the Drawings.
- 13. Selected backfill shall then be placed and compacted in 6-inch layers up to the level of the pipe bedding material.
- 14. When the pipe to be installed in a trench requires the pipe installers to work under and around the pipe, the Contractor may request the CEI that he be allowed to exceed the 12" maximum clearance, specifying the clear distance desired. The decision of the CEI in this regard shall be final.
- 15. The ends of existing mains shall be temporarily capped or plugged to keep them clean and the ends of all mains shall be temporarily anchored to keep the joints from blowing apart from internal pressure until the new mains can be reconnected to them.
- 16. In addition to specific construction methods specified, the general requirements in subsequent subsections, below, shall apply to the work of this project.

3.03 TRENCH STABILIZATION

Trench bottoms which are rendered soft or unstable as a result of construction methods, such as improper or inadequate sheeting, dewatering or other causes, shall be stabilized. In no event shall pipe be installed when such conditions exist. The Contractor shall correct such conditions so as to provide proper bedding or foundations for the proposed installation.

3.04 TRENCH OVERCUT

- A. If, after excavating the trench to a depth of 2 feet 6 inches below the outside bottom elevation of the proposed pipe barrel, and the soil at that depth is still unsatisfactory as foundation material because it contains marl, muck, organic matter, or other unsuitable material, the pipe trench shall be excavated further in one-foot depth increments until a suitable foundation material is found. The Town reserves the right to require trench overcut to depths up to 6 feet, i.e., to a point 8.5 feet below the bottom of the pipe.
- B. Select backfill, as defined above, shall then be compacted in 6-inch layers up to the bottom of the proposed 6 inches of pipe bedding.

3.05 REMOVAL OF WATER

A. It is a basic requirement of these Specifications that excavation shall be free from water before pipe or structures are installed. However, it is realized that in certain sections of the work this cannot be accomplished economically and the Contractor may request permission to use the "Alternate Method of Construction" defined below.

- B. The Contractor shall provide all necessary pumps, underdrains, well point systems, and other means for removing water from trenches and other parts of the work including structures. The Contractor shall continue dewatering operations until the backfill has progressed to a sufficient height over the pipe to prevent flotation or movement of the pipe in the trench, so that the backfill is above the natural water level.
- C. Where applicable, the Contractor shall be required to obtain all necessary permits approving the location and proposed method of disposal before discharging water from any excavation into any portion of the public right-of-away or into any existing drainage structure or facility.
- D. Water from the trenches and excavation shall be disposed of in such a manner as will not cause injury to public health, to public or private property, to the work completed or in progress, to the surface of the streets, or to cause interference with the use of the same by public. Submit the proposed method of handling and disposal of trench waster for approval before starting the excavation.
- E. The Contractor is cautioned that the Town, Miami-Dade County, or other governing body having jurisdiction over the work location may have regulatory rules and ordinances prohibiting, or limiting, the discharge of water from any excavation into sanitary and storm sewer systems, or to canals and drainage ditches. Obtain all necessary permits approving the location and proposed method of disposal before discharging water from any excavation into any portion of the public right-of-way, or into any existing drainage structure or facility.
- F. Pumps and engines for dewatering systems shall be operated with mufflers and a minimum noise level suitable to a residential area. The Contractor shall be responsible for any nuisance created due to the disposal of the water from his discharge system.

3.06 INSTALLATION OF BACKFILL

- A. Backfilling of pipe trenches will not be allowed until the work has been approved by the the CEI and/or a representative of the Town's Water and Sewer Department, pressure tested if required, and the CEI indicates that backfilling may proceed. Any work which is covered or concealed without the knowledge and consent of the CEI shall be uncovered or exposed for inspection. Partial backfill may be made to help restrain the pipe during pressure testing, if previously authorized by the CEI and/or a representative from Medley WASD.
- B. The Contractor shall backfill all trenches and other excavations made in the process of installing the pipe. He shall maintain the surface of the backfill free from major irregularities and potholes.
- C. Select backfill material shall be placed under and around the pipe to one foot above the crown in 6-inch layers. Each layer shall be thoroughly compacted to at least 90 percent of

maximum density as defined by AASHTO Standard No. T-180, "Moisture-Density Relations of Soils using a 10-lb. (4.54 kg.) Rammer and an 18-in. (457 mm) Drop". The material in the ditch may be compacted by either hand tamper or a mechanized power tamper, provided the results obtained meet the continued approval of the CEI. Particular attention and care shall be exercised in obtaining thorough support for the branch of all service connection fittings. Care shall be taken to preserve the alignment and gradient of the installed pipe.

- D. Backfilling and compacting of material lying above a point one foot, above the crown of the pipe and below the pavement base or the surface of the ground, if out of pavement, shall be accomplished in layers not exceeding 9 inches in thickness. Each layer shall be thoroughly compacted with a powered hand tamper or a mechanized power tamper to at least 98 percent of maximum density as determined by AASHTO Specification T-180 or such greater density as may be required by the governing authority over the area in which the work is performed. A testing laboratory will make periodic field tests to determine the density being obtained in each lift, or layer, or the backfill. When compacted backfill fails to meet the specified percentage of maximum density as shown by test results, it shall be reworked and recompacted, and then retested. The reworking, recompacting and retesting of the backfill shall be repeated as many times as may be necessary to obtain compacted backfill with density meeting or exceeding the specified percentage as indicated by test results.
- E. The Contractor shall exercise proper care to insure that no pipe will be broken or displaced through the use of the type of mechanical compacting equipment he selects. Water shall be added as required to obtain optimum moisture to facilitate compaction, but ponding or inundation of backfill will not be permitted. These ponding limitations shall not prohibit backfill in a wet trench up to the level of the natural water table if the "Alternate Method of Construction" is utilized.
- F. Backfill shall in general be kept up with the rate of pipe laying. The backfill up to the springline of the pipe shall be placed as soon as practical after the laying of the pipe. On parts of the line where ground water level may be high enough to float the pipe, the placing of the backfill and the rate of pumping the trench shall be so controlled as to prevent the pipe from floating or moving from the line and grade shown on the Plans.
- G. In the event that sufficient suitable material is not available at any point to properly backfill the trench, the Contractor shall transport suitable material from points of the line where such material is available or shall otherwise furnish suitable material.
- H. Suitable material in excess of all backfill requirements and all unsuitable material shall be removed from the work and disposed of by the Contractor at the Contractor's expense.
- I. Within paved areas of trench excavation, the base and surfacing shall be reconstructed as shown on the Drawings.
J. Where cuts have been made through unpaved, stabilized rock roadways, driveways and parkways, surface restoration shall consist of 3 inches of compacted limerock overlaid by 3 inches of gravel or graded and washed rock with a maximum diameter of ½-inch, except as otherwise directed by the CEI. The rock shall be installed over the entire width of the disturbed area and shall closely match the existing rock at each location. Several grades of rock may be required to attain this end, but it is not anticipated that more than one grade will have to be used at any one location.

3.07 INSTALLATION OF PIPE BEDDING

- A. As described above, all pipe trenches shall be excavated to a level 6-inches below the outside bottom of the proposed pipe barrel. The resulting excavation shall be backfilled with approved pipe bedding material, up to the level of the outside bottom of the proposed pipe barrel. This material shall be tamped and compacted to provide a proper bedding for the pipe and shall then be shaped to receive the pipe, including recesses for the pipe bells and couplings. Placing and compacting bedding up to the level of the lower one-third of the pipe barrel shall immediately follow the installation of the pipe. Bedding shall be provided under the branch of all fittings to furnish adequate support and bearing under the fitting.
- B. Select Backfill material may be utilized where the excavated trench bottom is above water.
- C. Any excavation below the levels required for installation of the pipe bedding shall be backfilled with approved bedding material, tamped, compacted and shaped to provide proper support for the proposed pipe.

3.08 COMPACTION AND DENSITIES

- A. Methods of control and testing of backfill construction to be employed in this work are:
 - 1. Maximum density of the material in trenches shall be determined by AASHTO Designation T 180.
 - 2. Field density of the backfill material in place shall be determined by AASHTO Designation T 238.
- B. Laboratory and field density tests are necessary to establish compliance with the compaction requirements of these specifications. The Town will only accept projects for which successful laboratory and field density test results are submitted. Tests will be made at depths and locations to the satisfaction of the CEI.
- C. Trench backfill which does not comply with the specified densities, as indicated by such tests, shall be reworked and recompacted until the required compaction is secured.

3.09 ALTERNATE METHOD OF CONSTRUCTION

A. General:

- 1. A combination of conditions in the substrata, water table, or method of disposal may be encountered during the course of the work which make dewatering impossible, or only possible through the use of unusual methods, the cost of which is excessive. When such conditions are encountered, but only after all reasonable means to dewater the excavation have been employed without success, the Contractor, with the concurrence of the CEI may elect to employ the following alternate method of construction. The concurrence of the CEI shall be obtained and the Contractor shall limit the use of the alternate method of construction to such specific portions of the work as determined applicable.
- 2. The requirements set forth in other sections of this Project Manual shall establish the required standards of construction quality for this work. Use of the alternate method of construction described hereinafter shall in no way be construed as relieving the Contractor of his basic responsibility for satisfactory completion of the work.
- 3. Subject to all of the requirements stated hereinabove, including approval by the CEI, construction will be permitted in accordance with the following specifications.
- B. Removal of Water: The installation of pipe, manholes and appurtenances under water will be permitted and the dry-trench requirements of "Removal of Water" will be waived.
- C. Excavation: Excavation shall be performed in accordance with normal applicable excavation specifications.
- D. Pipe Bedding for Ductile Iron:
 - 1. Pipe bedding shall be placed from 6-inches below the outside bottom of the proposed pipe barrel up to the level of the springline of the pipe barrel of gravity sewers and to the level of the lower one-third of the pipe barrel for force mains or water mains. The bedding material shall be washrock, drainfield limerock or approved material. Limerock screenings, sand or other fine organic material shall not be used. 2. The bedding material used shall be tamped and graded to provide a proper bedding for the pipe and shall then be shaped to receive the pipe. Bedding shall be provided under the branch of all fittings to furnish adequate support and bearing under the fitting.
- E. Backfill:
 - 1. After the pipe is installed, backfilling shall proceed in accordance with the provisions of "Installation of Backfill", except that select backfill material or pipe bedding material shall be used to backfill around the pipe and to a level one foot above the outside top (crown) of the pipe. Under no circumstances shall material other than select backfill or specified pipe bedding material be considered satisfactory for this purpose.

2. If the Alternate Method of Construction is used, all backfill material, shall be carefully lifted into the trench and released to fall freely therein when the bucket or container is near or at a moderate height above water level. Height of release shall be to the satisfaction of the CEI. Below the existing water level, and to a point not more than 18-inches above the water level, the backfill material shall be carefully placed into place in uniform layers, of equal depth on each side of the pipe. From a point not more than 18-inches above the water level, and below the pavement base or the surface of the ground if out of paving, backfill material shall be placed and compacted for normal backfilling as provided in "Installation of Backfill" and "Compaction and Densities".

3.10 RESTORATION OF EXISTING SURFACES

Paved and grassed areas disturbed by the operations required under this Section shall be restored as indicated on the approved Drawings and/or specified herein.

END OF SECTION

SECTION 02745

PAVEMENT REMOVAL AND REPLACEMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work included under this Section covers the furnishing of all labor, equipment and material required for cutting, removing, protecting, constructing, replacing or stabilizing all existing roadways, driveways and pavements.
- B. All existing utility castings, including valves boxes, junction boxes, manholes, handholes, pull boxes, inlets and similar structures in the areas of trench restoration, pavement replacement and pavement overlay shall be adjusted by the Contractor to bring them flush with the surface of the finished work.

1.02 QUALITY CONTROL

The phrase "FDOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition. The FDOT Specifications, are referred to herein and are hereby made a part of this Project Manual to the extent of such references, and shall be as binding upon the Contract as through reproduced herein in their entirety.

1.03 DAMAGE BY CONTRACTOR

- A. The Contractor shall protect from damage by construction operations, all pavements, including all base courses and surface courses, within the work area.
- B. Any base course or surface course beyond those limits, damaged as a result of the Contractor's operation, shall be restored in accordance with the applicable requirements of this Project Manual, to the satisfaction of the CEI and the Town.
- C. Any damage to adjacent lanes of pavement will require the Contractor to resurface the entire lane width for a length, as approved by the Town. When the damage amounts to 25 percent or more in any one block (approximately 600 feet), the Contractor shall resurface the entire width of the lane in which the damage occurred for the entire block.
- D. The Contractor is hereby notified that wherever the line for repaving for trenches extends one foot into the edge of the existing paving, he shall repave to this edge only. Full lane paving will not be required. Damage to the pavement beyond this line by the Contractor will require that he repave the full width.

E. In order to protect himself from being held liable for any existing damaged pavement, including detour routes, the Contractor is advised to notify in writing the authority having jurisdiction over the street where such defective pavement exists prior to proceeding with any work in the vicinity. A copy of all such notices shall be forwarded to the CEI and the Town.

PART 2 - PRODUCTS

2.01 MATERIAL, GENERAL

- A. Limerock Base: The limerock base shall consist of either one or two courses limerock obtained from local sources where the overburden was removed from the pits prior to mining operations. The limerock shall comply with the requirements of FDOT Specifications, Section 200 and Section 911 for Miami Oolite limerock, with a maximum size of the aggregate to be 1-1/2 inches.
- B. Prime Coat and Tack Coat shall conform to Section 300 of the FDOT Specifications.
- C. Asphaltic Concrete: The materials and construction of the asphaltic concrete patch and surface courses shall be the same thickness and type as the adjacent roadway conforming to Sections 330, 331 and 916 of the FDOT Specifications.
- D. Sand cover material shall be clean and non-plastic, and shall be composed of hard durable grains, free from loam, roots, silt, clay, or rock particles and other deleterious substances. Local sand meeting such requirements may be used. Sand shall be subject to approval by the Department.
- E. Flowable fill: Flowable fill, shall be used as backfill only directed by the EOR. It shall be used for trenches, support for pipe structures, culverts, utility cuts and other works where cavities exist and where firm support is needed for pavements and structural elements.

2.02 BITUMINOUS PAVING MATERIAL

- A. Asphalt cement for asphaltic concrete mixes shall be Viscosity Grade AC-20, homogeneous, free from water and shall meet the requirements of FDOT Specifications, Section 916-1. Unless otherwise specified, all test samples required shall be supplied by the Contractor. For friction courses, in addition to meeting the above requirements, the bituminous material shall contain 0.5% of a heat-stable, anti-stripping additive from an approved source.
- B. Asphaltic Concrete Type S-I Mix shall meet the requirements for Type S-I Asphaltic Concrete, Sections 330, 331 and 916 of FDOT Specifications.

- C. Asphaltic Concrete Type I Mix shall meet the requirements of Dade County Public Works Department Specifications for Type I Asphaltic Concrete Surface Course, Section 133 of the Public Works Manual.
- D. Asphaltic Concrete Type III Mix for asphaltic concrete wearing surface overlay, both machine laid and standard (skin patch), shall meet the requirements of FDOT Specifications for Type III Asphaltic Concrete, Section 333-1 through Section 333-6.
- E. Type V paving repairs shall consist of a machine-laid asphaltic concrete wearing surface overlay, which shall be a nominal one-inch thick asphaltic concrete, meeting the material requirements of Type I repairs. See subsection 3.07, below.
- F. Asphaltic Concrete Type FC-1, FC-2, FC-3 and FC-4 shall meet the requirements of FDOT Specifications for Friction Courses, Sections 337-1 through Section 337-7.
- G. Emulsified Asphalt for Slurry Seal Coat shall be of the slow-setting, mixing type and shall be homogeneous, meeting the requirements of the Asphalt Institute, Grade SS-1 or SS-1h.
- H. Liquid Asphalt for Sand and Asphalt Paving shall be asphalt cement, viscosity Grade AC-5 or emulsified asphalt, Grade RS-2 (anionic) conforming to the requirements of FDOT Specifications, Section 916-1 and 916-4, respectively.
- I. Mineral Aggregate for Slurry Seal Coat shall consist of screened sand or limestone screenings or gray granite screenings or a mixture of sand and screenings plus not less than 3%, by weight, of Type I or Type II Portland cement.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Permanent pavement repair shall be in accordance with the details shown in the Standard Details herein, with edges straight and parallel and patches rectangular in plan. Replace any paving, beyond the limits shown on the Drawings and as called for in the Project Manual, as required. Where trenches are located out of the existing pavement and damage occurs to the pavement, that pavement shall also be replaced by the Contractor.
- B. Pavement markings removed or obliterated by the Contractor's operations shall be promptly replaced, in kind, to the satisfaction of the Town.
- C. All equipment necessary for construction shall be on the job site in first class working condition. Spilling or dropping of petroleum products is prohibited and all defective equipment shall be removed or replaced immediately. The Contractor shall be subject to all Town and Miami-Dade County PERA regulations and clean up requirements.

- D. The percentages of maximum density for subgrade and limerock base specified herein are minimum. Greater percentages of maximum density shall be obtained, if so required, by the CEI.
- E. Asphaltic concrete mixtures shall be obtained only from plants which comply with the requirements of FDOT Specifications, Section 320 as applicable, using materials specified herein, and producing the specified mixture. General construction requirements for all hot bituminous mixtures specified herein shall conform to FDOT Specifications, Section 330, as applicable.
- F. Asphaltic concrete shall be laid only where the surface to be covered is intact, firm, cured and dry, and only when weather conditions are suitable. The temperature of the mixture at the time of spreading shall be within limits of FDOT Specifications. No mixture shall be spread when the air temperature is less than 40 degrees Fahrenheit.
- G. Any mixture caught in transit by a sudden rain may be laid at the Contractor's risk, if the base is in suitable condition. Under no circumstances shall asphaltic material be placed while rain is falling, or when there is water on the area to be paved.
- H. Subgrade: Roadway subgrades shall be stabilized to the minimum depth shown on the Drawings to a Limerock Bearing Ratio of not less than 40. Stabilizing shall be Type B as defined in Section 160 of the FDOT Specifications. Stabilization may require the addition and thorough mixing in of crushed limerock, course limerock screenings, or any other stabilizing material acceptable to the Department. The stabilizing material shall be applied in such quantity that, after mixing and blending, the subgrade will have a LBR of not less than 40. Stabilizing material shall be mixed or blended in the subgrade material by plowing, scarifying, disking, harrowing, blading and mixing with rotary tillers until the mixed materials are of uniform bearing value throughout the width and depth of the layer being processed.
- I. At least three density determinations shall be made on each day's final compaction operations on each course, and the density determinations shall be made at more frequent intervals if deemed necessary by the CEI.
- J. Limerock Base: The limerock base shall be constructed in accordance with Sections 200 and 911 of the DOT Specifications, to the thickness and width indicated on the Drawings.
- K. After spreading of the base material is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross section after compaction. For double course base, this scarifying shall extend a depth sufficient to penetrate slightly the surface of the first course. The maximum depth of each lift shall be 8-inches.
- L. When the material does not have the proper moisture content to insure the required density, wetting or drying shall be required. If the material is deficient in moisture, water

will be added and uniformly mixed in by disking the base course to its full depth. If the material contains an excess of moisture, it shall be allowed to dry before being compacted. As soon as proper conditions of moisture are attained, the material shall be compacted to an average density not less than 98 percent maximum density as determined in more than one course, the density shall be obtained in each lift of the base.

- M. During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density determination on the finished base.
- N. Unless otherwise directed by the EOR, the surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the thin glaze or cemented surface and to allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.
- O. If cracks or checks appear in the base, either before or after priming, which in the opinion of the EOR, would impair the structural efficiency of the base course, the Contractor shall remove such cracks or checks by rescarifying, reshaping, adding base material where necessary and recompacting.
- P. Mixing Base and Subgrade: If at any time the subgrade material shall become mixed with the base course material, the Contractor shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.
- Q. Asphaltic Concrete: The spreading, compacting and jointing the wearing surface shall be in accordance with Sections 330 and 331 of the FDOT Specifications to the thickness indicated on the Drawings.

3.02 TEMPORARY PAVING

- A. Prior to commencing excavation, the asphalt surface shall be sawcut within the limits of the allowable trench width. Temporary paving will be required along the entire route where the original paved surface is removed. Unless otherwise approved by the EOR or the Town, temporary paving shall be placed the same day the trench is backfilled. The trench shall be backfilled up to a level 1 inch below the existing pavement surface and a temporary, cold mixed sand/asphalt pavement shall be constructed up to the level of the existing pavement surface. The liquid asphalt shall be Grade RC-70, conforming to the requirements of FDOT Specifications, Section 916-2. The sand shall conform to the requirements of FDOT Specifications, Section 902 for fine aggregate.
- B. The cold mix is to be installed one block at a time, not crossing any intersection, or a maximum of 1,200 feet shall be completed before the Contractor may move forward with his excavation work. Backfill, compaction and temporary paving is to keep pace with the

pipe installation. Written permission must be obtained from the Town to allow greater lengths than 1,200 feet.

- C. Prior to completion of the work and within a maximum of 30 calendar days, the Contractor shall remove the 1 inch of cold mix and surplus backfill. He shall replace it with the specified compacted limerock base course and asphaltic within the specified working limits.
- D. The temporary pavement shall be maintained by the Contractor in a condition satisfactory to the CEI and the Town until its removal. Removal shall include any surplus backfill material. Replacement of the temporary pavement with permanent pavement shall be made within 30 days. In replacing the temporary paving with permanent pavement, all work shall be completed in sections compatible with specified traffic maintenance procedures.
- E. The Contractor may elect to install a suitable temporary hot mix asphaltic pavement, to be left in-place, in lieu of cold mix, when the hot mix asphalt is left in-place and installed over properly compacted limerock base course.
- F. Sand seal on the limerock base course will not be permitted in lieu of temporary paving.
- G. Unless otherwise approved by the CEI and the Town, temporary paving, shall be placed within twenty-four hours following the completion of backfilling.
- 3.03 TYPE I PAVING REPAIR (Limerock Base Asphaltic Concrete Surface)
 - A. Type I paving repairs shall be made with an 8-inch thick compacted limerock base and a minimum 1-inch thick asphaltic concrete surface. Asphaltic concrete shall have a compacted thickness of 2-inch, placed in a minimum of two (2) compacted 1-inch lifts.
 - B. The backfill previously placed and compacted shall be excavated to the required depth below the existing road surface and the existing paving shall be cut back beyond all excavations, using an abrasive disc saw to trim the edges to straight and true lines, minimum width for the limerock base shall be equal to the trench width plus 2 feet. Eight inches of limerock base shall be placed in two layers, each layer compacted to not less than ninety-eight percent (98%) density in accordance with Section 200 of the FDOT Specifications. During rolling, the base shall be wetted down, as necessary, to secure the greatest possible compaction. After rolling, the entire surface of the base shall be thoroughly scarified to a depth of not less than 3 inches and shaped to conform to and be parallel with the existing surface, then watered and rolled again. Rolling and watering shall continue until the entire depth of the base is bonded and compacted into an unyielding mass.
 - C. If at any time the subgrade material becomes mixed with the limerock base course materials, the Contractor shall, without additional compensation, dig out and remove the

mixture, reshape and compact the subgrade and replace the materials removed with clean rock which shall be watered and rolled until satisfactorily compacted.

- D. After the limerock base course has been properly prepared and is dry and ready to receive the wearing surface, a tack coat of emulsified asphalt shall be applied at a rate of 0.10 gallon per square yard, immediately followed by the asphaltic concrete. The tack coat shall be applied to the entire limerock base uniformly, and shall thoroughly coat all surfaced. Care shall be taken to tack coat and bond the edge of surrounding pavement.
- E. The asphaltic concrete shall be plant mixed, using the best grade of local aggregates of approved size and gradation and mixed with an approved binder and conforming the either Sections 330, 331 and 916 of FDOT Specifications, or Dade County Public Works Type I, as ordered by the EOR.
- F. Where the width of the repair permits, the asphaltic concrete plant mix material shall be placed by means of an approved mechanical spreader and finisher. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than eight tons. The compacted asphaltic concrete mixture shall not be, in any case, less than one inch in thickness. Rolling shall proceed as closely behind the spreader as possible and all material shall be completely compacted the same day it is placed. The minimum width of the wearing surface shall be the same as the base.

3.04 ASPHALT COLD MILLING

- A. The Contractor shall perform asphalt cold milling where required for a complete installation, when approved or requested by the Town. Cold milling shall be done using an automated pavement planer capable of maintaining an accurate depth. Cold milling equipment shall meet the approval of the Town. All charges for M.O.T., transportation of personnel, equipment and other mobilization charges shall be considered as incidental to the cold milling operation.
- B. Cold asphalt milling shall be provided to improve the ride-ability of the finished pavement, lower the finished grade adjacent to an existing curb prior to resurfacing or to completely remove existing pavement. The overall length of the milling machine (excluding the conveyor) shall be a minimum of 18 feet, and having a minimum cutting width of six feet. The milling operation shall be operated to effectively minimize the amount of dust being emitted from the machine. Pre-wetting of the pavement may be required. In areas where milling is to be performed around the Town utility structures such as manholes, valve boxes etc., proper caution shall be taken as not to damage any of the structures. Saw-cutting of the structure shall be employed to prevent any damage. Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a power broom or other approved equipment to remove to the greatest extent practicable, the fine material which

will dust under traffic. This operation shall be conducted in a manner so as to minimize the potential for creating a traffic hazard and to minimize air pollution.

- C. The milling operation shall be continuous so as to complete each site without any delays. All milling operations shall be coordinated by the CEI and/or the Town.
- D. Traffic maintenance charges shall include the installation and maintenance of all traffic control and safety devices, in accordance with specifications outlined in the Dade County Public Works Manual. In addition, the Contractor shall provide all barricades, flashing warning lights and/or arrow boards necessary to maintain safety and warn motorists of the construction.

3.05 REPAIR OF DAMAGED PAVEMENT

- A. All damage to pavement by the Contractor as a result of Work under this project shall comply with "DAMAGE BY CONTRACTOR", above, and shall be repaired in a manner satisfactory to the CEI and the Town. The repair shall include the preparation of the subgrade, the placing and compacting of the limerock base, the priming of the base, the placing and maintaining of the surface treatment, all as specified herein.
- B. The width of all repairs within the work area shall extend at least 12 inches beyond the limit of the damage. The edge of the pavement to be left in place shall be cut to an edge with a saw or other acceptable method so as to provide a clean edge to abut the repair. The line of the repair shall be uniform with no irregularities. Repair of damage by the Contractor beyond the work area shall be approved by the governing agencies having jurisdiction over the work prior to commencing the work.

END OF SECTION

SECTION 11205

SUBMERSIBLE (WASTEWATER) PUMPS

PART 1 - GENERAL

1.01 SCOPE

The Contractor shall furnish and install submersible non-clog wastewater pumps and appurtenances and place in satisfactory operation, in a workmanlike manner, all machinery, equipment, apparatus and accessories required for a complete installation in accordance with these specifications.

1.02 REFERENCES

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.

Reference	Title
ABMA 9-90	Load Ratings and Fatigue Life for Ball Bearings
ABMA 11-90	Load Ratings and Fatigue Life for Roller Bearings
ASTM A48-00	Gray Iron Castings
ASTM A108-99	Steel Bars, Carbon, Cold Finished, Standard Quality
ASTM A276-00a	Stainless and Heat-Resistant Steel Bars and Shapes
ASTM A278-93	Gray Iron Castings for Pressure Containing Parts for Temperature up to 650 Degrees F
ASTM A322-91 (1996)	Steel Bars, Alloy, Standard Grades
ASTM A576-90b (2000)	Steel Bars, Carbon, Hot Wrought, Special Quality
ASTM A743 /A743M-98a	Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion-Resistances for General Application
Hydraulic Institute Standards	Standards of the Hydraulic Institute, (Current Edition)

1.03 SUBMITTALS

- The Contractor shall submit the following after approval of plans but prior to construction of pump station:
- A. Pump Drawings.
- B. Pump performance curves, including other impeller sizes.
- C. Predicted pump performance curves for each condition point specified in Part 2 showing head, power, efficiency and NPSH required on the ordinate plotted against capacity on the abscissa.
- D. Materials of construction.
- E. Motor drawings
- F. Complete electric motor data.
- G. Submit in accordance with Section 01340, "Shop Drawings".

PART 2 - PRODUCTS

- 2.01 GENERAL
 - A. It is the intent of these Specifications to obtain complete and operable equipment. All items and accessories appearing in the Plans, in the manufacturer's literature as standard, and all items specified herein, shall be included. Items not included herein or on the Plans or manufacturer's literature but which can be reasonably inferred as necessary for the equipment to be properly and legally operable shall be included.
 - B. Pumping units and accessories shall be the standard product of manufacturers which have produced and sold such pumps and appurtenances for a period of at least 5 years for similar service.

2.02 PUMPS

- A. Pump shall be totally submersible, non-clogging, electrically operated, designed specifically for use in municipal wastewater applications and capable of handling raw unscreened sewage. Each pumping unit shall be suitable for the allotted space shown on the Plans and shall be satisfactorily suitable for the design conditions as determined by the Medley WASD.
- B. <u>Design</u>: The design shall be such that the pump unit shall be automatically and firmly connected to the discharge piping when lowered into place on its mating discharge connection. The pump shall be so designed that it may be lowered to or raised from its place in the wet-well by Type 316 stainless steel chain or cable and accurately guided by

pipe guide bars extending from the top of the station to the discharge connection. The pump shall be guided by no less than two (2) separate Type 316 stainless steel guide rails of 2-inch minimum diameter for pumps of 29 or less horsepower; 3-inch minimum diameter for pumps between 30 and 100 horsepower and of 4-inch minimum diameter for pumps over 100 horsepower or other guide system as approved by the Medley WASD. There shall be no need for personnel to enter the wet-well.

- C. Discharge Connection: Mating discharge connection of pump unit shall be permanently affixed to the concrete in the wet-well with Type 316 stainless steel epoxy anchor bolts furnished by and of the size recommended by the pump manufacturer. However, anchor bolts shall be 3/4-inch stainless steel, minimum. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal contact with minimal leakage. Unless otherwise approved, machined metal contacts shall be replaceable.
- D. Each pump with its appurtenances and cable shall be capable of continuous submersion under water without loss of water-tight integrity. Major parts such a stator casing, oil casing, sliding bracket, volute and impeller shall be of cast iron ASTM A-48, Class 35B. All surfaces coming into contact with sewage other than stainless steel shall be protected by a coating resistant to sewage. All exposed bolts and nuts shall be Type 316 stainless steel.
- E. The pumps shall have a maximum weight of 1,500 pounds, as required to meet conditions described in these Specifications and design operating characteristics. The previously stated weight requirement supersedes any other weight listed elsewhere in these specifications. Pumps shall have a minimum efficiency of 50% at best efficiency point.

2.03 COOLING SYSTEM

Motors shall be sufficiently cooled by the surrounding environment or pumped media. Cooling system shall provide for continuous operation in ambient temperatures of up to 104° F.

2.04 PUMP CONSTRUCTION

- A. Material and Coating: The major pump components shall be ASTM A48, "Gray Iron Castings", Class 35B cast iron, with smooth surfaces devoid of blow holes and other irregularities; of sufficient strength, weight and metal thickness to insure long life, accurate alignment and reliable operation. All exposed nuts and bolts shall be type 316 stainless steel. All surfaces coming into contact with sewage other than stainless steel shall be protected by an approved sewage resistant coating. The pump exterior shall be sprayed first with PVC epoxy primer. All remaining surfaces where watertight seal is required shall be machined and fitted with nitril rubber "O" rings. Fittings shall be such that the sealing is accomplished by metal-to-metal contact between the machined surfaces.
- B. <u>Cable Entry Seal:</u>

- 1. The cable entry water seal shall be designed to preclude specific torque requirements to ensure a watertight and submersible seal. The cable entry shall be comprised of a cylindrical elastomer grommet flanked by stainless steel washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the entry body containing a strain relief function separate from the function of sealing the cable.
- 2. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the motor interior from foreign material gaining access through the pump top.
- 3. Cable entry assemblies utilizing an epoxy for sealing may be considered, on a case-bycase basis. Epoxy shall be locally and commercially available, and shall have maximum published cure time of six (6) hours at room temperature and shall be suitable for use in a municipal sewerage environment.
- C. <u>Impeller</u>: The impeller(s) shall be of gray cast iron, Class 35B, dynamically balanced, single or double shrouded, non-clogging design having a long throughlet without acute turns. The impellers shall be capable of handling solids, fibrous materials, heavy sludge and other matter found in normal sewage applications. The impeller shall be of a single vane, 2 or 3 vane non-clogging design. Recessed impellers are not acceptable by the Medley WASD. Impeller(s) shall be keyed to the shaft, retained with an allen head bolt and shall be capable of passing a minimum 3-inch diameter solid sphere. One impeller tool shall be provided with each pump.
- D. <u>Wear Rings:</u> A wear ring or wear plate system shall be used to provide efficient sealing between the volute and suction inlet of the impeller. Each pump shall be equipped with a brass, or nitrile rubber coated steel ring insert that is drive fitted to the volute inlet.
- E. <u>Volute:</u> Pump volute(s) shall be single-piece gray cast iron, Class 35B, non-concentric design with smooth fluid passages large enough at all points to pass any solids that may enter the impeller.
- F. Shaft and Mechanical Seal:
 - 1. The pump and rotor shaft shall be the same unit. The shaft shall be ANSI Type 420 series stainless steel, or approved equal.
 - 2. Each pump shall be provided with a tandem mechanical rotating shaft seal system. Seals shall run in an oil reservoir. Lapped seal faces must be hydro-dynamically lubricated at a constant rate. The lower seal unit, between the pump and the oil chamber shall contain one stationary and one positively driven rotating tungsten or silicone carbide ring. The upper seal unit, between the oil sump and motor housing, shall contain one stationary tungsten carbide or ceramic ring and one positively driven rotating carbon ring. The use of a positively driven rotating tungsten or silicone carbide

ring is acceptable in lieu of the positively driven rotating carbon ring. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment, but shall be easily inspected and replaceable. Each pump shall be provided with an oil chamber for the shaft sealing system. The oil chamber shall be designed to prevent over-filling and to provide oil expansion capacity. The drain and inspection plug with positive anti-leak seal shall be easily accessible from the outside. The pump shaft shall rotate on 2 permanently lubricated bearings with a minimum L10 rating of 50,000 hours.

2.05 PUMP MOTOR

- A. The pump motor shall be squirrel cage induction, shell type design, housed in an air filled, watertight chamber, no more than 60 HP and 1,800 RPM, 240/480 volts, 3 phase, 60 Hertz, 1.15 S.F., Nema type B. The stator winding and stator leads shall be insulated with moisture resistant Class F insulation which will resist a temperature of 155 degree centigrade. The stator shall be dipped and baked 3 times in Class F varnish. The motor shall be designed for continuous duty capable of sustaining a minimum of 12 starts per hour. Motors shall be approved for Class 1, Division II, Group D atmospheres in accordance with NEC classification for hazardous areas. Motors shall be able to start within the 1300% factor allowed by NEC 430-52 or documentation shall be provided as to why it cannot.
- B. Each unit shall be provided with an adequately designed cooling system to permit continuous operation in totally, partially, or non-submerged condition. Cooling media channels and ports shall be sized to be non-clogging.
- C. Motor bearings shall be permanently grease lubricated. Oil filled motors are not acceptable.
- D. Thermal switches shall be embedded in the stator lead coils. All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. At 125 degrees C (260 degrees F) the thermal switches shall open, stop the motor and activate an alarm. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. Wire nuts or crimping devices are not acceptable. The motor and pump shall be designed and assembled by the same manufacturer
- E. The pump motor cable shall be suited for submersible pump applications with Underwriters Laboratory approval permanently embossed on the cable. Cable sizing shall conform to the National Electric Code Specifications for pump motors. Each pump shall be furnished with ample cable such that one continuous length of cable, supplied by pump manufacturer, will be all that is required to run from pump, when lowered in the wet-well, to the controls, without need of splices.

F. The motor horsepower shall be adequate such that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All equipment shall be installed as shown on the Plans and in accordance with these specifications.
- B. All motors shall be factory mounted by the driven equipment manufacturer in accordance with the motor manufacturers drawings and instructions. Field installation of the unit, including final alignment shall be the responsibility of the Contractor.
- C. Installation shall include furnishing all necessary appurtenances for initial operation and making final adjustments to place the equipment in operable condition.
- D. All control and alarm wires, as required, shall be provided even if not shown on plan drawings.

3.02 PREPARATION FOR STORAGE

All flanges shall be covered to prevent damage. Pump motors, and shafts will be stored inside warehouses. Pumps may be stored outside, on wood members away from the ground, at sufficient elevation to prevent flooding, and protected from the weather by secured canvas or plastic coverings.

3.03 PUMP TESTS

The manufacturer shall perform the following inspections and tests on each pump before shipment from the factory:

- A. Impeller, motor rating and electrical connections shall be checked for compliance with customer's purchase order.
- B. Motor and cable insulation tests for moisture content or insulation defects shall be made.
- C. Prior to submergence, the pump shall be run dry, to establish correct rotation and mechanical integrity.
- D. Pump shall be run for 30 minutes submerged, a minimum of 6 feet underwater.
- E. After the operation tests, the insulation test is to be performed again. A written report, signed by a professional engineer, registered in the state where the tests were performed, stating that "A" through "D" (above) were performed and that the tests were satisfactorily accomplished, shall be supplied with each pump at the time of shipment.

3.04 START-UP SERVICES

The supplier shall provide start-up service to place the pumps and controls in proper operation. During this service, the operation of the equipment will be reviewed and the station will be inspected for proper installation and operation. This service shall be provided by a representative of the manufacturer. The pumps shall be tested at start-up and the voltage, current and other significant parameters recorded. The manufacturer shall provide a formal test procedure and forms for recording the data. The supplier shall submit a written report to the Contractor, stating results of the start-up inspection. A copy of the report shall be furnished to the Medley WASD. The Contractor shall inform the Medley WASD 24-hours prior to commencement of such services. These services shall be at no cost to the Medley WASD.

3.05 PUMP WARRANTY

The pump manufacturer shall warrant the units supplied to the owner against defects in workmanship and materials for a period of 5 years or 10,000 hours of operation, in normal use, operation and service. The warranty shall be in printed form and shall apply to all similar units. A copy of the warranty shall be supplied with each pump. The warranty shall consist of the following:

From 0-18 months or 0 - 3,000 hours, 100% warranty.

From 19-39 months or 3,001 - 6,500 hours, 50% warranty.

From 40-60 months or 6,501 - 10,000 hours, 25% warranty.

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SECTION 13300

INSTRUMENTATION AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall furnish, install and place into service operating process instrumentation, control systems and panels including accessories, related to this project as shown on plans and specified herein.
 - 1. Existing plant systems must remain operational during construction. Nighttime and/or other off hours work may be required to support plant operations and shall be included in the contractor's bid.
 - 2. All wires in control panels must be permanently tagged and shown on the as-built drawings. This includes all spare and abandoned wires and cables. Spare and abandoned cables are to be taped and left coiled in the panels for future use.
 - 3. See electrical drawings and specifications for additional work required of the instrument contractor as part of this project.
 - i. Work Includes: Engineering, furnishing, installing, calibrating, adjusting, testing, documenting, starting up, and OWNER training for a complete Instrumentation and Control System. Major parts are:
 - 4. Instrumentation including primary elements, transmitters, and control devices.
 - 5. Control Panels.
 - 6. PLC and I/O Rack Control Panels
 - 7. Computer System if applicable, as defined in Section 13400
 - 8. Software and Licensing
 - 9. Acceptance Testing, including 30-day system acceptance test.
- B. Instrument and Control (I&C) Supplier work scope:
 - 10. For I&C equipment and ancillaries provide the following:
 - a. completing detail design.
 - b. Required Submittals.
 - c. Equipment and ancillaries.

- d. Instructions, details, and recommendations to, and coordination with, Contractor for proper installation.
- e. Verify readiness for operation.
- f. Verify the correctness of final power and signal connections .
- g. Adjusting and calibrating.
- h. Starting up.
- i. Testing and coordination of testing.
- j. Training.
- 11. Verify following work not by I&C Supplier is provided:
 - a. Correct type, size, and number of signal wires with their raceways.
 - b. Correct electrical power circuits and raceways.
 - c. Correct size, type, and number of I&C related pipes, valves, fittings, and tubes.
 - d. Correct size, type, materials, and connection of process mechanical piping for in-line primary elements.
- 12. For equipment not provided under I&C Supplier, but directly connected to equipment required by I&C Supplier:
 - a. Obtain from Contractor, manufacturer's information on installation, interface, function, and adjustment.
 - b. Coordinate with Contractor to allow required interface and operation with I&C System.
 - c. For operation and control, verify that installations, interfacing signal terminations, and adjustments have been completed with manufacturer's recommendations.
 - d. Test to demonstrate required interface and operation with I&C System.
 - e. Examples of items in this category, but not limited to the following:
 - 1) Valve operators, position switches, and controls.
 - 2) Chemical feed pump and feeder speed/stroke controls.
 - 3) Automatic samplers.
 - 4) Motor control centers.
 - 5) Adjustable speed drive systems.

- f. Examples of items not in this category:
 - 1) Internal portions of equipment provided under Division 16, Electrical, that are not directly connected to equipment under I&C System.
 - 2) Internal portions of I&C Systems provided as part of package systems and that are not directly connected to equipment provided under I&C System.
- 12. Wiring external to equipment provided by I&C Supplier:
- 13. Special control and communications cable: Provided by I&C Supplier.
 - i. Software Engineering work scope:
- 14. Configuration of PLCs, including:
 - a. Correct I/O mapping and scaling.
 - b. Ladder logic implementing defined control strategies.
 - c. SCADA interface mappings.
 - d. Specifications/documents including: System External Specification, System Internal Specification, I/O Checklist, Factory Acceptance Test Plan, and Site Acceptance Test Plan.
 - e. As-built documentation.
- 15. Start-up support, including system testing.
- 16. System training.

Computer based SCADA system (as defined in Section 13400).

i. Each item of hardware, software, and/or firmware developed, delivered, installed, licensed, or modified under this contract shall be Year 2000 (Y2K) "Millennium Compliant".

1.02 SINGLE INSTRUMENT SUPPLIER

A. The Contractor shall assign to the Single Instrument and Control (I&C) supplier full responsibility for the functional operation of all new instrumentation systems. The Contractor shall have said supplier perform all engineering necessary in order to select, to furnish, to program, to supervise installation, connection, to calibrate, to place into operation of all sensors, instruments, alarm equipment, control panels, accessories, and all other equipment as specified herein. The I&C supplier shall have a maintenance office within a 150 mile radius of the project.

- B. The single instrument and controls supplier shall demonstrate his ability to successfully complete projects of similar sizes and nature. Provide references (including phone number and contact name) for at least three projects successfully completed in which the following tasks were performed: system engineering, documentation including panel assembly, schematics and wiring diagram, field testing, calibration and start-up, operator instruction and maintenance training.
- C. The foregoing shall enable the Contractor and the Owner to be assured that the full responsibility for the requirements of this Section shall reside in an organization which is qualified and experienced in the water management field and its process technology on a functional systems basis.
- D. The single I&C supplier shall have a UL approved shop and shall build all panels according to UL 508A.
- E. Instrumentation and Controls supplier shall be C.C. Control Corp., Curry Controls, Champion Controls, Revere Controls, Commerce Controls, Inc.
- F. The single software engineering supplier shall demonstrate his ability to successfully complete projects of similar sizes and nature. Provide references (including phone number and contact name) for at least three projects successfully completed in which the following tasks were performed: ladder logic programming, computer based SCADA system configuration, documentation, field testing, start-up, and operator instruction.

1.03 INSTALLATION WORK

A. Nothing in this part of the Specifications shall be construed as requiring the Contractor to utilize personnel supplied by his assigned instrument manufacturer's organization, or any division thereof, to accomplish the physical installation of any elements, instruments, accessories or assemblies specified herein. However, the Contractor shall employ installers who are skilled and experienced in the installation and connection of all elements, instruments, accessories and assemblies; portions of their work shall be supervised or checked as specified in Part 3, herein.

1.04 PREPARATION OF SUBMITTAL OF DRAWINGS AND DATA

A. It is incumbent upon the Contractor to coordinate the work specified in these Sections so that a complete I&C system for the facility shall be provided and shall be supported by accurate Shop and record Drawings. As a part of the responsibility as assigned by the Contractor, the Single I&C supplier shall prepare and submit through the Contractor, complete organized Shop Drawings, as specified in Part 2.02, herein. Interface between instruments, motor starters, etc. shall be included in his Shop Drawing submittal.

B. During the period of preparation of this submittal, the Contractor shall authorize direct, informal liaison between his Single I&C supplier and the Engineer for exchange of technical information. As a result of this liaison, certain minor refinements and revisions in the systems as specified may be authorized informally by the Engineer, but these shall not alter the scope of work or cause increase or decrease in the Contract Price. During this informal exchange, no oral statement by the Engineer shall be construed to give formal approval of any component or method, nor shall any statement be construed to grant formal exception to, or variation from these Specifications.

1.05 ADDITIONAL TECHNICAL SERVICES

- A. At no separate additional cost to the Owner, the Contractor shall provide the following services of qualified technical representatives of the Single I&C supplier (See Part 3, herein).
 - 1. To supervise installation and connection of all instruments, elements, and components of every system, including connection of instrument signals to primary measurement elements and to final control elements such as pumps, valves, and chemical feeders;
 - 2. To make all necessary adjustments, calibrations and tests; and to instruct plant operating and maintenance personnel on instrumentation. This time shall be in addition to whatever time is required for other facets of work at the site, and shall be during the Owner's normal working days and hours.

1.06 GUARANTEE

A. The Contractor shall guarantee all equipment and installation, as specified herein, for a period of one (1) year following the date of completion of the work. To fulfill this obligation, the Contractor shall utilize technical service personnel designated by the Single I&C supplier to which the Contractor originally assigned project responsibility for instrumentation. Services shall be performed within two (2) calendar days after notification by the Owner.

1.07 ADDITIONAL PROVISIONS

- A. The applicable provisions of the following Sections under Electrical Work shall apply to work and equipment specified herein, the same as if stated in full, herein:
 - 1. Codes and Standards
 - 2. Equipment, Materials and Workmanship
 - 3. Testing
 - 4. Grounding
 - 5. Equipment Anchoring

- 6. Conductor and Equipment Identification
- 7. Terminal Cabinets and Control Compartments
- 8. Process Control Devices

1.08 NEWEST MODEL COMPONENTS

A. All meters, instruments, and other components shall be the most recent field proven models marketed by their manufacturers at the time of submittal of Shop Drawings unless otherwise specified to match existing equipment. All technical data publications included with submittals shall be the most recent issue.

1.09 INSPECTION OF THE SITE AND EXISTING CONDITIONS

- A. The instrumentation drawings were developed from past record drawings and information supplied by the Town.
- B. Before submitting a bid, visit the site and determine conditions at the site and at all existing structures in order to become familiar with all existing conditions and instrumentation and control systems which will, in any way or manner, affect the work required under this Contract. No subsequent increase in Contract cost will be allowed for additional work required because of the CONTRACTOR'S failure to fulfill this requirement.

1.10 RELATED WORK

- A. Division 16 Electrical
- B. Division 11 Equipment
- C. Division 13 Special Construction

PART 2 - PRODUCTS

2.01 INSTRUMENTATION CRITERIA

- A. DESIGNATION OF COMPONENTS:
 - 1. In these Specifications and on the Drawings, all systems, meters, instruments, and other elements are represented schematically, and are designated by numbers, as derived from criteria in Instrument Society of American Standard ANSI/ISA S5.1 1973. The nomenclature and numbers designated herein and on the Drawings shall be employed exclusively throughout Shop Drawings, data sheets, and similar materials. Any other symbols, designations, and nomenclature unique to the manufacturer's standard methods shall not replace these prescribed above, used, herein and on the Drawings.
- B. SIGNAL CHARACTERISTICS:

- Signals shall be electrical, as indicated herein, and shall vary in direct linear proportion to the measured variable, except as noted. Electrical signals outside control panel(s) shall be 4 to 20 milliamperes DC, except as noted. Signals within enclosures may be 1 5 volts DC.
- C. MATCHING STYLE, APPEARANCE AND TYPE:
 - 1. All instruments to be panel mounted at the control panels shall have matching style and general appearance. Instruments performing similar functions shall be of the same type, model, or class, and shall be of one (1) manufacturer.
- D. ACCURACY AND REPEATABILITY:
 - 1. The overall accuracy of each instrumentation system or loop shall be as prescribed in the Specifications for that system or loop. Each system's accuracy shall be determined as a probable maximum error; this shall be the square root of the sum of the squares of certified "accuracy s" of certain designated components in each system, expressed as a percentage of the actual span or value of the measured variable. Each individual electronic instrument shall have a minimum accuracy of +0.7 percent of full scale and a minimum repeatability of +0.4 percent of full scale unless otherwise specified. Instruments which do not conform to or improve upon these criteria are not acceptable.

E. SIGNAL ISOLATORS, CONVERTERS AND POWER SUPPLIES:

 Signal isolators shall be furnished and installed in each measurement and control loop, wherever required, to insure adjacent component impedance match or where feedback paths may be generated. Signal converters shall be included where required to resolve any signal level incompatibilities. Signal power supplies shall be included, as required by the manufacturer's instrument load characteristics, to insure sufficient power to each loop component.

F. ALTERNATIVE EQUIPMENT OR METHODS:

1. Equipment or methods requiring redesign of any project details are not acceptable without prior approval of the Engineer. Any changes inherent to a proposal alternative shall be at no additional cost to the Owner. The required approval shall be obtained in writing by the I&C Subcontractor through the Contractor prior to submittal of Shop Drawings and data. Any proposal for approval of alternative equipment or methods shall include evidence of improved performance, operational advantage and maintenance enhancement over the equipment or method specified, or shall include evidence that a specified component is not available. Otherwise, alternative equipment (other than direct, equivalent substitutions) and alternative methods shall not be proposed.

2.02 DETAILED SYSTEMS DRAWINGS AND DATA

A. CONTENT:

- 1. The Contractor shall submit detailed Shop Drawings and data prepared and organized by the Single I&C supplier designated at the time of bidding. The quantity of submittal sets required shall be six (6). These Drawings and data shall be submitted as a complete bound package at one time within 80 calendar days after date of Notice to Proceed and shall include:
- 2. Drawings showing definite diagrams for every instrumentation loop system. These diagrams shall show and identify each component of each loop or system using legend and symbols from ISA Standard S5.4, each having the format of ISA Standard S5.1 as used on the Project Drawing. (Each system or loop diagram shall be drawn on a separate Drawing sheet.)
- 3. Data sheets for each component, together with a technical product brochure or bulletin. The data sheets shall show:
 - (a) Component function description used herein and on the Drawings;
 - (b) Manufacturer's model number or other product designation;
 - (c) Project tag number used herein and on the Drawings;
 - (d) Project system loop of which the component is a part;
 - (e) Project location or assembly at which the component is to be installed;
 - (f) Input and output characteristics;
 - (g) Scale range and units (if any) and multiplier (if any);
 - (h) Special requirements or features
- B. A complete index shall appear in the front of each bound submittal volume. A separate technical brochure or bulletin shall be included with each instrument data sheet. The data sheets shall be indexed in the submittal by systems or loops, as a separate group for each system or loop. If, within a single system or loop, a single instrument is employed more than once, one data sheet with one brochure or bulletin may cover all identical uses of that instrument in that system. Each brochure or bulletin shall include a list of tag numbers for which it applies. System groups shall be separated by labeled tags.
 - 1. Drawings showing both schematic and wiring diagrams for control circuits. Complete details on the circuit interrelationship of all devices within and outside each control panel shall be submitted first, using schematic control diagrams. Subsequent to return

of this first submittal by the Engineer, piping and wiring diagrams shall be prepared and submitted for review by the Engineer; the diagrams shall consist of component layout Drawings to scale, showing numbered terminals on components together with the unique number of the wire to be connected to each terminal. Piping and wiring diagrams shall show terminal assignments from all primary measurement devices, such as flow meters, and to all final control devices, such as samplers, pumps, valves, and chemical feeders. The Contractor shall furnish all necessary equipment supplier's Shop Drawings to facilitate inclusion of this information by the I&C system supplier.

- 2. Schematic and wiring diagram criteria shall be followed as established in NEMA Standards Publication ANSI/NEMA 1CS 1 1978, "Industrial Control and Systems."
- 3. Assembly and construction Drawings for each control panel and for other special enclosed assemblies for field installation. These Drawings shall include dimensions, identification of all components, surface preparation and finish data, nameplates, and the like. These Drawings also shall include enough other details, including prototype photographs, to define exactly the style and overall appearance of the assembly; a finish treatment sample shall be included.
- 4. Installation, mounting and anchoring details for all components and assemblies to be field mounted, including conduit connection or entry details.
- 5. Complete and detailed bills of materials. A master Bill of Materials listing all field mounted devices, control panels and other equipment that shall be shipped to the job site. A Bill of Materials for each control panel listing all devices within the panel.
- 6. Modifications to existing equipment. A complete description of all proposed modifications to existing instrumentation equipment, control panels, control devices, cabinets, etc., shall be submitted with the Shop Drawings complete with detailed Drawings of the proposed modifications.
- C. ORGANIZATION AND BINDING:
 - 1. The organization of initial Shop Drawing submittal required above shall be compatible to eventual inclusion with the Technical Manuals submittal and shall include final alterations reflecting "as built" conditions. Accordingly, the initial multiple copy Shop Drawing submittal shall be separately bound in 3 ring binders of the type specified under Part 2.03, herein, for the Technical Manuals.

2.03 TECHNICAL MANUALS

A. Five (5) final sets of technical manuals shall be supplied for the Owner, and one (1) final set shall be supplied for the Engineer, as a condition of acceptance of the project. Each set shall consist of one (1) or more volumes, each of which shall be bound in a standard size, three ring, loose-leaf, vinyl plastic hard cover binder suitable for bookshelf storage. Binder ring size shall not exceed 3.0 inches.

- B. Initially, two (2) sets of these manuals shall be submitted to the Engineer for favorable review after return of favorably reviewed Shop Drawings and data required under Part 3, herein. Following the Engineer's review, one (1) set shall be returned to the Contractor with comments. The sets shall be revised and/or amended as required and the requisite final sets shall be submitted to the Engineer fifteen (15) days prior to start up of systems. The Engineer shall distribute the copies.
- C. In addition to updated Shop Drawing information to reflect actual existing conditions, each set of technical manuals shall include installation, connection, operating, trouble shooting, maintenance, and overhaul instructions in complete detail. This shall provide the Owner with comprehensive information on all systems and components to enable operation, service, maintenance, and repair. Exploded or other detailed views of all instruments, assemblies, and accessory components shall be included together with complete parts lists and ordering instructions.

2.04 SPARE PARTS

A. The Contractor shall include, as part of the bid package, a list of recommended spare parts covering items required under Section. The Single I&C Supplier in fact shall be responsible for delivery of the spare parts, as directed by the Owner after plant start up. The Contractor shall also submit a list of recommended equipment for maintaining and calibrating equipment furnished under Section 13300.

2.05 CONTROL PANELS

A. GENERAL:

- 1. New control panels shall be furnished and installed under this Contract. They shall house the instrumentation, control devices, indicating lights, PLC's, RTU's, alarm chasses, displays, all necessary accessories, wiring and terminal blocks as necessary and as shown on the Drawings and as described herein. Control panel doors shall be equipped with a door latch kit or a fast operating clamp assembly as applicable. 120 volt AC control voltage in a control panel shall be supplied with a line noise suppressing transformer specified elsewhere in this Section. Each control panel shall be properly grounded and as such be provided with a ground terminal block. Control panels shall be properly sized for installation through new and existing entry ways and custom fit for locations as shown on the drawings.
- B. CONSTRUCTION:
 - 1. Control Room:

- (a) Control room panels shall be NEMA 12. The enclosures shall be manufactured of 14 gauge steel.
- 2. Building:
 - (a) Control panels inside a building (not in a control room) shall be NEMA 12, 304 stainless steel 14 gauge construction. Control panels in corrosive areas shall be construed to be outdoors.
- 3. Outdoor:
 - (a) All outdoor control panels shall be NEMA 4X with drip shield kit, 3 point latch mechanism and 316 stainless steel 14 gauge construction.
- 4. Cooling
 - (a) Control panels shall have sufficient cooling and/or ventilation not to exceed the maximum operating temperature of any of the internal components. Ambient temperature limits shall be 90 degrees F for indoor and 100 degrees F for outdoor control panels. Outdoor control panels with electronic equipment shall be furnished with sun shields on around and on top of the control panels.
- 5. UPS:
 - (a) UPS: Control Panels shall be furnished with a UPS to provide power to the PLC microprocessor and all PLC support, interface, and communication equipment for 10 minutes. UPS shall be manufactured by Best, model Ferrups, APC or equal.

C. SIGNAL AND CONTROL CIRCUIT WIRING:

- 1. Wire Type and Sizes
 - (a) Conductors shall be flexible stranded copper wire; these shall be U.L. listed Type THHN and shall be rated 600 volts. Wire for control signal circuits and alarm input circuits shall be 16 AWG. All instrumentation cables shall be shielded No. 20 AWG minimum with a copper drain wire. All special instrumentation cable such as between sensor and transmitter shall be supplied by the I&C supplier.
- 2. Wire Insulation Colors

- (a) Conductors supplying 120 volt AC power on the line side of a disconnecting switch shall have a black insulation for the ungrounded conductor. Grounded circuit conductors shall have white insulation. Insulation for ungrounded 120 volt AC control circuit conductors shall be red. All wires energized by a voltage source external to the control board(s) shall have yellow insulation. Insulation for all DC conductors shall be blue.
- 3. Wiring Installation
 - (a) All wires shall be run in plastic wireways except (1) field wiring, (2) wiring run between mating blocks in adjacent sections, (3) wiring run from components on a swing out panel to components on a part of the fixed structure, and (4) wiring run to panel mounted components. Wiring run from components on a swing out panels to other components on a fixed panel shall be made up in tied bundles. These shall be tied with nylon wire ties, and shall be secured to panels at both sides of the "hinge loop" so that conductors are not strained at terminals.
 - (b) Wiring run to control devices on the front panels shall be tied together at short intervals with nylon wire ties and secured to the inside face of the panel using adhesive mounts.
 - (c) Wiring to rear terminals on panel mount instruments shall be run in plastic wireways secured to horizontal brackets run above or below the instruments in about the same plane as the rear of the instruments.
 - (d) Shields of shielded instrument cable shall only be grounded on one side of each cable run. The side to be grounded shall always be in the field as applicable.
 - (e) Care shall be exercised to properly insulate the ungrounded side, to prevent ground loops from occurring.
 - (f) Conformance to the above wiring installation requirements shall be reflected by details shown on the Shop Drawings for the Engineer's review.
- 4. Wire Marking

- (a) Each signal, control, alarm, and indicating circuit conductor connected to a given electrical point shall be designated by a single unique number which shall be shown on all Shop Drawings. These numbers shall be marked on all conductors at every terminal using permanently marked heat shrink plastic. Instrument signal circuit conductors shall be tagged with unique multiple digit numbers. Black and white wires from the circuit breaker panelboard shall be tagged including the one (1) or two (2) digit number of the branch circuit breaker.
- 5. Terminal Blocks
 - (a) Terminal blocks shall be molded plastic with barriers and box lug terminals, and shall be rated 15 amperes at 600 volts. White marking strips, fastened securely to the molded sections, shall be provided and wire numbers or circuit identifications shall be marked thereon with permanent marking fluid. Terminal blocks shall be General Electric Type CR 151A1 with mounting rack, equivalent by Cinch Jones or equal.
- D. PAINTING:
 - 1. Control panels shall be thoroughly cleaned and sandblasted per SSPC SP 6 (Commercial Blast) after which surfaces shall receive a prime coat (Amercoat 185, Koppers 622HB, or equal) 3 mils dry, followed by two (2) or more finish coats (Amercoat 5401, Koppers 501, or equal) 3 mils dry, for a total thickness of the complete system of 6 mils. The finished color of the outside surfaces shall be selected by the Engineer. The inside surfaces shall have a white finish coat.
 - 2. Exterior control panels shall be painted white on the exterior. A durable coating system with a five-year full replacement guarantee shall be used to coat the stainless steel panels. Defects in the coating systems include, but are not limited to, fading, color change, cracking peeling, or otherwise disbonding.
- E. PLC CONTROL PANEL REQUIEREMENTS
 - 1. All input/output hardware and interface equipment shall be provided by the computer & PLC system supplier for all specified inputs and outputs. Input/output hardware shall be plug-in modules (or equivalent I/O assembly and associated printed circuit board) in associated I/O rack assemblies.
 - 2. Signal and control circuitry to individual input/output modules shall be arranged such that any one module failure shall not disable more than one control loop within any group of controlled equipment (eg. one pump out of a group of three pumps, etc.)
 - 3. All analog and discrete inputs and outputs shall be optically or transformer isolated for voltage surge protection and shall meet peak common mode and 3 kV surge to ground

withstand capability (SWC) test as specified by ANSI C37.90A-197A (IEEE Standard 472-1974).

- 4. In the event a standard manufacturers product does not satisfy the above surge requirements, additional protective circuitry to suppress contact bounce and to protect transients from being recognized as data. Input/output modules shall be configured for ease of wiring and maintenance. The modules shall be connected to wiring arms which are movable to permit removal of a module without disturbing field wiring. Covers shall be provided to prevent operator personnel from inadvertently touching the terminals.
- 5. Input/output modules shall have individual indicators that show the on/off status of each input or output device connected to it.
- 6. Analog Input
 - (a) The analog input subsystem shall accept 4-20 MA (1-5 volts across 250 ohms) signals which shall be multiplexed into one or more amplifiers and ADC's by one or more analog input multiplexers. The analog input multiplexers shall be of the solid state differential type and shall employ successive approximation or dual slope integration to digitize the sampled analog signals into a 12 bit binary value; with an accuracy of +0.05% of full scale. Input power supply shall be 24 volts DC from the I/O power supply subsystem where power is not supplied by the associated field instrument.
- 7. Discrete Input
- 8. Dry Contact:
 - (a) The input subsystem shall sense the open or closed status of contacts at each scan interval. Sensing power shall be 24 volts DC from the I/O power supply subsystem.
- 9. Powered input:
 - (a) The input subsystem shall sense the status of 120VAC inputs at each scan interval. Power for inputs is derived from the source system or equipment.
- 10. Analog Output

- (a) The analog output subsystem shall accept incremental signals from the process controller. A solid state digital to analog converter (DAC) shall be provided for each analog output. The incremental signals from the process controller shall increment or decrement the 4-20 MA output signal from each DAC. A 24 volt DC power supply shall be provided for analog outputs from the I/O power supply subsystem.
- (b) The output of each DAC shall be continuously maintained and shall have a drift rate no greater than 2% in 24 hours. Each DAC shall have a 12 bit resolution and an accuracy of +0.05% full scale.
- 11. Discrete Output
 - (a) The discrete output subsystem shall be of the solid state type and shall generate maintained or momentary outputs as required to operate interposing relays provided in related circuitry. Diode protection (in addition to surge protection) shall be provided on all discrete outputs. The output contacts shall be rated 24 VDC/120 VAC, 5A SPDT.
- 12. Power Supplies
 - (a) Input/output (I/O) subsystem power supplies shall be provided for each PLC control panel and shall be sized to power all 2-wire and 4-wire discrete and analog DC circuits under full-load conditions including allowances for specified spares. The incoming power source to the I/O subsystem power supplies shall be 115 VAC from the associated panelboard. Transformation, rectification and smoothing circuitry shall be furnished to provide a regulated 24 volt DC power supply. The DC power supply shall be converted to other DC voltage levels as required. Provide redundant 24VDC power supplies with diode protection and alarm (PLC input) in case of either power supply failure.
- 13. Uninterruptable Power Supplies
 - (a) Provide UPS in each PLC control panel to provide uninterruptible power for the PLC, I/O, two wire instrument loops, all interposing relays, all PLC support, interface, and communication equipment for 10 minutes. UPS shall adhere to section 13400.
- 14. Additional spare inputs and outputs

(a) The PLC power supply shall have sufficient capability to handle the power requirements for all the PLC components and I/O points, and spare I/O points. For new PLC panel, provide additional 25 percent input/output active spare capacity, 25 percent input/output expansion capability for future use.

2.06 ACCESSORIES

- A. General purpose relays in the control panels shall be plug in type with contacts rated 10 amperes at 120 volts AC. The quantity and type of contacts shall be as shown on the Drawings. Each relay shall be enclosed in a clear plastic heat and shock resistant dust cover. Sockets for relays shall have screw type terminals. Relays shall be Potter and Brumfield Type KRP or KUP, Square-D Type K, or equal.
- B. Time delay relays shall be solid state on-delay or off-delay type with contacts rated 10 amperes at 120VAC. Units shall include adjustable dial with graduated scale covering the time range in each case. Time delay relays shall be Agastat Series 7000, Omron series H3, SSAC type TDM or approved equal.
- C. Additional slave relays shall be installed when the number or type of contacts shown exceed the contact capacity of the specified relays and timers.
- D. Switches and indicating lights shall be round 30.5mm configuration, heavy duty and corrosion resistant. Legend plate shall be standard size square style laminate with white field and black markings as shown.
- E. Indicating lights shall have 6VAC lamps and integral transformer for operation from 120VAC, unless otherwise noted. Lens color shall be as noted. All indicating lights shall be push-to-test type. Pushbuttons shall include full guard with flush button and selector switches shall include a black non-illuminated knob on switch, unless otherwise noted. Contact arrangement and configuration shall be as shown.
- F. Devices shall be Cutler Hammer Type E-30, General Electric Type CR104, Square D class 9001 type Sk, Allen Bradley Bulletin 800 or equal.
- G. Selector switches shall be of the rotary type with the number of positions as shown on the Drawings. Color, escutcheon engravings, contact configurations and the like shall be as shown. Devices shall be Cutler Hammer Type E-24, General Electric Type CR104, or equal.
- H. Circuit breakers shall be single pole, 120 volt, 15 ampere rating or as required to protect wires and equipment and mounted inside the panels as shown.
- I. Nameplates shall be supplied for identification of all field mounted elements, including flow meters and their transmitters. These nameplates shall identify the instrument, or meter, descriptively, as to function and system. These nameplates shall be fabricated from black face, white center, laminated engraving plastic. A nameplate shall be provided for each

signal transducer, signal converter, signal isolator, each electronic trip, and the like, mounted inside the control panels. These shall be descriptive, to define the function and system of such element. Adhesives shall be acceptable for attaching nameplates. Painted surfaces must be prepared to allow permanent bonding of adhesives. Nameplates shall be provided for instruments, function titles for each group of instruments and other components mounted on the front of the control panels as shown. These nameplates and/or individual letters shall be fabricated from VI LAM, Catalog No. 200, manufactured by N/P Company, or equivalent by Formica, or equal. Colors, lettering, style and sizes shall be as shown or as selected by the Engineer.

J. Solenoid Valves if not otherwise noted shall be globe valve directly actuated by solenoid and not requiring minimum pressure differential for operation. Materials shall be brass globe valve bodies and Buna-N valve seats. The size shall be 1/4" normally closed. The coil shall be 115 VAC coil, NEMA 4 solenoid enclosure. Manufacturer shall be ASCO; Red Hat, or equal.

2.07 TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS) PROTECTION

- A. GENERAL:
 - 1. TVSS protection shall be provided to protect the electronic instrumentation system from induced surges propagating along the signal and power supply lines. The protection systems shall be such that the protective level shall not interfere with normal operation, but shall be lower than the instrument surge withstand level, and be maintenance free and self-restoring.
 - 2. Instruments shall be housed in a suitable case, properly grounded. Ground wires for all TVSS shall be connected to a good earth ground and where practical, each ground wire run individually and insulated from each other. These protectors shall be mounted within the instrument enclosure or a separate NEMA 4X junction box coupled to the enclosure.
- B. POWER SUPPLY:
 - Protection of all 120 VAC instrument power supply lines shall be provided. Control
 panels shall be protected by line noise suppressing isolation transformers and TVSS.
 Field instruments shall be protected by TVSS. For control panels, the line noise
 suppressing isolation transformer shall be Topaz Series 30 Ultra isolators or approved
 equal. The suppressor shall be Edco HSP-121 and U.L. 1449 compliant.
- C. ANALOG SIGNALS:
- D. Protection of analog signal lines originating and terminating not in the same building shall be provided by TVSS. For analog signal lines, the TVSS shall be Edco PC-642. For field
mounted two-wire instruments, the TVSS shall be encapsulated in stainless steel pipe nipples and shall be Edco SS64 series, and U.L. 497B compliant.

E. For field mounted four-wire 120VAC instruments, the TVSS shall be in a NEMA 4X polycarbonate enclosure, Edco SLAC series.

2.08 CONTROL STRATEGY SCHEDULES

- A. The control strategies are written descriptions of the programming required to implement regulatory and sequential control of the unit processes. Control strategies shall fully reside in the memory of the designated PLC. Coefficients pertaining to control strategies shall be modifiable through the operator interface in the monitoring / control mode.
- B. The I&C supplier shall include an additional 40 hours on-site to fine tune control strategies and make minor software modifications in order to resolve any logic discrepancies encountered during start-up, and supply the Owner with a complete functional system. This shall be part of the bid package with no additional cost to the owner.

PART 3 - EXECUTION

3.01 INSTALLATION, CALIBRATION, TESTING, START UP AND INSTRUCTION

- A. GENERAL:
 - 1. Under the supervision of the Single I&C supplier, all systems specified in this Section shall be installed, connected, calibrated and tested, and in coordination with the Engineer and the Owner, shall be started to place the processes in operation. This shall include final calibration in concert with equipment specified elsewhere in these Specifications, including pumps, valves, as well as certain existing equipment.
 - 2. Testing

- (a) All systems shall be exercised through operational tests in the presence of the Engineer in order to demonstrate achievement of the specified performance. Operational tests depend upon completion of work specified elsewhere in these Specifications. The scheduling of tests shall be coordinated by the Contractor among all parties involved so that the tests may proceed without delays or disruption by incomplete work. Check the function of each loop, including set points, alarms, displays, and operator interface. Check one loop for each type and 20% (min.) of all loops. Check data logging, alarm logging, and event logging. Correct deficiencies found and complete correction of deficiencies prior to shipment to site.
- (b) Failed Tests shall be repeated. With approval of the ENGINEER certain tests may be conducted by the I&C Supplier and Witnessed by the ENGINEER during START-UP.

B. INSTALLATION AND CONNECTION:

- 1. The Contractor shall install and connect all field-mounted components and assemblies under the criteria imposed in Part 1, 1.03, herein. The installation personnel shall be provided with a final reviewed copy of the Shop Drawings and data.
- 2. The instrument process sensing lines and air signal tubing shall, in general, be installed in a similar manner to the installation of conduit specified under Section 16050. Individual tubes shall be run parallel and near the surfaces from which they are supported.
- 3. Supports shall be used at intervals of not more than 3 feet of rigid tubing.
- 4. Bends shall be formed with the proper tool and to uniform radii and shall be made without deforming or thinning the walls of the tubing. Plastic clips shall be used to hold individual plastic tubes parallel. Ends of tubing shall be square cut and cleaned before being inserted in the fittings. Bulkhead fittings shall be provided at all panels.
- 5. The Contractor shall have a technical field representative of the I&C supplier to instruct these installation personnel on any and all installation requirements; thereafter, the technical field representative shall be readily available by telephone to answer questions and supply clarification when needed by the installation personnel.
- 6. Where primary elements (supplied by I&C supplier) shall be part of a mechanical system, the I&C supplier shall coordinate the installation of the primary elements with the mechanical system manufacturer.
- 7. Finally, after all installation and connection work has been completed, the technical field representative shall check it all for correctness, verifying polarity of electric power and signal connections, making sure all process connections are free of leaks, and all such similar details. If the initial inspection finds no deficiencies, the technical field representative shall proceed to the certification to the Contractor. Any completed work that is found to have deficiencies shall have those deficiencies corrected by installation

personnel at no additional cost to the Owner. The technical field representative shall then recheck the work after the identified deficiencies are corrected. If the technical field representative finds deficiencies in the follow-up inspection, then remedial action shall be taken by the Contractor at no cost to the Owner. This pattern shall be repeated until the installation is free from defect. The technical field representative shall then certify in writing to the Contractor that for each loop or system that he has inspected is complete and without discrepancies.

8. The field representative of the Single I&C supplier shall coordinate all work required to interface the new equipment and control devices with the existing equipment, including all required modifications to existing equipment and related devices.

C. CALIBRATION

- 1. All instruments and systems shall be calibrated after installation, in conformance with the component manufacturer's written instructions. This shall provide that those components having adjustable features are set carefully for the specific conditions and applications of this installation, and that the components and/or systems are within the specified limits of accuracy. Defective elements which cannot achieve proper calibration or accuracy, either individually or within a system, shall be replaced. This calibration work shall be accomplished by the technical field representatives of the I&C system supplier who shall certify in writing to the Contractor that for each loop or system all calibrations have been made and that all instruments are ready to operate. See section 3.02 supplements for sample "Instrumentation Calibration Sheet".
- 2. Proof of Conformance The burden of proof of conformance to specified accuracy and performance is on the Contractor using its designated Single I&C supplier. The Contractor's designer shall supply necessary test equipment and technical personnel if called upon to prove accuracy and/or performance, at no separate additional cost to the Owner, wherever reasonable doubt or evidence of malfunction or poor performance may appear within the guarantee period.

D. PRE-COMMISSIONING

- 1. The I&C Supplier shall test each loop (discrete and analog) to determine if it is functioning correctly. The I&C Supplier shall furnish a loop sheet for each loop to be tested. The loop sheet shall represent the actual "as-built" condition of the loop. The I&C Supplier shall perform a field functional loop test which shall be witnessed by the ENGINEER and OWNER. If the loop fails the functional test, the I&C Supplier shall coordinate repairs for the CONTRACTOR to correct whatever is wrong with the loop. The I&C Supplier shall retest the loop until it is approved.
- 2. Each loop shall be tested and approved by ENGINEER and OWNER until all loops have been approved.
- E. START-UP AND INSTRUCTION

1. When all systems are assessed by the Contractor to have been successfully carried through complete operational tests with a minimum of simulation, and the Engineer concurs in this assessment, plant start up by the Owner's operating personnel can follow. For a minimum of three times for (4) hours prior to start up, operating and maintenance personnel shall be instructed in the functions and operation of each system and shall be shown the various adjustable and set point features which may require readjustment, resetting or checking, re-calibration or maintenance by them from time to time. This instruction shall be scheduled at a time arranged with the Owner at least two (2) weeks in advance. Instruction shall be given by qualified persons who have been made familiar in advance with the systems. All equipment shall be checked during the first year of operation at intervals of three months for a period of not less than one day or as may be required to correct any defects to the satisfaction of the Owner.

F. MODIFICATIONS TO EXISTING FACILITIES

1. The Contractor shall make all modifications to existing equipment and control devices which are required to successfully install and integrate all new instrumentation equipment. All costs for any required modification and rehabilitation effort shall be included in the Contractor's original bid amount and no additional payment shall be allowed.

3.02 SUPPLEMENTS

- A. Supplements listed below, following "END OF SECTION" are part of this Specification.
 - 1. Loop Status Report
 - 2. Functional Acceptance Test Sheet
 - 3. Instrumentation Calibration Sheet

END OF SECTION

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SECTION 15060

PIPING AND FITTINGS

PART 4 - SCOPE

4.01 SCOPE

- A. The work included in this section consist of furnishing all material, equipment, labor and performing all operations necessary for the supply of all piping, fittings and accessories within the limits of work, as shown on the drawings and specified herein.
- B. Where references are made to other standards or codes, unless specific date references are indicated the latest edition of said standard or code shall govern.

4.02 PIPING LAYOUT

Field verify dimensions prior to preparation of layout and shop drawings. Obtain shop drawing approval prior to fabrication of piping. All items not specifically mentioned in the Project Manual or noted on the approved Drawings, but which are obviously necessary to make a complete working installation shall be included.

4.03 DELIVERY, STORAGE AND HANDLING

- A. During shipping, delivery and installation of pipe and accessories, handle in a manner as to ensure a sound undamaged condition.
- B. Exercise particular care not to injure pipe coatings.

PART 5 - PRODUCTS

5.01 PIPE AND FITTINGS

A. GENERAL

As used herein, "ANSI" denotes the American National Standards Institute, "AWWA" denotes the American Water Works Association, and "ASTM" denotes the American Society for Testing and Materials.

All pipe and fittings to be furnished hereunder shall conform to the referenced ANSI and/or AWWA Standard as modified herein, as appearing in the following sections.

All markings required on pipe and fittings, shall be clearly legible and located such that they will not be hidden or destroyed when assembled into the intended system.

B. PIPE

All pipes shall be ductile iron pipe conforming to ANSI/AWWA Standard C151/A21.51-02, "Ductile-Iron Pipe, Centrifugally Cast, for Water". All pipe and fittings for water applications shall be in full compliance with ANSI/NSF 61, "Drinking Water System Components-Health Effects". Manufacturers shall maintain their NSF certification for the duration of the Contract and any extensions thereof.

The pipe thickness and outside diameter of pipe for sanitary sewer and water usage shall conform to Tables 1 and 2 (for push-on and mechanical joint pipe, respectively) of ANSI/AWWA Standard C151/A21.51-02 for the following sizes (The pressure class specified is the minimum permitted):

Size Pressure Class

14-inch through 20-inch 250

For restrained joint pipe, the thickness of the pipe barrel remaining after grooves are cut, if required in the design of restrained end joints, shall not be less than the nominal wall thickness of equal sized non-restrained joint pipe as shown above.

Each piece of pipe shall be marked as required in Subsection 4.6 of AWWA C151-02. Letters and numerals on pipe sizes 12-inch and smaller shall be not less than 3/8-inch.

The Town absolutely reserves the right to require the use of "thickness" class pipe or higher pressure class pipe in applications where in the opinion of the EOR such use is in the best interest of the Town. The EOR's decision in this regard shall be final.

A sufficient quantity of non-toxic vegetable soap lubricant shall be supplied with each shipment of pipe. The soap lubricant shall be suitable for use in subaqueous trench conditions.

For flanged ductile-iron pipe with integrally cast flanges or threaded flanges, the nominal wall thickness of the pipe barrel shall be as specified in Section 3.03, "Joints and Accessories" under "Flanged Joints", herein below.

The single gasket push-on pipe shall be shipped in standard 18-foot or 20-foot lengths, but not both. The restrained single-gasket push-on joint pipe shall be shipped in standard 18 or 20-foot lengths as specified above or fabricated lengths as noted in each order. At least two lengths of each size of single gasket push-on pipe furnished under each order shall be tested with circumferential gauges to insure that the pipe may be cut at any point along its length and have an outside diameter which will be within the manufacturer's standard design dimensions and tolerances for plain pipe. These lengths shall be identified with an easily distinguished, painted marking, longitudinally along the full length of the pipe.

C. FITTINGS

1. Fittings Conforming with ANSI/AWWA C110/A21.11-98 (Water & Sewer Use)

Restrained push-on joint fittings shall be cast ductile iron for use with ductile-iron pipe as specified above. Standard mechanical joint, push-on joint and flanged joint fittings shall also be ductile iron for use with ductile-iron pipe as specified above. Cast ductile-iron fittings in the 3-inch through 24-inch size range shall be pressure rated at 350 psi, minimum; (except flange-joint fittings shall be rated at 250 psi, minimum); and in the 30-inch through 48-inch size range shall be pressure rated at 250 psi, minimum. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C110/A21.10-98, "Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids". In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-00, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings".

The weight of fittings shall be as given in ANSI/AWWA C110/A21.11-98 for ductile-iron fittings. The weight of mechanical joint fittings shall be as established in Tables 3 through 12. The weight of flanged joint fittings shall as established in Tables 13 through 20.

2. Fittings Conforming with ANSI/AWWA C153/A21.53-00 (Water & Sewer Use)

All fittings shall be cast ductile-iron for use with ductile-iron pipe as specified above. Fittings in the 3-inch through 24-inch size range shall be pressure rated at 250 psi, minimum; and in the 54inch through 48-inch size range shall be pressure rated at 250 psi, minimum (except for those fittings such as plugs, caps, and sleeves which are normally rated at a higher pressure). No flanged fittings or mixtures of flanged with other end type fittings will be allowed in the range of 3-inch through 48-inch since they are not covered in the AWWA Standard. Flanged fittings conforming with and covered by this standard are allowed in sizes, 54, 60 and 64-inch. In conformance with the standard, 54, 60 and 64-inch flanged tees, crosses and reducers with outlets of smaller dimension as listed in ANSI/AWWA C153/A21.53-00 are permitted. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C153/A21.53-00, "Ductile-Iron Compact Fittings for Water Service". In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-00, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings" except as otherwise allowed in C153. Mechanical joint glands shall be ductile-iron only.

Since the C153 Standard provides only minimum dimensions, fully detailed drawings of all fittings proposed shall be supplied by the manufacturer with his bid. The tabulated nominal weight of each size and type of fitting shall also be supplied by the manufacturer for all items proposed. This weight shall be that of the bare casting prior to application of any lining or coating. The weight of a fitting supplied under the contract shall not be less than ninety-five (95) percent of the tabulated nominal weight supplied by the manufacturer's catalog literature

for that fitting. Further, the weight of fittings supplied shall not be more than five (5) percent above the same tabulated nominal weight.

- D. JOINTS AND ACCESSORIES
 - 1. Push-On Type Joints (Single Gasket and Single Gasket with Gasket Restraint)

Push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-00, except that the gaskets for pipe and fittings shall be neoprene where so specified.

The required number of gaskets for each push-on joint pipe plus one extra for every 50 joints or fraction thereof, shall be furnished with each order. The gaskets shall be shipped in suitable protective containers. All single gasket pipe shall be as manufactured by United States Pipe and Foundry Company (Tyton), by the American Cast Iron Pipe Company (Fastite), by McWane, Inc. (Mix of Tyton and Fastite), Tyler/Union (Tyton) or approved equal.

Push-on joints together with both their regular and gasket-restraint gaskets shall be of the design, dimensions and tolerances of either those provided by American Cast Iron Pipe Company (Fastite/Fast-Grip) or those provided by United States Pipe and Foundry Company (Tyton/Field Lok). No other designs shall be acceptable. If required by the Town, the Vendor shall supply complete design drawings, with dimensions, tolerances and materials of the joint and gasket being supplied within fourteen (14) calendar days of the date of receipt of the letter, fax or E-mail requiring said submission. If so required by the Town, this submission shall be signed, sealed and dated by an Engineer registered to practice in the State where the manufacturer is located. If the pipe is of non-domestic origin, signing, sealing and dating of the submission, when required, shall be performed by an Engineer registered in the state where the Vendor's main office is located or the State of Florida, at the discretion of the Town its designee.

2. Mechanical Joints

Mechanical joints for fittings shall conform to ANSI/AWWA Standard C111/A21.11-00, except that the gaskets for each fitting under Groups D and D1 shall be neoprene. Bolt holes for mechanical joints shall be equally spaced, and shall straddle the vertical centerline. Tee head bolts and hexagonal nuts for all mechanical joints in fittings shall be of high strength low-alloy steel with composition, dimensions and threading as specified in ANSI/AWWA Standard C111/A21.11-00. Glands shall be of ductile-iron construction for ductile iron fittings, and cast gray iron or ductile iron for cast gray-iron fittings.

The proper number of gaskets, glands, bolts and nuts, all conforming to ANSI/AWWA Standard C111/A21.11-00, plus one extra gasket for every 10 joints or fraction thereof, shall be furnished with each order. The gaskets and joint accessories shall be shipped in suitable protective containers. Follower glands held in place with set screws will not be acceptable. Segmented glands will not be acceptable.

3. Mechanical Joint and Push On Joint Megalug-Type Restraining Systems

Use of this type of restraint is restricted to underground mechanical joint or push on joint applications and in general may not be used above grade or as a substitute for flanged joints. Any above grade applications will require submission of shop drawings of the piping system where they are utilized and may require design by a Florida registered Professional Engineer.

In any mechanical joint or push on joint underground piping system of 30-inch nominal diameter and below this type of restraint may be utilized as design or field conditions dictate. It is recognized that flange adapters of this type form a useful tool for adjusting lengths of flanged pipe runs in instances such as runs with a large number of deflections where it is almost impossible to predict all lengths correctly. Therefore, a very restricted number of these joints will be allowed in instances where it can be clearly shown to the satisfaction of the Engineer that they are necessary. This application is restricted to 20-inch nominal diameter and below. Further, this use shall be designed in and shall not be made as a field substitution. In all instances flange adapters shall be rated for a minimum working pressure of 250 psi with a minimum safety factor of 2:1. In no case will these flange adapters be used as a general substitute for standard flanged joints.

The Town absolutely reserves the right to require other forms of restraint where in the opinion of the EOR CEI the use of this form of restraint is not in the best interest of the Town and his decision shall be final.

The Megalug restraint systems manufactured by EBAA Iron Sales, Eastland Texas, will be considered the standard of quality for comparison purposes and if the Town has any doubts as to the durability, quality or ability to restrain of a proffered substitute, the entity offering the substitute shall bear the entire burden of proving this equality to the complete satisfaction of the EOR. Other manufacturers producing this type of restraint system shall submit data with their shop drawings showing that their restraint system has been in the marketplace for a minimum of three years in this country.

Each thrust-resistant mechanical joint or push on joint made up with this type of restraint and the pipe and fitting of which it is a part, shall be designed to withstand an axial thrust from an internal pipeline pressure of at least 150 psi at bulkhead conditions without reduction because of its position in the pipeline nor for support from external thrust blocks.

This type of joint restraint shall not be used above grade except as previously specified nor shall it be used as a carrier pipe within a casing. This type of restraint shall not be used with tape wrapped pipe or with too great a coating thickness on the exterior of the pipe.

4. Restrained Push-on Joints (Single Gasket Non-Gasket Restrained)

Restrained joints in pipe and fittings shall be of the single gasket push-on type, and shall conform to all applicable provisions of ANSI/AWWA Standard C111/A21.11-00, except that

gaskets for pipe and fittings shall be neoprene, where so specified, and the following requirements:

Thickness of the pipe barrel remaining at grooves cut, if required in the design of restrained end joints, shall not be less than the nominal wall thickness of equal sized non-restrained pipe as specified in Section 3.1 above. Restrained joints using field welding, set screws, or gaskets with expanding metal inserts will not be acceptable.

The restraining components, when not cast integrally with the pipe and fittings, shall be ductile iron or a high strength non-corrosive alloy steel.

Tee head bolts and hexagonal nuts for all restrained joints in pipe and fittings shall be of high strength low-alloy steel with composition, dimensions and threading as specified in ANSI/AWWA Standard C111/A21.11-00, except that the length of the bolts shall meet the requirements for the restrained joint design.

The proper number of gaskets, bolts, nuts and all necessary joint material, plus one extra gasket for every 10 joints or fraction thereof, shall be furnished with each order. The gaskets and joint accessories shall be shipped in suitable protection containers.

Each thrust-resistant joint and the pipe and fitting of which it is a part, shall be designed to withstand the axial thrust from an internal pipeline pressure of at least 150 psi at bulkhead conditions without reduction because of its position in the pipeline nor for support from external thrust blocks.

Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly. During deflection, all components in the restrained system shall be in contact to provide an equal force on all contact areas.

When restrained spigot ends are ordered for items of Group A, the corresponding bell ends of the pipe to be restrained (also within Group A), shall be furnished with the required matching restraining features at no additional cost other than the price bid per foot of pipe.

5. Flanged Joints

Connecting pieces with one end flanged and the other end either plain-end or mechanical joint, shall conform to ANSI/AWWA Standard C110/A21.10-98. Joint material for both the flanged end and the mechanical joint accessories for connecting pieces with a mechanical joint end shall be furnished as specified.

Flange adapters shall be used only on a restricted basis and shall not be used as a general substitute for regular flanged joints. Further, the Town absolutely reserves the right to require regular flanged or other types of joint when it is considered in the Town's best interest. The decision of the EOR shall be final in such situation. Flanges shall be made of ductile iron conforming with ASTM 536. Flange shall be restrained by a number of individual gripping

wedges operated by torque-limiting actuating screws. Each flange adapter shall have a permanently cast in identification number allowing tracing of the date, foundry and pour that fabricated the unit together with all test data for the material of the pour. Records for this purpose shall be retained by the foundry for a minimum of two years after the pour date and shall be supplied to the Department within no more than two weeks after request. Factor of safety shall be a minimum of 2 to 1.

Other types of flanged fittings, and flanged pipe, shall conform to the following requirements unless otherwise stated in the order:

Flanged fittings shall conform to ANSI/AWWA Standard C110/A21.10-98, as specified hereinabove.

Flanged ductile-iron pipe with integrally cast flanges shall be manufactured in accordance with ANSI/AWWA Standard C151/A21.51-02, and with provisions contained hereinabove for centrifugally cast ductile iron pipe, and shall be furnished with ANSI Standard Class 125 flanges, plain faced and drilled, conforming to ANSI Standard B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", latest revision. Hollow back flanges are not acceptable.

Flanged ductile-iron pipe with threaded flanges shall be manufactured in accordance with ANSI/AWWA Standard C115/A21.15-99, "Flanged Ductile-Iron Pipe With Ductile-Iron or Grey-Iron Threaded Flanges", and shall be rated for a working pressure of 250 psi, minimum. The nominal thickness of flanged ductile-iron pipe, 6-inch and larger, shall not be less than those shown in Table 1 of ANSI/AWWA Standard C115/A21.15-99. The nominal thickness of 4-inch flanged ductile-iron pipe shall be Class 54 (min.) conforming to Tables 3 and 4 of ANSI/AWWA Standard C151/A21.51-02. The pipe shall be furnished with ANSI Standard Class 125 flanges, plain faced and drilled, conforming to ANSI Standard B16.1, latest revision. Hollow back flanges and grey-iron flanges shall not be acceptable for use as threaded flanges. Threaded flanges shall be individually fitted and machine tightened on the threaded pipe by the manufacturer, and shall not be interchangeable in the field. Pipe lengths shall be as ordered. Removal of flanges, cutting and re-threading the pipe, and re-installing the flanges will not be permitted in any case.

All flanges on ductile-iron pipe and fittings shall be of ductile iron. All joint materials for flanged pipe and fittings, shall be supplied with all pipe or fittings ordered. Bolts and nuts shall comply with all requirements of Appendix Section A.1 of ANSI/AWWA Standard C115/A21.15-99 except that both shall be stainless steel. Unless ring gaskets are specifically called for in the order, gaskets shall be full-faced, and gaskets shall be of 1/8-inch thickness. Gaskets shall fully conform with the requirements of ANSI/AWWA Standard C115/A21.15-99 Appendix Section A.2 except that gaskets shall be SBR for water and neoprene for sewer usages.

5.02 QUALITY ASSURANCE

All pipe, fittings and other materials supplied under this Contract shall be subject to inspection while still on the delivery truck. It is the sole responsibility of the vendor and supplier to make prior contact with the CEI and or a Town representative and provide a minimum of 48-hours prior notice of delivery. When so notified, the CEI and/or the Town will make arrangements for inspection of the material upon arrival or within a reasonable time thereafter. Material will not be unloaded without inspections taking place either prior to or, if necessary for examination, during the unloading procedure. The Town will not be responsible for any delays or additional costs created by non-compliance with the requirement for prior notification or the requirement for thorough inspection.

Materials shall be delivered in complete compliance with the AWWA Standards as modified herein, without damage, and shall match or exceed the quality of any samples supplied. The Department absolutely reserves the right to require samples of any material supplied and to perform whatever tests considered by the CEI, whose decision shall be final, to be in the Town's best interest on said samples. Where such tests are of a destructive nature, the sample, if it passes the test will be paid for (at cost as shown by invoice) by the Town. Samples failing will be immediately replaced with suitable material at the supplier's/contractor's expense. Samples required prior to order as a condition for purchase or as a materials submittal for approval will be at the supplier's/contractor's expense but, if approved and not used for destructive tests, may be used in the work with permission from the CEI.

Materials found to be defective, not in strict compliance with the quality standards of samples supplied or these specifications shall be immediately returned to the vendor at his expense. If defects are discovered at a later time, the vendor shall be required to remove said items and shall bare all costs for so doing together with any replacement costs. Rejection of items may subject the vendor to liquidated and/or actual damages as specified elsewhere herein.

Foundries supplying materials shall maintain their metallurgical records for a minimum period of two years after fabrication and firms not doing so may be found in default.

Flaws which provide cause for rejection include but are not limited to; incorrect metallurgy or metallurgy which cannot be verified to the complete satisfaction of the EOR; foundry identification/location, size, pressure and material identification information lost, removed, nonexistent, or not visible when assembled; not in complete compliance with all applicable AWWA Standards as modified herein and/or these specifications; not in compliance with NSF; not in compliance with approved shop drawings; out of roundness in excess of AWWA requirements; dimensional differences in excess of AWWA requirements; rough exterior coating; chipped, cracked, scratched or otherwise damaged interior or exterior coatings or linings; interior or exterior coatings which are too thin; coatings too thick to allow proper assembly; coatings too thick to allow proper grip by restraining gaskets or other restraining elements; pin holes or honey combing of pipe; weld spatter or excess metal in gasket grooves

or the whole of the bell area; bell areas which are distorted or otherwise improperly cast; spigots which are out of round, not of proper dimension, or not beveled to an extent that will allow easy assembly of the pipe joint; gaskets which are defective or of the wrong material; lack of joint materials; improper or defective joint materials; bolting of the wrong material or size; electro galvanizing or other exterior plating when hot-dip galvanizing is required; incorrect, flawed or damaged interior coating or lining; lack or non-submittal of all required certifications; non-timely submission of certifications; incorrect/incomplete certifications or certifications lacking the signature, date and seal of a professional engineer when so required; flanges which are too thin, not a right angles to the pipe centerline, or otherwise distorted; together with all other flaws or defects which in the opinion of the Engineer, who's decision shall be final, adversely affect the assembly and/or function of the piping system as intended.

PART 6 - EXECUTION

- 6.01 General
 - A. Pipe and fittings shall at all times be handled with great care to avoid damage. In loading and unloading, they shall be lifted with cranes or hoists or slid or rolled on skidways in such manner as to avoid shock. Under no circumstances shall this material be dropped or allowed to roll or slide against obstructions.
 - B. All work shall be performed by skilled workmen experienced in similar installations. All pipe and fittings shall be adequately supported by clamps, brackets, straps, concrete supports, rollers or other devices as shown and/or specified. Supports or hangers shall be spaced so that maximum deflection between supports or hangers shall not exceed 0.050 inch for pipe filled with liquid, but shall not be further than 6 feet apart, whichever is closer, unless otherwise shown. All pipe supports shall be secured to structures by approved inserts or expansion shields and bolts.
 - C. All pipe shall be thoroughly cleaned internally before being installed. All pipes, except oxygen service, air and gas, shall be flushed with water and swabbed to assure removal of all foreign matter before installation. Air and gas piping shall be tapped with a hammer to loosen scale or other foreign matter that might be within the pipe, then thoroughly blown with a high pressure air hose. Air shall be from the Contractor's air compressor.
 - D. Whenever possible, the pipe will be installed with minimum 48-inches of cover, however, due to the numerous utilities in the area, this burial could change substantially.
 - E. At all horizontal or vertical pipe deviation, the Contractor shall install both restrained pipe and thrust blocks. Joints may only be opened to adjust alignment by half of the AWWA or manufacturer's recommended opening (which is smaller).
 - F. Pipe Sleeves and Wall Castings: Pipe sleeves and wall castings shall be provided at the

locations called for on the Drawings and/or specified herein. These units shall be as detailed and of the material as noted on the Drawings and/or specified herein. They shall be accurately set in the concrete or masonry to the elevations shown. All wall sleeves and castings required in the walls shall be in place when the walls are poured. Ends of all wall castings and wall sleeves shall be of a type consistent with the piping to be connected to them.

G. Tie Rods: Unless otherwise indicated on the Drawings, the size and number of tie rods for a joint or installation shall be as recommended by the manufacturer's design chart for a working pressure of 150 psi. Tie rods shall be installed as recommended by the manufacturer.

6.02 EXCAVATION FOR PIPING

- A. The Contractor shall make all excavation necessary for the construction of the pipelines, connections, valves and appurtenances, to the lines and grades shown on the Drawings.
- B. The trench shall be excavated at least 6 inches below pipe laying grade as shown on the Plans. All sheeting and shoring shall be installed at the Contractor's expense where it is necessary for pipe installation and property protection or required by the Trench Safety Act. The cost of dewatering any excavation shall be at the Contractor's expense. The disposal of water removed from an excavation shall be in a manner which will not create a hazard, or be detrimental to the public health or to public or private property.
- C. The Contractor shall obtain all necessary permits approving the location and proposed method of disposal before discharging water from any excavation into any portion of the public right-of-way or into any existing drainage structure or facility. All construction signs required shall be provided by the Contractor.

6.03 INSTALLATION OF PIPE, FITTINGS AND VALVES

- A. General:
 - 1. The design Drawings are in some cases diagrammatic. They may not show every bend, off-set, elbow or other fitting which may be required in the piping for installation in the space allotted. Careful coordination of the work of this Section with that of Division 2 is necessary to avoid conflicts. Install gravity lines at uniform grade to low point after field verification of low point invert.
 - 2. The centerline of the pipe shall not vary by more than 2 inches from the location shown on the Plans and the top of the pipe shall not vary by more than 2 inches from the established grade, except at points where this tolerance must be changed to clear obstructions, or make connections. Deviation from this location will be permitted only

upon written instructions from the Engineer.

- 3. Sandbags may be used to support the pipe in the ditch but no pipe shall be laid on blocks, except by the written permission of the EOR. The trench shall be dewatered to the extent that all poured lead joints in cast iron pipe and fittings may be made perfectly dry. Flanged joints, mechanical joints and push-on joints in cast iron pipe and fittings may be made under water.
- B. Installation of Ductile Iron Pipe
 - 1. All bends, tees, and plugs, unless otherwise specified, shall be backed with concrete to undisturbed ground. Provision shall be made to prevent concrete from adhering to plugs or bolts.
 - 2. Bolts, nuts and rubber gaskets for use in flanged and mechanical joints shall be stored under cover. Gaskets shall not be exposed to heat, light or any petroleum products, shall be kept clean and shall not be handled with greasy or dirty hands.
 - 3. Before making up flanged joints in cast iron pipe and fittings, the back of each flange under the bolt heads, and the face of each flange shall have all lumps, blisters and excess bituminous coating removed and shall be wire brushed and wiped clean and dry.
 - 4. Before laying the ductile iron pipe, all lumps, blisters and excess coal-tar coating shall be removed from the bell and spigot ends of each pipe and the outside of the spigot and the inside of the bell wire brushed and wiped clean and dry. The entire gasket groove area shall be free of bumps or any foreign matter which might displace the gasket. The cleaned spigot and gasket shall not be allowed to touch the trench walls or trench bottom at any time. Vegetable soap lubricant shall be applied in accordance with the pipe manufacturer's recommendations, to aid in making the joint. The workmen shall exercise caution to prevent damage to the gasket or the adherence of grease or particles of sand or dirt. Deflections shall be made only after the joint has been assembled.
 - 5. Cutting of ductile iron pipe for inserting valves, fittings, etc., shall be done by the Contractor with a mechanical pipe saw in a neat and workmanlike manner without damage to the pipe, the lining, or the coating.
 - 6. Unless otherwise directed, ductile iron pipe shall be laid with the bell ends facing in the direction of laying; and for lines on an appreciable slope, the bells shall, at the discretion of the Engineer, face upgrade.
 - 7. Push-on and mechanical joints in ductile iron pipe and fittings shall be made in accordance with the manufacturer's standards except as otherwise specified herein. Joints between push-on and mechanical joint pipe and/or fittings shall be made in accordance

with AWWA Standard Specifications, "Installation of Ductile Iron Water Mains and Appurtenances," C600-87, except that deflection at joints shall not exceed one-half of the manufacturer's recommended allowable deflection, or one-half of the allowable deflection specified in AWWA C600-87, whichever is the lesser amount.

- 8. Flanged joints shall be used only where indicated on the Plans. Before making up flanged joints in the pipeline, the back of each flange under the bolt heads and the face of each flange shall have all lumps, blisters and excess bituminous coating removed and shall be wire brushed and wiped clean and dry. Flange faces shall be kept clean and dry when making up the joint, and the workmen shall exercise caution to prevent damage to the gasket or the adherence of grease or particles of sand or dirt. Bolts and nuts shall be tightened by opposites in order to keep flange faces square with each other, and to insure that bolt stresses are evenly distributed.
- 9. Bolts and nuts in flanged and mechanical joints shall be tightened in accordance with the recommendations of the pipe manufacturer for a leak-free joint. The workmen shall exercise caution to prevent overstress. Torque wrenches shall be used until, in the opinion of the Engineer, the workmen have become accustomed to the proper amount of pressure to apply on standard wrenches.

6.04 FIELD QUALITY CONTROL

- A. All water mains shall be flushed to remove all sand, debris, rock and other foreign matter. Dispose of the flushing water without causing a nuisance or property damage.
- B. Pressure and Leakage Testing: All pumps, piping and gauges shall be furnished, installed and operated by the Contractor and all such equipment and devices and their installation shall be approved by the EORCEI. Pump shall be of a non-pulsating type suitable for this application and gauge accuracy certification may be required at the EOR's discretion. All pressure and leakage testing shall be done in the presence of a representative of the Department as a condition precedent to the approval and acceptance of the system.

END OF SECTION

SECTION 15100

VALVES, GENERAL

PART 1 - GENERAL

1.01 SCOPE

- A. The Contractor shall provide all tools, supplies, materials, equipment, and labor necessary for furnishing, installing, adjusting, and testing of all valves and appurtenant work, complete and operable. For buried valves, the Contractor shall furnish and install valve boxes to grade, with covers, extensions, and position indicators.
- B. The provisions of this Section shall apply to all valves and valve operators called out in the various Sections of these Specifications except where otherwise specified. Valves and operators in particular locations may require a combination of units, sensors, limit switches, and controls specified in other sections of these Specifications.
- C. All valves specified herein shall be furnished with an affidavit from the manufacturer(s) certifying that the valves furnished comply with the applicable provisions of the AWWA specifications, as modified herein. That they were factory tested in accordance with the AWWA Standard Leakage and Hydrostatic Tests as modified herein, with a certified test report furnished to the Town for each valve.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Piping, General
- B. Painting
- C. Equipment General Provisions
- D. Valve (by type) Specification Sections

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. <u>Codes:</u> All codes, as referenced herein, are specified in Section entitled "Reference Standards." As used herein, "ANSI" denotes the American National Standards Institute; "AWWA", the American Water Works Association; and "ASTM", the American Society for Testing and Materials.
- B. <u>Commercial Standards:</u>

ANSI/ASME B1.20.1	General Purpose Pipe Threads (Inch).
ANSI/ASME B31.1	Power Piping.

ASTM A 536	Specification for Ductile Iron Castings.
ASTM B 61	Specification for Steam or Valve Bronze Castings.
ASTM B 62	Specification for Composition Bronze or Ounce Metal Castings.
ASTM B 148	Specification for Aluminum-Bronze Castings.
ASTM B 584	Specification for Copper Alloy Sand Castings for General Applications.
ANSI/AWWA C500	Gate Valves for Water and Sewerage Systems.
AWWA C550	Protective Interior Coatings for Valves and Hydrants.

1.04 MANUFACTURER

All valves shall be the product of domestic manufacturing firms which have been engaged in the production of valves for not less than five (5) years.

1.05 QUALITY ASSURANCE

A. Valve Testing

The Contractor is advised that he is required to furnish all labor, materials and equipment necessary to pressure test each valve furnished by himself or the Town, bidirectionally, prior to installation, to the satisfaction of the Engineer of Record. If the valves are available, the tests shall be performed prior to the start of construction. Otherwise, the tests shall be performed as soon as the valves are available to afford the maximum time for any corrective work required. The Contractor shall include all costs for this requirement under the appropriate Proposal Item(s), no other compensation will be provided.

B. Bronze Parts

Unless otherwise specified, all interior bronze parts of valves shall conform to the requirements of ASTM B 62.

C. Provide valves that have the manufacturer's name and valve rating cast in body.

1.06 SUBMITTALS

- A. Shop Drawings of all valves.
- B. Affidavit of Compliance

Submit for all AWWA valves an affidavit of compliance certifying that the valves and the materials used in their construction conform to the applicable requirements of AWWA Specifications as revised and cited below, and that all tests specified have been performed and that all test requirements have been met.

C. Approved Drawings

The EOR's drawings, which constitute an integral part of this Contract, indicate the general layout of the complete system. Field verification of scale dimensions on plans is directed since actual locations, distances and levels will be governed by actual field conditions. Discrepancies shown on different Drawings, or between Drawings and actual field conditions, or between plans and specifications, shall promptly be brought to the attention of the EOR and the CEI, for a decision. All items not specifically mentioned in the specifications or noted on the Drawings, but which can be reasonably assumed as necessary to make a complete working installation shall be included.

PART 2 - PRODUCTS

- 2.01 VALVES
 - A. General:

The Contractor shall furnish all valves, gates, valve operating units, stem extensions, operators and other accessories as shown or specified. All valves and gates shall be new and of current manufacture. These valves shall be provided with valve boxes, covers and valve extensions. All valves shall have a minimum design pressure rating of 150 psi unless otherwise specified elsewhere herein.

- B. Cast iron parts of valves shall meet the requirements of ASTM A126, "Standard Specifications for Gray Iron Castings for Valves, Flanges and Pipe Fittings, Class 'B'." Flanged ends shall be flat-faced and have bolt circle and bolt patterns conforming to ANSI B16.1 Class 125.
- C. All castings shall be clean and sound, without defects of any kind and no plugging, welding or repairing of defects will be permitted. All bolt heads and nuts shall be hexagonal conforming to ANSI B18.2. Gaskets shall be full-face and made of synthetic elastomers in conformance with ANSI B16.21 suitable for the service characteristics, especially chemical compatibility and temperature. Non-ferrous alloys of various types shall be used for parts of valves as specified. Where no definite specification is given, the material shall be the recognized acceptable standard for that particular application.
- D. All buried valves shall be provided with cast-iron valve boxes unless otherwise indicated. The boxes shall conform with the Town and Miami-Dade County Standards and be installed

perpendicularly, centered around and covering the upper portions of the valve operator. The top of each valve box shall be placed flush with finish grade unless otherwise indicated on the Drawings. Valve boxes shall be as specified elsewhere in this Section.

E. Valve Flanges

The flanges of valves shall be in accordance with Section 15060, "Pipes and Fittings."

F. Gate Valve Stems

Gate valve stems shall be of bronze conforming to ASTM B62, containing not more than 5 percent of zinc nor more than 2 percent of aluminum.

G. Protective Coating

Except where otherwise specified, ferrous surfaces, exclusive of stainless steel surfaces, in the fluid passages of all valves 4-inch and larger shall receive an epoxy coating in accordance with AWWA C550. Flange faces of valves shall not be epoxy coated. The valve manufacturer shall certify in writing that such coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with these Specifications. Exterior coating shall be asphalt varnish conforming to Federal Specification TT-C-494A.

2.02 VALVE OPERATORS

- A. General
 - 1. All valves of a particular size and pressure rating by a given manufacturer shall be supplied with the same operator. No variation will be permitted during the contract. All valve operators, regardless of type, shall be installed, adjusted, and tested by the valve manufacturer at the manufacturing plant. Operator orientation shall be verified with the Department prior to fabrication. If this requirement is not met, changes to orientation shall be made at no cost the Department.
 - 2. All operators shall turn counter-clockwise to open. Operators shall have the open direction clearly and permanently marked. Field adjustment and testing of the operators and valves to ensure proper installation and operation shall be the responsibility of the Contractor.
 - 3. All manual operators shall be equipped with AWWA square nuts.
 - 4. Operation of valves and gates shall be designed so that the effort required to operate shall not exceed 40 pounds.

2.03 TORQUE LIMITING DEVICE

Each valve shall be provided with a torque limiting device designed to protect the actuator and valve parts. The device shall consist of an overtorque protection mechanism enclosed in a

hermetically sealed cast iron housing. The mechanism shall be permanently lubricated and factory set to trip between 200 and 220 ft. lbs. of applied torque. The housing shall have integrally cast, 2-inch AWWA operating nut and matching socket to operate and to fit over the actuator or extension shaft nuts, respectively. The socket shall be provided with a set screw to fit the device. The direction of rotation shall be permanently shown with word and arrow next to the operating nut. The entire device shall be coated inside and out with a 2-part epoxy. The torque limiting device shall be as manufactured by Annspach Controls Company of St. Louis, Missouri, or approved equal.

2.04 VALVE BOXES

Cast iron valve boxes shall be provided for all valves installed underground. All valves boxes shall be No. 2 or 3 in accordance with the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: All work shall be performed by skilled workmen experienced in similar installations. All valves shall be adequately supported by clamps, brackets, straps, concrete supports or other devices as shown or specified. All supports shall be secured to structures by approved inserts or expansion shields and bolts.
- B. All valves shall be thoroughly cleaned internally before being installed. Installation of valves shall be done in accordance with construction methods specified in "Pipes and Fittings" Section of these Specifications.
- C. Install valves as recommended by manufacturer.
- D. Install valves so that they are easily accessible for operation, visual inspection and preventive maintenance.
- E. Location of valves and chain operators: Install valves so as to be accessible for operation and free from interferences when operated. Position so that leakage will not contact any electrical equipment that may be located below.
- F. The installation of all underground valves shall include a valve box and riser in accordance with the Details shown on the Drawings for the various sizes and types of valves to be installed. Riser pipes and valve boxes shall be carefully centered and set flush with the finished grade if in paving, or with the top of the ground if out of paved areas. All valve boxes shall be held in position with concrete as shown on the Drawings.
- G. Upon completion of the Project, but prior to final acceptance, the Contractor in the presence of the CEI, shall fully open each valve installed by him, except at connections to existing

Town mains. For values 16-inch and larger, the Contractor, shall count the number of turns required to operate each value from a completely closed to a fully opened position, and shall paint the number on the bottom of the value box lid or manhole cover. Values at connections to existing Town mains shall only be operated by Town forces.

END OF SECTION

SECTION 15115

CHECK VALVES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish and install check valves complete and operable, including all appurtenances and accessories.

1.02 RELATED WORK SPECIFIED ELSEWHERE

Section 15100 - Valves, General.

PART 2 - PRODUCTS

2.01 CHECK VALVE

- A. General
 - 1. The swing-check valves shall be standard (plain), outside lever-and-weight or outside lever-and-spring types, for normal horizontal installations, conforming to all of the applicable requirements of the most current ANSI/AWWA Standard C508, "Swing-Check Valves for Waterworks Service, 2-in. Through 24 In. NPS", except as otherwise specified herein. The valves shall be iron body, bronze mounted and suitable for buried service.
 - 2. Valve bonnet opening shall be large enough to allow ample clearance for direct removal of disc by hand.
- B. External Ferrous Items

All external ferrous items, except cast iron, shall be hot-dipped galvanized in accordance with the most current ANSI/ASTM Standard A123, "Zinc (Hot-Galvanized) Coatings on Iron and "Steel Products", or ANSI/ASTM Standard A153, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware", or stainless steel.

C. Flanged Valves

Flanged valves shall have ends plain-faced and drilled conforming to ANSI Standard B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", Class 125. Bolt holes in the flanges shall be equally spaced and shall straddle the vertical and horizontal centerline. All joint materials for flanged valves will be furnished with the valves; neoprene for sewer and SBR for water applications.

D. Clapper.

- 1. The clapper shall swing clear of the waterway when the valve opens, permitting a full flow through the valve equal to the nominal diameter of the pipe.
- 2. The body and clapper seating surface shall be metal to metal, and shall be bronze.
- 3. The clapper disc and the clapper hinge arm, including the clapper disc cap screw, shall be bronze or cast iron. Clapper to hinge arm connection shall be such that the unit cannot be unscrewed by fluid flow.
- E. Clapper Hinge Pin
 - 1. The clapper hinge pin shall be stainless steel conforming to AISI Type 316. For check valves with outside levers, the clapper hinge pin shall rest in bronze bushings and shall extend through the casing on the right hand side when facing the valve inlet.
 - 2. The clapper hinge pins shall rest in bronze bushings provided with a packing type seal ("O"-rings are not acceptable) and shall extend through the casing on the right hand side when facing the valve inlet. An opening shall be provided in each of two bosses on the body for easy access to either end of the hinge pin. The openings shall be tapped and provided with plugs.
- F. See Part 2 of Section 15100, "Valves, General", for other components.

2.02 TESTING

All check valves shall be tested at the factory in accordance with Section 5.2 of the most current ANSI/AWWA Standard C508 and a Certified Test Report shall be furnished with each valve.

PART 3 - EXECUTION

3.01 GENERAL

All valves shall be installed in accordance with provisions of Section 15100, "Valves, General." Care shall be taken that all valves are well supported.

END OF SECTION

SECTION 15130

MISCELLANEOUS VALVES

PART 1 - GENERAL

1.01 SCOPE

The Contractor shall furnish and install miscellaneous valves as required, complete and operable, including all appurtenances and accessories.

1.02 RELATED WORK SPECIFIED ELSEWHERE

Section 15100 - Valves, General

PART 2 - PRODUCTS

2.01 AIR RELEASE VALVES (MANUAL) AND FLUSHING VALVE OUTLETS

- A. The air release valve and flushing valve assemblies shall be installed in accordance with the details shown in the Drawings. The following products shall be used to construct the assemblies:
- B. Angle Valves (for air release valve 2-inch screwed valves with handwheel, bronze and flushing valve outlet) body and composition disc, Nibco T311 or ITT Grinnell Fig. No. 3220
- C. Corporation Stops 1-1/2 inch, Mueller No. H-10003(for air release)
- D. Taps into ductile iron pipe for air release and flushing valve assemblies shall be AWWA Tapered thread only, and the Contractor shall provide suitable equipment for this purpose as approved by the EOR. After the tap has been made, and the corporation stop installed a pipe coveying potable water, the inside of the pipe around the stop and the exposed exterior surfaces of the stop shall be heavily coated with Kop-Coat Super Hi-Gard 891 White 1898, or approved equal. Where taps are made in a pipe conveying sewerage, the Contractor shall heavily coat the inside of the pipe around the stop and the exposed exterior surfaces of the stop with Bitumastic 300M, by Kop-Coat Co., or approved equal.
- E. The installation of air release valves shall include PVC. pipe, angle valves, corporation stop, and placing ductile iron riser pipes complete with valve boxes and covers, set in concrete in accordance with the Drawings.

2.02 SERVICE SADDLES

A. Service pipe saddle shall fit to the maximum O.D. of the saddle's range, and extend a minimum of 160 degrees around the pipe. When the saddle is used on pipe to the minimum

pipe size of the range, the saddle shall extend 180 degrees around the pipe. Straps shall have ends chamfered and be provided with Class 2 fit, National Coarse Threads. Saddle casting shall be ductile iron, double strap and shall have asphaltic coating. Straps shall be stainless steel. Valve gaskets shall be self sealing neoprene.

PART 3 - EXECUTION

3.01 GENERAL

- A. All valves shall be installed in accordance with provisions of Section 15100, "Valves, General." Care shall be taken that all valves in are well supported on each end of the valve.
- B. Installation of both manual and automatic air release valves shall be in accordance with subsection 2.01-B, above.
- C. All valves shall be installed in accordance with the supplier's printed recommendations.

END OF SECTION

SECTION 16010

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. Requirements specified within this section apply to all sections in Division 16, ELECTRICAL. Work specified herein shall be performed as if specified in the individual sections.

1.02 DESIGN REQUIREMENTS

A. All electronic boards as part of electrical equipment shall meet the atmospheric conditions of the space the equipment is installed in. All electronic boards which are not installed in a conditioned environment shall be fungus-resistant.

B. All electrical equipment shall be rated for the conditions the equipment is installed in.

1.03 STANDARDS, CODES, PERMITS, AND REGULATIONS

A. Perform all work; furnish and install all materials and equipment in full accordance with the latest applicable rules, regulations, requirements, and specifications of the following:

Local Laws and Ordinances.

State and Federal Laws.

National Electrical Code (NEC).

State Fire Marshal.

Underwriters' Laboratories (UL).

National Electrical Safety Code (NESC).

American National Standards Institute (ANSI).

National Electrical Manufacturer's Association (NEMA).

National Electrical CONTRACTOR'S Association (NECA) Standard of Installation.

Institute of Electrical and Electronics Engineers (IEEE).

Insulated Cable Engineers Association (ICEA).

Occupational Safety and Health Act (OSHA).

National Electrical Testing Association (NETA).

American Society for Testing and Materials (ASTM).

Florida Building Code, including Broward County amendments.

B. Conflicts, if any, which may exist between the above items, will be resolved at the discretion of the ENGINEER.

C. Wherever the requirements of the Specifications or Drawings exceed those of the above items, the requirements of the Specifications or Drawings govern. Code compliance is mandatory. Construe nothing in the Contract Documents as permitting work not in compliance with these codes.

D. Obtain all permits and pay all fees required by any governmental agency having jurisdiction over the work. Arrange all inspections required by these agencies. On completion of the work, furnish satisfactory evidence to the ENGINEER that the work is acceptable to the regulatory authorities having jurisdiction.

1.04 ELECTRICAL COORDINATION

A. Work Provided Under this Contract: See plans.

B. Temporary Power:

Provide temporary power for all office trailers and for all construction areas.

1.05 SUBMITTALS

A. Quality Control Submittals:

Voltage Field Test Results.

Voltage Balance Report.

Equipment Line Current Report

Factory test certification and reports for all major electrical equipment.

Site test certification and reports as specified in other Division 16, ELECTRICAL sections.

As part of the electrical submittal, the contractor shall provide a minimum of $\frac{1}{4}=1'-0''$ scaled layout of the electrical equipment in the electrical room or major electrical equipment in a mechanical room showing sizes of all equipment and their spatial relationship. Non-electrical equipment shall be approved before finalizing the electrical layout in mechanical rooms.

B. The following information shall be provided for all electrical equipment:

A copy of each specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph checkmarked to indicate specification compliance or marked to indicate requested deviations from specification requirements. Check-marks ($\sqrt{}$) 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. The remaining portions of the paragraph not underlined shall signify compliance on the part of the Contractor with the specifications. The submittal shall be accompanied by a detailed, written justification for each deviation.

Electrical equipment submittals shall be made by specification section. Submit one package per specification section and do not group multiple specification sections under one submittal package.

Provide complete conduit and equipment layouts: a scaled plan layout of the electrical room(s) showing spatial relationships of all equipment as well as the overall size of the room. Minimum scale shall be $\frac{1}{4}$ "=1'-0".

Provide a conduit plan for major power, instrumentation and control conduits, both interior and exterior, showing routing, size and stub up locations for buried or in slab conduits.

1.06 ENVIRONMENTAL CONDITIONS

A. All chemical rooms and areas shall be designated as corrosive.

B. All indoor chemical and process equipment areas shall be considered wet locations.

C. Electrical equipment in rooms designated as Classified by NFPA 70 (national electrical code) as Division 1 or Division 2 shall meet all requirements set forth for that classification as described in NEC article 500.

D. All outdoor electrical panel and instrumentation control panels, shall be mounted with supports to meet the local wind loading requirements, indicated or not on drawings. All panels shall be mounted steady and securely.

1.07 INSPECTION OF THE SITE AND EXISTING CONDITIONS

A. The Electrical Drawings were developed from past record drawings and information supplied by the OWNER. Verify all scaled dimensions prior to submitting bids.

B. Before submitting a bid, visit the site and determine conditions at the site and at all existing structures in order to become familiar with all existing conditions and electrical system which will, in any way or manner, affect the work required under this Contract. No subsequent increase in Contract cost will be allowed for additional work required because of the CONTRACTOR's failure to fulfill this requirement.

C. Carry out any work involving the shutdown of the existing services to any piece of equipment now functioning in existing areas at such time as to provide the least amount of inconvenience to the OWNER. Do such work when directed by the ENGINEER.

D. After award of Contract, locate all existing underground utilities at each area of construction activity. Protect all existing underground utilities during construction. Pay for all required repairs without increase in Contract cost, should damage to underground utilities occur during construction.

1.08 RESPONSIBILITY

A. The CONTRACTOR shall be responsible for:

Complete systems in accordance with the intent of these Contract Documents.

Coordinating the details of facility equipment and construction for all Specification Divisions which affect the work covered under Division 16, ELECTRICAL. Furnishing and installing all incidental items not actually shown or specified, but which are required by good practice to provide complete functional systems.

Coordinate with equipment supplier for dimensions of the equipment and ask the supplier to ship the equipment in section if the equipment is too large to enter the room (door) where the equipment will be installed. The cost to assembly the equipment at the job site shall be included in the bid price.

1.09 INTENT OF DRAWINGS

A. Electrical plan Drawings show only general location of equipment, devices, and raceway, unless specifically dimensioned. The CONTRACTOR shall be responsible for the proper routing of raceway, subject to the approval of the ENGINEER.

B. All electrical equipment sizes and characteristics have been based on manufacturer Cutler-Hammer. If the CONTRACTOR chooses to and is allowed to substitute, the CONTRACTOR shall be responsible for fitting all the equipment in the available space as shown on the Drawings.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide materials and equipment listed by UL wherever standards have been established by that agency.

B. Equipment Finish:

Provide manufacturers' standard finish and color, except where specific color is indicated.

If manufacturer has no standard color, provide equipment with ANSI No. 61, light gray color.

PART 3 -- EXECUTION

3.01 GENERAL

A. Electrical Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.

B. Install work in accordance with NECA Standard of Installation, unless otherwise specified.

3.02 LOAD BALANCE

A. Drawings and Specifications indicate circuiting to electrical loads and distribution equipment.

B. Balance electrical load between phases as nearly as possible on switchboards, panel boards, motor control centers, and other equipment where balancing is required.

C. When loads must be reconnected to different circuits to balance phase loads, maintain accurate record of changes made, and provide circuit directory that lists final circuit arrangement.

3.03 CHECKOUT AND STARTUP

A. Voltage Field Test:

Check voltage at point of termination of power company supply system to project when installation is essentially complete and is in operation.

Check voltage amplitude and balance between phases for loaded and unloaded conditions.

Record supply voltage (all three phases simultaneously on the same graph) for 24 hours during normal working day. Submit Voltage Field Test Report within 5 days of test.

Unbalance Corrections:

a. Make written request to power company to correct condition if balance (as defined by NEMA) exceeds 1 percent, or if voltage varies throughout the day and from loaded to unloaded condition more than plus or minus 4 percent of nominal.

b. Obtain a written certification from a responsible power company official that the voltage variations and unbalance are within their normal standards if corrections are not made.

B. Equipment Line Current Tests:

Check line current in each phase for each piece of equipment.

Make line current check after power company has made final adjustments to supply voltage magnitude or balance.

If any phase current for any piece of equipment is above rated nameplate current, prepare Equipment Line Phase Current Report that identifies cause of problem and corrective action taken.

C. Startup:

Demonstrate satisfactory operation of all 480 and 120-volt electrical equipment. Participate with other trades in all startup activities.

Assist the Instrumentation and Control (I&C) Contractor in verifying signal integrity of all control and instrumentation signals.

END OF SECTION

SECTION 16050 BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards that may be referenced in this section:
 - 1. American National Standards Institute (ANSI):
 - a. C55,1, Standard for Shunt Power Capacitors.
 - b. C62.11, Standard for Metal-Oxide Surge Arrestors for AC Circuits.
 - c. Z55.1, Gray Finishes for Industrial Apparatus and Equipment.
 - 2. American Society for Testing and Materials (ASTM):
 - a. A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - b. A240, Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.
 - c. A570, Standard Specification for Steel, Sheet, and Strip, Carbon, Hot-Rolled, Structural Quality.
 - 3. Federal Specifications (FS):
 - a. W-C-596, Connector, Receptacle, Electrical.
 - b. W-S-896E, Switches, Toggle, Flush Mounted.
 - 4. National Electrical Contractor's Association, Inc. (NECA): 5055, Standard of Installation.
 - 5. National Electrical Manufacturers Association (NEMA):
 - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 - b. AB 1, Molded Case Circuit Breakers and Molded Case Switches.
 - c. CP I, Shunt Capacitors.
 - d. ICS 2, Industrial Control Devices, Controllers, and Assemblies.
 - e. KS 1, Enclosed Switches.
 - f. LA I, Surge Arrestors.
 - g. PB 1, Panelboards.
 - h. ST 20, Dry-Type Transformers for General Applications.
 - i. WD I, General Requirements for Wiring Devices.
 - 6. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).
 - 7. Underwriters Laboratories, Inc. (UL):
 - a. 67, Standard for Panelboards.
 - b. 98, Standard for Enclosed and Dead-Front Switches.
 - c. 198C, Standard for Safety High-Intermpting-Capacity Fuses, Current-Limiting Types.
 - d. 198E, Standard for Class Q Fuses.
- e. 486E, Standard for Equipment Wiring Terminals.
- f. 489, Standard for Molded Case Circuit Breakers and Circuit Breaker Enclosures.
- g. 508, Standard for Industrial Control Equipment.
- h. 810, Standard for Capacitors.
- i. 943, Standard for Ground-Fault Circuit Interrupters.
- j. 1059, Standard for Terminal Blocks.
- k. 1561, Standard for Dry-Type General-Purpose and Power Transformers.

1.02 SUBMITTALS

- A. Shop Drawings:
 - 1. Device boxes for use in hazardous areas.
 - 2. Junction and pull boxes used at, or below, grade.
 - 3. Hardware.
 - 4. Terminal junction boxes.
 - 5. Panelboards and circuit breaker data.
 - 6. Fuses.
 - 7. Contactors.
 - 8. Transformers.
 - 9. All other miscellaneous material part of this project.
 - 10. Wire pulling compound.
- B. Quality Control Submittals:
 - 1. Test Report: Sound test certification for dry type power transformers (0 to 600-volt, primary).
- 1.03 QUALITY ASSURANCE
- A. UL Compliance: Materials manufactured within scope of Underwriters Laboratories shall conform to UL Standards and have an applied UL listing mark.
- B. Hazardous Areas: Materials and devices shall be specifically approved for hazardous areas of the class, division, and group shown and of a construction that will ensure safe performance when properly used and maintained.
- 1.04 SPARE PARTS
- A. Furnish, tag, and box for shipment and storage the following spare parts:
 - 1. Fuses, 0 to 600 Volts: Six of each type and each current rating installed.

PART 2 PRODUCTS

2.01 OUTLET AND DEVICE BOXES

- A. Sheet Steel: One-piece drawn type, zinc- or cadmium-plated.
- B. Cast Metal:
 - 1. Box: Cast ferrous metal.
 - 2. Cover: Gasketed, weatherproof, cast ferrous metal, with stainless steel screws.
 - 3. Hubs: Threaded.
 - 4. Lugs (Cast Mounting) Manufacturer:
 - a. Crouse-Hinds; Type FS or FD.
 - b. Appleton; Type FS or FD.

C. Cast Aluminum:

- 1. Material:
 - a. Box: Cast, copper-free aluminum.
 - b. Cover: Gasketed, weatherproof, cast copper-free aluminum with stainless steel screws.
- 2. Hubs: Threaded.
- 3. Lugs: Cast mounting.
- 4. Manufacturers:
 - a. Crouse-Hinds; Type FS-SA or FD-SA.
 - b. Appleton; Type FS or FD.
- D. PVC-Coated Sheet Steel:
 - 1. Type: One-piece.
 - 2. Material: Zinc- or cadmium-plated.
 - 3. Coating: All surfaces; 40-mil PVC.
 - 4. Manufacturer: Appleton.
- E. Nonmetallic:
 - 1. Box: PVC.
 - 2. Cover: PVC, weatherproof, with stainless steel screws.
 - 3. Manufacturer: Carlon; Type FS or FD, with Type E98 or E96 covers.
- 2.02 JUNCTION AND PULL BOXES

- A. Outlet Boxes Used as Junction or Pull Box: As specified under Article OUTLET AND DEVICE BOXES.
- B. Large Sheet Steel Box: NEMA 250, Type 1.
 - 1. Box: Code-gauge, galvanized steel.
 - 2. Cover: Full access, screw type.
 - 3. Machine Screws: Corrosion-resistant.
- C. Large Cast Metal Box: NEMA 250, Type 4.
 - 1. Box: Cast malleable iron, hot-dip galvanize finished, with drilled and tapped conduit entrances.
 - 2. Cover: Hinged with screws.
 - 3. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
 - 4. Manufacturers, Surface Mounted Type:
 - a. Crouse-Hinds; Series W.
 - b. O.Z./Gedney; Series Y.
 - 5. Manufacturers, Recessed Type:
 - a. Crouse-Hinds; Type WJBF.
 - b. O.Z./Gedney; Series YR.
- D. Large Stainless Steel Box: NEMA 250, Type 4X.
 - 1. Box: 14-gauge, ASTM A240, Type 316 stainless steel.
 - 2. Cover: Hinged with screws.
 - 3. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
 - 4. Manufacturers:
 - a. Hoffman Engineering Co.
 - b. Robroy Industries.
- E. Large Steel Box: NEMA 250, Type 4.
 - 1. Box: 12-gauge steel, with white enamel painted interior and gray primed exterior, over phosphated surfaces, with final ANSI Z55.1, No. 61 gray enamel on exterior surfaces.
 - 2. Cover: Hinged with screws.
 - 3. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
 - 4. Manufacturers:
 - a. Hoffman Engineering Co.
 - b. Robroy Industries.
- F. Large Nonmetallic Box:

- 1. NEMA 250, Type 4X.
- 2. Box: High-impact, fiberglass-reinforced polyester or engineered thermoplastic, with stability to high heat.
- 3. Cover: Hinged with screws.
- 4. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
- 5. Conduit hubs and mounting lugs.
- 6. Manufacturers:
 - a. Crouse-Hinds; Type NJB.
 - b. Carlon; Series N, C, or H.
 - c. Robroy Industries.
- G. Concrete Box:
 - 1. Box: Reinforced, cast concrete.
 - 2. Cover: Cast iron.
 - 3. Cover Marking: ELECTRICAL, TELEPHONE, or as shown.
 - 4. Manufacturers:
 - a. Brooks Products Inc.; No. 36/36T.
 - b. Qwikset; W 17.
- 2.03 FLOOR BOXES
- A. General: Shall comply with UL 514A for metallic outlet boxes, UL 514C for nonmetallic outlet boxes, and CSA 22.2 No. 18
- B. Approved Manufacturers
 - 1. Thomas & Betts: Steel City & Carlon Brands
 - 2. Approved Equal
- C. Flush Service Floor Boxes for Concrete Floors
 - 1. Power and communications outlets are installed at floor level
 - 2. Cast Iron for Slab-on-Grade Applications
 - a. Shall be fully adjustable
 - b. Round: Steel City 600 Series
 - c. Rectangular Multi-Gang: Steel City 640 Series
 - 3. Stamped Steel
 - a. Shall be fully adjustable
 - b. Round: Steel City 68 Series

- c. Rectangular Multi-Gang: Steel City 740 Series
- 4. Nonmetallic
 - a. Round: Carlon E971FB Series
 - b. Rectangular Gangable: Carlon E976RFB Series
- 5. Flush Service Covers
 - a. Steel City
 - 1. Round: P60 Series
 - 2. Rectangular: P64 Series
 - 3. Materials: Brass, Aluminum, Nonmetallic
 - b. Carlon
 - 1. Round: E97 Series
 - 2. Rectangular: E976 Series
 - 3. Materials: Brass, Stainless Steel, Nonmetallic
- D. Recessed Service Floor Boxes for Concrete Floors
 - 1. Power and communications outlets are installed below floor level cover shall close fully when outlets are in use
 - 2. Two Compartments for Power and Communications
 - a. Cast Iron for Slab-on-Grade: Steel City 664-CI
 - b. Stamped Steel: Steel City 664-SC
 - c. Shallow, Stamped Steel: Steel City 664-S
 - d. Recessed Service Covers: Solid Brass, Aluminum, Nonmetallic
 - 3. Four Compartments for Power and Communications
 - a. Cast Iron for Slab-on-Grade: Steel City 665-CI
 - b. Stamped Steel: Steel City 665-SC
 - c. Shallow, Stamped Steel: Steel City 668-S
 - d. 2" KO's for AV, Stamped Steel: Steel City 665-AV2
 - e. Recessed Service Covers
 - 1. Steel City 665 Series: Solid Brass, Aluminum, Nonmetallic
 - 2. Steel City 668 Series: Zinc, Powder-Coated
 - 4. Six Compartments for Power and Communications
 - a. Stamped Steel: Steel City 667-SC
 - b. Recessed Service Covers: Nonmetallic
- E. Fire-Rated Poke Through Systems for Above-Grade Concrete Floors

- 1. Shall meet the requirements of UL 263
- 2. For use in up to 2-hour fire rated floors poke through shall maintain the fire rating of the floor.
- 3. Installation Spacing: Minimum of 2 ft. on center, not more than one poke through per 65 sq. ft. of floor area in each span per the UL Fire Resistance Directory
- 4. Flush Service Poke Through Systems
 - a. Power and communications outlets are installed at floor level
 - b. Two Power Receptacles & Two Data Jacks
 - 1. 3" Core Drill
 - 2. Steel City FPT3 Series
 - c. Four Power Receptacles & Four Data Jacks
 - 1. 4" Core Drill
 - 2. Steel City FPT4 Series
 - 3. Power Receptacles can be wired as Isolated Ground
 - d. Two Power Receptacles & Six Data Jacks
 - 1. 4" Core Drill
 - 2. Steel City FPT4 Series
 - 3. Power Receptacles can be wired as Isolated Ground
 - e. Flush Covers: Solid Brass, Aluminum
- 5. Furniture Feed Poke Through Systems
 - a. For feeding power and communications cabling to modular furniture
 - b. ³/₄" Hub for Power, 1-1/4" Hub for Communications: Steel City FFPT4 Series
 - c. Concentric 1-1/4" & 2" Hubs for Communications: Steel City FFPT3 Series
 - d. Furniture Feed Covers: Solid Brass, Aluminum
- F. Access Floor Modules for Raised Floors
 - 1. Box shall drop into an opening in the floor tile.
 - 2. Stamped steel box w/ nonmetallic cover
 - 3. Steel City AFM Series
 - a. 2 Compartment: AFM-2

- b. 3 Compartment: AFM-4
- c. 3 Compartment, Round: AFM-4R
- d. 6 Compartment: AFM-6
- e. 10 Compartment: AFM-8
- G. Floor Boxes for Wood Sub-Floors
 - 1. Steel City 60W Series
 - a. Flush Service
 - b. Rectangular Mult-Gang
 - c. Stamped Steel
 - d. Covers: P64 Series, Brass, Aluminum, Nonmetallic
- 2.04 TELEPHONE TERMINAL CABINET (TTC)
- A. Provide 3/4-inch thick, fire-resistant, 4-foot by 8-foot plywood backboard.
- B. Provide No. 2 ground wire to TTC from main ground in SSWBD.
- C. Provide duplex receptable (GFI) next to TTC.
- 2.05 WIRING DEVICES
- A. Switches:
 - 1. NEMA WD I and FS W-S-896E.
 - 2. Specification grade, totally-enclosed, ac type, with quiet tumbler switches and screw terminals.
 - 3. Capable of controlling 100 percent tungsten filament and fluorescent lamp loads.
 - 4. Rating: 20 amps, 120/277 volts.
 - 5. Color:
 - a. Office Areas: Ivory.
 - b. Other Areas: Brown.
 - 6. Switches with Pilot Light: 125-volt, neon light with red jewel, or lighted toggle when switch is ON.
 - 7. Manufacturers:
 - a. Bryant.
 - b. Leviton.
 - c. Hubbell.
 - d. Pass and Seymour.
 - e. Arrow Hart.
- B. Receptacle, Single and Duplex:

- 1. NEMA WD 1 and FS W-C-596.
- 2. Specification grade, two-pole, three-wire grounding type with screw type wire terminals suitable for No. 10 AWG.
- 3. High strength, thermoplastic base color.
- 4. Color:
 - a. Office Areas: Ivory.
 - b. Other Areas: Brown.
- 5. Contact Arrangement: Contact to be made on two sides of each inserted blade without detent.
- 6. Rating: 125 volts, NEMA WD 1, Configuration 5-20R, 20 amps.
- 7. Manufacturers:
 - a. Bryant.
 - b. Leviton.
 - c. Hubbell.
 - d. Pass and Seymour.
 - e. Sierra.
 - f. Arrow Hart.
- C. Receptacle, Ground Fault Circuit Interrupter: Duplex, specification grade, tripping at 5 mA.
 - 1. Color: Ivory.
 - 2. Rating: 125 volts, NEMA WD 1, Configuration 5-20R, 20 amps, capable of interrupting 5,000 amps without damage.
 - 3. Size: For 2-inch by 4-inch outlet boxes.
 - 4. Standard Model: NEMA WD 1 with No. 12 AWG copper USE/RHH/RHW-XLPE insulated pigtails and provisions for testing.
 - 5. Feed-Through Model: NEMA WD 1, with No. 12 AWG copper USE/RHH/RHW-XLPE insulated pigtails and provisions for testing.
 - 6. Manufacturers:
 - a. Pass and Seymour.
 - b. Bryant.
 - c. Leviton.
 - d. Hubbell.
 - e. Arrow Hart.
- D. Receptacle, Special-Purpose:
 - 1. Rating and number of poles as indicated or required for anticipated purpose.
 - 2. Matching plug with cord-grip features for each special-purpose receptacle.
- E. Multioutlet Surface Raceway System: Three-wire grounding receptacles, spaced on 6-inch centers with insulated grounding conductor to each receptacle.

- 1. Color: Gray with black receptacles.
- 2. Manufacturers:
 - a. Plugmold; 2000.
 - b. Walker; Duct 2GW.

2.06 DEVICE PLATES

- A. General: Sectional type plates not permitted.
- B. Plastic:
 - 1. Material: Specification grade, 0.10-inch minimum thickness, noncombustible, thermosetting.
 - 2. Color: To match associated wiring device.
 - 3. Mounting Screw: Oval-head metal, color matched to plate.
- C. Metal:
 - 1. Material: Specification grade, one-piece, 0.040-inch nominal thickness stainless steel.
 - 2. Finish: ASTM A167, Type 302/304, satin.
 - 3. Mounting Screw: Oval-head, finish matched to plate.

D. Cast Metal:

- 1. Material: Malleable ferrous metal, with gaskets.
- 2. Screw: Oval-head stainless steel.
- E. Engraved:
 - 1. Character Height: 3/16 inch.
 - 2. Filler: Black.
- F. Weatherproof:
 - 1. For Receptacles: Gasketed, cast metal or stainless steel, with individual cap over each receptacle opening.
 - 2. Mounting Screw: Stainless steel.
 - a. Cap Spring: Stainless steel.
 - b. Manufacturers:
 - 1) General Electric.
 - 2) Bryant.

- 3) Hubbell.
- 4) Sierra.
- 5) Pass and Seymour.
- 6) Crouse-Hinds; Type WLRD or WLRS.
- 7) Bell.
- 8) Arrow Hart.
- 3. For Switches: Gasketed, cast metal incorporating external operator for internal switch.
 - a. Mounting Screw: Stainless steel.
 - b. Manufacturers:
 - 1) Crouse-Hinds; DS-181 or DS-185.
 - 2) Appleton; FSK-LVTS or FSK-IVS.
- G. Raised Sheet Metal: 1/2-inch high zinc- or cadmium-plated steel designed for one-piece drawn type sheet steel boxes.
- 2.07 LIGHTING AND POWER DISTRIBUTION PANELBOARD (LP, IP, AND PP PANEL)
 - A. NEMA PB I, NFPA 70, and UL 67, including panelboards installed in motor control equipment.
 - B. Panelboards and Circuit Breakers: Suitable for use with 75 degrees C wire at full NFPA 70, 75 degrees C ampacity.
 - C. Short-Circuit Current Equipment Rating: Fully rated; series connected unacceptable.
 - D. Rating: If not otherwise shown in plans. Applicable to a system with available short-circuit current of 25,000 amperes rms symmetrical at 208Y/120 or 120/240 volts and 65,000 amperes rms symmetrical at 480Y/277 volts.
 - E. Where ground fault interrupter circuit breakers are indicated or required by code: 5 mA trip, 10,000 amps interrupting capacity circuit breakers.
 - F. Cabinet: As shown on plans.
 - G. Bus Bar:
 - 1. Material: Copper, full sized throughout length.
 - 2. Provide for mounting of future circuit breakers along full length of bus regardless of number of units and spaces shown. Machine, drill, and tap as required for current and future positions.
 - 3. Neutral: Insulated, rated 150 percent of phase bus bars with at least one terminal screw for each branch circuit.

- 4. Ground: Copper, installed on panelboard frame, bonded to box with at least one terminal screw for each circuit.
- 5. Lugs and Connection Points:
 - a. Suitable for either copper or aluminum conductors.
 - b. Solderless main lugs for main, neutral, and ground bus bars.
 - c. Subfeed or through-feed lugs as shown.
- 6. Bolt together and rigidly support bus bars and connection straps on molded insulators.
- H. Circuit Breakers:
 - 1. NEMA AB 1 and UL 489.
 - 2. Thermal-magnetic, quick-make, quick-break, molded case, of the indicating type showing ON/OFF and TRIPPED positions of operating handle.
 - 3. Noninterchangeable, in accordance with NFPA 70.
 - 4. Locking: Provisions for handle padlocking, unless otherwise shown.
 - 5. Type: Bolt-on circuit breakers in all panelboards.
 - 6. Multipole circuit breakers designed to automatically open all poles when an overload occurs on one pole.
 - 7. Do not substitute single-pole circuit breakers with handle ties for multipole breakers.
 - 8. Do not use tandem or dual circuit breakers in normal single-pole spaces.
 - 9. Ground Fault Interrupter:
 - a. Equip with conventional thermal-magnetic trip and ground fault sensor rated to trip in 0.025 second for a 5-milliampere ground fault (UL 943, Class A sensitivity).
 - b. Sensor with same rating as circuit breaker and a push-to-test button.
- I. Manufacturers:
 - 1. Square D;
 - 2. Or approved equal.
- 2.08 MINI-POWER CENTER (MPC)
- A. General: Transformer, primary and secondary main circuit breakers, and secondary panelboard section enclosed in NEMA 250, Type 4X enclosure. Complete MPC shall be rated for 22,000 amperes RMS symmetrical.
- B. Transformer:
 - 1. Type: Dry, self-cooled, encapsulated.
 - 2. Insulation: Manufacturer's standard, with UL 1561 temperature rise.

- 3. Full capacity, 2-1/2 percent voltage taps, two above and two below normal voltage.
- 4. Primary Voltage: See plans.
- 5. Secondary Voltage: See plans.
- C. Panelboard: Full, UL 489, short-circuit current rated.
 - 1. Type: Thermal-magnetic, quick-make, quick-break, indicating, with noninterchangeable molded case circuit breakers.
 - 2. Number and Breaker Ampere Ratings: Refer to Panel Schedule.
- 2.09 CIRCUIT BREAKER, INDIVIDUAL, 0 TO 600 VOLTS
- A. NEMA AB I, UL 489 listed for use at location of installation.
- B. Minimum Interrupt Rating: As shown or as required.
- C. Thermal-magnetic, quick-make, quick-break, indicating type, showing ON/OFF and TRIPPED indicating positions of the operating handle.
- D. Suitable for use with 75 degrees C wire at full NFPA 70, 75 degrees C ampacity.
- E. Locking: Provisions for padlocking handle.
- F. Multipole breakers to automatically open all poles when an overload occurs on one-pole.
- G. Enclosure: NEMA 250, Type 12, Industrial Use, 4X outdoors, wet locations and corrosive areas, unless otherwise shown.
- H. Interlock: Enclosure and switch shall interlock to prevent opening cover with switch in the ON position.
- I. Do not provide single-pole circuit breakers with handle ties where multipole circuit breakers are shown.
- 2.10 USED SWITCH, INDIVIDUAL, 0 TO 600 VOLTS
- A. UL 98 listed for use and location of installation.
- B. NEMA KS 1 and UL 98 Listed for application to system with available short circuit current of 22,000 amps rms symmetrical.
- C. Quick-make, quick-break, motor rated, load-break, heavy-duty (HD) type with external markings clearly indicating ON/OFF positions.

- D. Suitable for use with 75 degrees C wire at full NFPA 70, 75 degrees C ampacity.
- E. Fuse mountings shall reject Class H fuses and accept only current-limiting fuses specified.
- F. Enclosure: NEMA 250, Type 12, Industrial Use, 4X outdoors, wet locations and corrosive areas, unless otherwise shown.
- G. Interlock: Enclosure and switch to prevent opening cover with switch in the ON position.
- 2.11 NONFUSED SWITCH, INDIVIDUAL, 0 TO 600 VOLTS
- A. NEMA KS 1.
- B. Quick-make, quick-break, motor rated, load-break, heavy-duty (HD) type with external markings clearly indicating ON/OFF positions.
- C. Suitable for use with 75 degrees C wire at full NFPA 70, 75 degrees C ampacity.
- D. Enclosure: NEMA 250, Type 12, industrial use, 4X- outdoors, wet locations and corrosive areas, unless otherwise shown.
- E. Interlock: Enclosure and switch to prevent opening cover with switch in the ON position.
- 2.12 FUSE, 0 TO 600 VOLTS
- A. Current-limiting, with 200,000 ampere rms interrupting rating.
- B. Provide to fit mountings specified with switches and features to reject Class H fuses.
- C. Motor and Transformer Circuits, 0- to 600-Volt:
 - 1. Amperage: 0 to 600.
 - 2. UL 198E, Class RK-1, dual element, with time delay.
 - 3. Manufacturers:
 - a. Bussmann; Type LPS-RK.
 - b. Littlefuse; Type LLS-RK.
- D. Motor and Transformer Circuits, 0- to 250-Volt:
 - 1. Amperage: 0 to 600.
 - 2. UL 198E, Class RK-1, dual element, with time delay.
 - 3. Manufacturers:

- a. Bussmann; Type LPN-RK.
- b. Littlefuse; Type LLN-RK.
- E. Feeder and Service Circuits, 0- to 600-Volt:
 - 1. Amperage: 0 to 600.
 - 2. UL 198E, Class RK-I, dual element, with time delay.
 - 3. Manufacturers:
 - a. Bussmann; Type LPS-RK.
 - b. Littlefuse; Type LLS-RK.
- F. Feeder and Service Circuits, O- to 250-Volt:
 - 1. Amperage: 0 to 600.
 - 2. UL 198E, Class RK-I, dual element, with time delay.
 - 3. Manufacturers:
 - a. Bussmann; Type LPN-RK.
 - b. Littleluse; Type LLN-RK.
- G. Feeder and Service Circuits, 0- to 600-Volt:
 - 1. Amperage: 601 to 6,000.
 - 2. UL 198C, Class L, double O-rings and silver links.
 - 3. Manufacturers:
 - a. Bussmann; Type KRP-C.
 - b. Littlefuse; Type KLPC.

2.13 PUSHBUTTON, INDICATING LIGHT, AND SELECTOR SWITCHES

- A. Contact Rating: NEMA ICS 2, Type A600.
- B. Selector Switch Operating Lever: Standard.
- C. Indicating Lights: Push-to-test.
- D. Pushbutton Color:
 - 1. ON or START: Black.
 - 2. OFF or STOP: Red.
- E. Pushbuttons and selector switches lockable in the OFF position where indicated.
- F. Legend Plate:

- 1. Material: Aluminum.
- 2. Engraving: 11 character/spaces on one line, 14 character/spaces on each of two lines, as required, indicating specific function.
- 3. Letter Height: 7/64 inch.
- G. Manufacturers:
 - 1. Heavy-Duty, Oiltight Type:
 - a. General Electric; Type CR 104P.
 - b. Square D; Type T.
 - c. Cutler-Hammer; Type 10250T.
 - 2. Heavy-Duty, Watertight, and Corrosion-Resistant Type:
 - a. Square D; Type SK.
 - b. General Electric; Type CR 104P.
 - c. Cutler-Hammer; Type E34.
 - d. Crouse-Hinds; Type NCS.

2.14 TERMINAL JUNCTION BOX

- A. Nema 4X 316 SS with backplate, powder coated white enclosure.
- B. Cover: Hinged, unless otherwise shown.
- C. Terminal Blocks: Provide separate connection point for each conductor entering or leaving box.
 - 1. Spare Terminal Points: 25 percent.
- D. Interior Finish: Paint with white enamel, powder coat or lacquer.
- E. Divider: Provide separation between control and power cables.
- 2.15 TERMINAL BLOCK (0 TO 600 VOLTS)
- A. UL 486E and UL 1059.
- B. Size components to allow insertion of necessary wire sizes.
- C. Capable of termination of all control circuits entering or leaving equipment, panels, or boxes.

- D. Screw clamp compression, dead front barrier type, with current bar providing direct contact with wire between the compression screw and yoke.
- E. Yoke, current bar, and clamping screw of high strength and high conductivity metal.
- F. Yoke shall guide all strands of wire into terminal.
- G. Current bar shall ensure vibration-proof connection.
- H. Terminals:
 - 1. Capable of wire connections without special preparation other than stripping.
 - 2. Capable of jumper installation with no loss of terminal or rail space.
 - 3. Individual, rail mounted.
- I. Marking system allowing use of preprinted or field-marked tags.
- J. Manufacturers:
 - 1. Weidmuller.
 - 2. Ideal.
 - 3. Electrovert.
- 2.16 MAGNETIC CONTROL RELAY
- A. NEMA ICS 2, Class A600 (600 volts, 10 amps continuous, 7,200VA make, 720VA break), industrial control with field convertible contacts.
- B. Time Delay Relay Attachment:
 - 1. Pneumatic type, timer adjustable from 0.2 to 60 seconds (minimum).
 - 2. Field convertible from ON delay to OFF delay and vice versa.
- C. Latching Attachment: Mechanical latch having unlatching coil and coil clearing contacts.
- D. Manufacturers:
 - 1. Cutler-Hammer; Type M-600.
 - 2. General Electric; Type CR120B.
- 2.17 RESET TIMER
- A. Drive: Synchronous motor, solenoid operated clutch.

- B. Mounting: Semiflush, panel.
- C. Contacts: 10-amp, 120-volt.
- D. Manufacturers:
 - 1. Eagle Signal; Bulletin 125.
 - 2. Automatic Timing and Controls; Bulletin 305.
- 2.18 ELAPSED TIME METER
- A. Drive: Synchronous motor.
- B. Range: 0 to 99,999.9 hours, nonreset type.
- C. Mounting: Semiflush, panel.
- D. Manufacturers:
 - 1. General Electric; Type 240, 2-1/2-inch Big Look.
 - 2. Eagle Signal; Bulletin 705.

2.19 MAGNETIC CONTACTOR

- A. NEMA ICS 2, UL 508.
- B. Electrically operated, electrically held.
- C. Main Contacts:
 - 1. Power driven in one direction with gravity dropout.
 - 2. Silver alloy with wiping action and arc quenchers.
 - 3. Continuous-duty, rated 30 amperes, 600-volt.
 - 4. Three-pole.
- D. Control: Two-wire.
- E. One normally open and one normally closed auxiliary contacts rated 10 amperes at 480-volt.
- F. Enclosure: NEMA 250, Type 12, unless otherwise shown.

- G. Manufacturers:
 - 1. Westinghouse; Class A211.
 - 2. General Electric; CR 353.
 - 3. Allen-Bradley; Bulletin 500 Line.

2.20 MAGNETIC LIGHTING CONTACTOR

- A. NEMA ICS 2, UL 508.
- B. Electrically operated by dual-acting, single coil mechanism.
- C. Inherently interlocked and electrically held in both OPEN and CLOSED position.
- D. Main Contacts:
 - 1. Power driven in both directions.
 - 2. Double-break, continuous-duty, rated 20 amperes, 600 volts, withstand rating of 22,000 amps rms symmetrical at 250 volts.
 - 3. Marked for electric discharge lamps, tungsten, and general-purpose loads.
 - 4. Position not dependent on gravity, hooks, latches, or semi-permanent magnets.
 - 5. Capable of operating in any position.
 - 6. Visual indication for each contact.
- E. Auxiliary contact relay for three-wire control.
- F. One normally open and one normally closed auxiliary contacts rated 10 amperes at 480-volt.
- G. Fully rated neutral plate.
- H. Provision for remote pilot lamp with use of auxiliary contacts.
- I. Clamp type, self-rising terminal plates for solderless connections.
- J. Enclosure: NEMA 250, Type 12, Dust-Tight, Drip-Tight, Industrial Use, unless otherwise shown.
- K. Manufacturers:
 - 1. ASCO.
 - 2. Westinghouse; Class A202.
 - 3. General Electric; Class 360.

2.21 INDUSTRIAL CAPACITORS

- A. UL 810, NEMA CP1, ANSI C55.1, and NFPA 70, Article 460.
- B. Enclosed, outdoor, weatherproof, three-phase capacitor units containing internally mounted, indicating type, high interrupting-capacity, current limiting fuses and discharge resistors.
- C. Units containing PCB dielectric fluid are unacceptable.
- D. Kilovar Ratings:
 - 1. Kilovar ratings of capacitors connected to individual motor circuits were selected based on expected motor power factor.
 - 2. Check motor nameplate and manufacturer's power factor and no-load current data for actual motor installed.
 - 3. Reduce capacitor kVAR if required, so the size does not exceed the motor manufacturer's recommended maximum size, and so it does not exceed the value required to raise motor no-load power factor to 0.95.
 - 4. Manufacturers:
 - a. ABB.
 - b. Square D.

2.22 THERMOSTAT

- A. Rating: 7.4 amps continuous, 44 amps locked rotor current at 120 volts and 3.7 amps continuous, 22 amps locked rotor current at 240 volts.
- B. Line voltage, single-stage, treated to resist corrosion, dust, dirt, and humidity with sealed SPDT contacts.
- C. Heating Adjustment Range: 35 to 100 degrees F.
- D. Cooling or Ventilating Adjustment Range: 70 to 140 degrees F.
- E. Manufacturer: Honeywell; Type T631F1084.
- 2.23 DRY TYPE TRANSFORMER (0- TO 600-VOLT PRIMARY)
- A. UL 1561, NEMA ST 20, unless otherwise indicated.

- B. Self-cooled, two-winding, UL K-4 rated for nonlinear loads.
- C. Insulation Class and Temperature Rise: Manufacturer's standard.
- D. Core and Coil:
 - 1. Encapsulated for single-phase units 1/2 to 25 kVA and for three-phase units 3 to 15 kVA.
 - 2. Thermosetting varnish impregnated for single-phase units 37.5 kVA and above, and for three-phase units 30 kVA and above.
- E. Enclosure:
 - 1. Single-Phase, 3 to 25 kVA: NEMA 250, Type 3R, non-ventilated.
 - 2. Single-Phase, 37-1/2 kVA and Above: NEMA 250, Type 2, ventilated.
 - 3. Three-Phase, 3 to 15 kVA: NEMA 250, Type 3R, nonventilated.
 - 4. Three-Phase, 30 kVA and Above: NEMA 250, Type 2, ventilated.
 - 5. Outdoor Transformers: NEMA 250, Type 3R.
- F. Wall Bracket: For single-phase units, 15 to 37-1/2 kVA, and for three-phase units, 15 to 30 kVA.
- G. Voltage Taps:
 - 1. Single-Phase, 3 to 10 kVA: Four 2-1/2 percent, full capacity; two above and two below normal voltage rating.
 - 2. Single-Phase, 15 kVA and Above: Four 2-1/2 percent, full capacity; two above and two below normal voltage rating.
 - 3. Three-Phase, 3 to 15 kVA: Four 2-1/2 percent, full capacity; two above and two below normal voltage rating.
 - 4. Three-Phase, 30 kVA and Above: Four 2-1/2 percent, full capacity; two above and two below normal voltage rating.
- H. Impedance: 4.5 percent minimum on units 75 kVA and larger.
- I. Maximum Sound Level: NEMA ST 20:
 - 1. 40 decibels for 0 to 9 kVA.
 - 2. 45 decibels for 10 to 50 kVA.
 - 3. 50 decibels for 51 to 150 kVA.
 - 4. 55 decibels for 151 to 300 kVA.
 - 5. 60 decibels for 301 to 500 kVA.

- J. Vibration Isolators:
 - 1. Rated for transformer's weight.
 - 2. Isolation Efficiency: 99 percent, at fundamental frequency of sound emitted by transformer.
 - 3. Less Than 30 kVA: Isolate entire unit from structure with external vibration isolators.
 - 4. 30 kVA and Above: Isolate core and coil assembly from transformer enclosure with integral vibration isolator.
- K. Manufacturers:
 - 1. Square D;
 - 2. Or approved equal.
- 2.24 LOW VOLTAGE, SECONDARY SURGE PROTECTIVE EQUIPMENT
- A. NEMA LA1, ANSI C62. 11.
- B. Surge Capacitor:
 - 1. Impregnated with non-PCB, biodegradable dielectric fluid.
 - 2. Integral discharge resistor which will drain residual voltage to 50 volts crest in less than I minute after disconnection from circuit.
- C. Arrestor: High strength metal oxide valve elements enclosed in high strength, corrosion resistant, molded resin housing.
- D. Equip capacitor and arrestor with mounting nipple, flat washer, and nut suitable for knockout or bracket mounting.
- 2.25 SUPPORT AND FRAMING CHANNELS
- A. Material:
 - 1. Dry indoors galvanized.
 - 2. All Other Areas: ASTM A167, Type 316 stainless steel
- B. Finish:
 - 1. Dry indoors galvanized..

- 2. All Other Areas: ASTM A167, Type 316 stainless steel or fiber-reinforced epoxy, as required.
- C. Inserts: Continuous.
- D. Beam Clamps: Gray cast iron.
- E. Manufacturers:
 - 1. B-Line.
 - 2. Unistrut.

2.26 NAMEPLATES

- A. Material: Laminated plastic.
- B. Attachment Screws: Stainless steel.
- C. Color: White, engraved to a black core.
- D. Engraving:
 - 1. Pushbuttons/Selector Switches: Name of drive controlled on one, two, or three lines, as required.
 - 2. Panelboards: Panelboard designation, service voltage, and phases.

E. Letter Height:

- 1. Pushbuttons/Selector Switches: 1/8 inch.
- 2. Panelboards: 1/4 inch.

2.27 SURGE PROTECTIVE DEVICE

- A. This section describes the material and installation requirements for transient voltage surge suppression devices (TVSS) or surge protective device (SPD) in switchboards, panelboards, main breaker, and motor control centers for the protection of all AC electrical circuits.
- B. SPD shall be listed and component recognized in accordance with UL 1449 3rd edition and UL 1283.
- C. SPD shall be installed and warranted by and shipped from the electrical distribution equipment manufacturer's factory.

- D. SPD shall provide surge current diversion paths for all modes of protection; L-L, L-N, L-G, N-G in WYE systems, and L-L, L-G in DELTA systems.
- E. SPD shall be modular in design. Each module shall be fused with a surge rated fuse.
- F. A UL approved disconnect switch shall be provided as a means of disconnect in the switchboard device only.
- G. SPD shall meet or exceed the following criteria:
 - 1. Maximum surge current capability (single pulse rated) shall be:
 - a. Service entrance switchboard 300kA
 - b. Branch panelboards & MCC: 200kA
 - c. Branch panelboards: 100kA
 - 2. UL 1449 Listed and Recognized Component Suppression Voltage Ratings shall not exceed the following:

<u>Voltage</u>	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>
208Y/120	700V	700V	700V
480Y/277	1200V	1200V	1200V

- H. SPD shall be UL labeled with a 20kA I-nominal (ensuring UL 96A compliance), 200kA Short Circuit Current Rating (SCCR), and labeled as a Type 1 device.
- I. SPD shall be provided with 1 set of NO/NC dry contacts, visual LED diagnostics and indications.
- J. SPD shall have a warranty for a period of five years, incorporating unlimited replacements of suppressor parts if they are destroyed by transients during the warranty period.Warranty will be the responsibility of the electrical distribution equipment manufacturer.
- K. Approve manufactures are:
 - 1. Cutler Hammer.
 - 2. General Electric.
 - 3. Siemans.
 - 4. Square D Company.
 - 5. Current Technology.
 - 6. No approved or equal.

PART 3 EXECUTION

3.01 GENERAL

A. Install equipment in accordance with NECA 5055.

3.02 OUTLET AND DEVICE BOXES

- A. Install suitable for conditions encountered at each outlet or device in the wiring or raceway system, sized to meet NFPA 70 requirements.
- B. Size:
 - 1. Depth: Minimum 2 inches, unless otherwise required by structural conditions. Box extensions not permitted.
 - a. Hollow Masonry Construction: Install with sufficient depth such that conduit knockouts or hubs are in masonry void space.
 - 2. Ceiling Outlet: Minimum 4-inch octagonal sheet steel device box, unless otherwise required for installed fixture.
 - 3. Switch and Receptacle: Minimum 2-inch by 4-inch sheet steel device box.
- C. Locations:
 - 1. Drawing locations are approximate.
 - 2. To avoid interference with mechanical equipment or structural features, relocate outlets as directed by ENGINEER.
 - 3. Light Switch: Install on lock side of doors.
 - 4. Light Fixture: Install in symmetrical pattern according to room layout unless otherwise shown.
- D. Mounting Height:
 - 1. General:
 - a. Measured to centerline of box.
 - b. Where specified heights do not suit building construction or finish, mount as directed by ENGINEER.
 - 2. Light Switch: 48 inches above floor.
 - 3. Thermostat: 54 inches above floor.
 - 4. Telephone Outlet: 6 inches above counter tops or 18 inches above floor.
 - 5. Wall Mounted Telephone Outlet: 52 inches above floor.
 - 6. Convenience Receptacle:
 - a. General Interior Areas: 18 inches above floor.

- b. General Interior Areas (Counter Tops): Install device plate bottom or side flush with top of splashback, or 6 inches above countertops without splashback.
- c. Industrial Areas, Workshops: 48 inches above floor.
- d. Outdoor, All Areas: 24 inches above finished grade.
- 7. Special-Purpose Receptacle: 54 inches above floor or as shown.
- E. Install plumb and level.
- F. Flush Mounted:
 - 1. Install with concealed conduit.
 - 2. Install proper type extension rings or plaster covers to make edges of boxes flush with finished surface.
 - 3. Holes in surrounding surface shall be no larger than required to receive box.
- G. Support boxes independently of conduit by attachment to building structure or structural member.
- H. Install bar hangers in frame construction, or fasten boxes directly with wood screws on wood, bolts and expansion shields on concrete or brick, toggle bolts on hollow masonry units, and machine screws threaded into steelwork.
- I. Threaded studs driven in by powder charge and provided with lock washers and nuts are acceptable in lieu of expansion shields.
- J. Provide plaster rings where necessary.
- K. Boxes embedded in concrete or masonry need not be additionally supported.
- L. Install stainless steel mounting hardware in industrial areas.
- M. Boxes Supporting Fixtures: Provide means of attachment with adequate strength to support fixture.
- N. Open no more knockouts in sheet steel device boxes than are required; seal unused openings.
- 0. Box Type (Steel Raceway System):
 - 1. Exterior Locations:
 - a. Exposed Raceways: Cast metal.
 - b. Concealed Raceways: Cast metal.
 - c. Concrete Encased Raceways: Cast metal.

- d. Class I, II, or III Hazardous Areas: Cast metal.
- 2. Interior Dry Locations:
 - a. Exposed Rigid Conduit: Cast metal.
 - b. Exposed EMT: Sheet steel.
 - c. Concealed Raceways: Sheet steel.
 - d. Concrete Encased Raceways: Cast metal.
 - e. Lighting Circuits, Ceiling: Sheet steel.
 - f. Class I, II, or III Hazardous Areas: Cast metal.
- 3. Interior Wet Locations:
 - a. Exposed Raceways: Cast metal.
 - b. Concealed Raceways: Cast metal.
 - c. Concrete Encased Raceways: Cast metal.
 - d. Lighting Circuits, Ceiling: Sheet steel.
 - e. Class I, II, or III Hazardous Areas: Cast metal.
- 4. Cast-In-Place Concrete Slabs: Sheet steel.
- P. Box Type (Rigid Aluminum Raceway System): Cast aluminum.
- Q. Box Type (Nonmetallic Raceway System):
 - 1. Corrosive Locations: Nonmetallic.
 - 2. Exposed Raceways: Nonmetallic.
 - 3. Concealed Raceways: Nonmetallic.
 - 4. Concrete Encased Raceways: Nonmetallic.
- R. Box Type, Corrosive Locations (PVC-Coated Rigid Galvanized Steel Raceway System): PVC coated cast metal..

3.03 JUNCTION AND PULL BOXES

- A. Install where shown and where necessary to terminate, tap-off, or redirect multiple conduit runs.
- B. Install pull boxes where necessary in raceway system to facilitate conductor installation.
- C. Install in conduit runs at least every 150 feet or after the equivalent of three right-angle bends.
- D. Use outlet boxes as junction and pull boxes wherever possible and allowed by applicable codes.
- E. Installed boxes shall be accessible.

- F. Do not install on finished surfaces.
- G. Install plumb and level.
- H. Support boxes independently of conduit by attachment to building structure or structural member.
- I. Install bar hangers in frame construction, or fasten boxes directly with wood screws on wood, bolts and expansion shields on concrete or brick, toggle bolts on hollow masonry units, and machine screws or welded threaded studs on steelwork.
- J. Threaded studs driven in by powder charge and provided with lock washers and nuts are acceptable in lieu of expansion shields.
- K. Boxes embedded in concrete or masonry need not be additionally supported.
- L. At or Below Grade:
 - 1. Install boxes for below grade conduits flush with finished grade in locations outside of paved areas, roadways, or walkways.
 - 2. If adjacent structure is available, box may be mounted on structure surface just above finished grade in accessible but unobtrusive location.
 - 3. Obtain ENGINEER's written acceptance prior to installation in paved areas, roadways, or walkways.
 - 4. Use boxes and covers suitable to support anticipated weights.
- M. Flush Mounted:
 - 1. Install with concealed conduit.
 - 2. Holes in surrounding surface shall be no larger than required to receive box.
 - 3. Make edges of boxes flush with final surface.
- N. Mounting Hardware:
 - 1. Noncorrosive Interior Areas: Galvanized.
 - 2. All Other Areas: 316 Stainless steel.
- 0. Location/Type:
 - 1. Finished, Indoor, Dry: NEMA 250, Type 1.
 - 2. Unfinished, Indoor, Dry: NEMA 250, Type 12.
 - 3. Unfinished, Indoor and Outdoor, Wet and Corrosive: NEMA 250, Type 4X.

- 4. Unfinished, Indoor and Outdoor, Wet, Dust, or Oil: NEMA 250, Type 13.
- 5. Unfinished, Indoor and Outdoor, Hazardous: NEMA 250, Type 7 and Type 9, where indicated.
- 6. Underground Conduit: Schedule 40 PVC.
- 7. Corrosive Locations: Nonmetallic.

3.04 TELEPHONE TERMINAL CABINET (TTC)

- A. Install TTC as per local telephone requirements.
- 3.05 TELEPHONE OUTLET
- A. Provide empty outlet boxes and cover plates meeting requirements of Telephone Company.
- 3.06 WIRING DEVICES
- A. Switches:
 - 1. Mounting Height: See Paragraph OUTLET AND DEVICE BOXES.
 - 2. Install with switch operation in vertical position.
 - 3. Install single-pole, two-way switches such that toggle is in up position when switch is on.
- B. Receptacles:
 - 1. Install with grounding slot down except where horizontal mounting is shown, in which case install with neutral slot up.
 - 2. Ground receptacles to boxes with grounding wire only.
 - 3. Weatherproof Receptacles:
 - a. Install in cast metal box.
 - b. Install such that hinge for protective cover is above receptacle opening.
 - 4. Ground Fault Interrupter: Install feed-through model at locations where ground fault protection is specified for "downstream" conventional receptacles.
 - 5. Special-Purpose Receptacles: Install in accordance with manufacturer's instructions.
- C. Multioutlet Surface Raceway System:
 - 1. Install in accordance with manufacturer's instructions.
 - 2. Wire alternate outlets to each circuit where two-circuit, three-wire supply is shown.
- 3.07 DEVICE PLATES

- A. Securely fasten to wiring device; ensure a tight fit to the box.
- B. Flush Mounted: Install with all four edges in continuous contact with finished wall surfaces without use of mats or similar materials. Plaster fillings will not be acceptable.
- C. Surface Mounted: Plate shall not extend beyond sides of box unless plates have no sharp corners or edges.
- D. Install with alignment tolerance to box of 1/16 inch.
- E. Engrave with designated titles.
- F. Types (Unless Otherwise Shown):
 - 1. Office: Stainless Steel.
 - 2. Exterior: Weatherproof.
 - 3. Interior:
 - a. Flush Mounted Boxes: Stainless Steel.
 - b. Surface Mounted, Cast Metal Boxes: Cast metal.
 - c. Surface Mounted, Sheet Steel Boxes: Stainless Steel.
 - d. Surface Mounted, Nonmetallic Boxes: Plastic.

3.08 PUSHBU'ITON, INDICATING LIGHT, AND SELECTOR SWITCH

- A. Heavy-Duty, Oiltight Type: Locations (Unless Otherwise Shown): Nonhazardous, indoor, dry locations, including motor control centers, control panels, and individual stations.
- B. Heavy-Duty, Watertight, and Corrosion-Resistant Type:
 - 1. Locations (Unless Otherwise Shown): Nonhazardous, outdoor, or normally wet areas.
 - 2. Mounting: NEMA 250, Type 4X enclosure.
- 3.09 TERMINAL JUNCTION BOX
- A. Install in accordance with Paragraph JUNCTION AND PULL BOXES.
- B. Label each block and terminal with permanently attached, nondestructible tag.
- C. Do not install on finished outdoor surfaces.

- D. Location:
 - 1. Finished, Indoor, Dry: NEMA 250, Type 1.
 - 2. Unfinished, Indoor, Dry: NEMA 250, Type 12.
 - 3. Unfinished, Indoor and Outdoor, Wet and Corrosive: NEMA 250, Type 4X 316 SS.
 - 4. Unfinished, Indoor and Outdoor, Wet, Dust, or Oil: NEMA 250, Type 13.

3.10 LIGHTING AND POWER DISTRIBUTION PANELBOARD

- A. Install securely, plumb, in-line and square with walls.
- B. Install top of cabinet 6 feet above floor unless otherwise shown.
- C. Provide typewritten circuit directory for each panelboard.
- 3.11 INDUSTRIAL CAPACITORS
- A. Provide suitable hangers or mounting brackets for wall or ceiling mounting.
- 3.12 DRY TYPE TRANSFORMER (0- TO 600-VOLT PRIMARY)
- A. Load external vibration isolator such that no direct transformer unit metal is in direct contact with mounting surface.
- B. Provide moistureproof, flexible conduit for electrical connections.
- C. Connect voltage taps to achieve (approximately) rated output voltage under normal plant load conditions.
- D. Provide wall brackets for single-phase units, 15 to 167-1/2 kVA, and three-phase units, 15 to 112 kVA.
- 3.13 SUPPORT AND FRAMING CHANNEL
- A. Furnish zinc-rich primer; paint cut ends prior to installation, where applicable.
- B. Install where required for mounting and supporting electrical equipment and raceway systems.
- C. All support and framing channel including mounting hardware shall be 316 SS.
- 3.14 MOTOR SURGE PROTECTION

- A. Ground in accordance with NFPA 70.
- B. Low Voltage: Ground terminals to equipment bus.

END OF SECTION

SECTION 16110 RACEWAYS

PART 1- GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Association of State Highway and Transportation Officials (AASHTO): Division I, Standard Specifications for Highway Bridges, Fourteenth Edition.
 - 2. American National Standards Institute (ANSI):
 - a. C80.1, Rigid Steel Conduit-Zinc Coated.
 - b. C80.3, Electrical Metallic Tubing-Zinc Coated.
 - c. CS0.5, Rigid Aluminum Conduit.
 - d. C80.6, Intermediate Metal Conduit (IMC)-Zinc Coated.
 - 3. American Society for Testing and Materials (ASTM):
 - a. A123 El, Standard Specification for Zinc-Coated (Galvanized) Coatings on Iron and Steel Products.
 - b. C857, Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
 - 4. National Electrical Contractor's Association, Inc. (NECA): 5055, Standard of Installation.
 - 5. National Electrical Manufacturers Association (NEMA):
 - a. RN 1, Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - b. TC 2, Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
 - c. TC 3, PVC Fittings for Use with Rigid PVC Conduit and Tubing.
 - d. TC 6, PVC and ABS Plastic Utilities Duct for Underground Installation.
 - e. VE 1, Metallic Cable Tray Systems.
 - 6. National Fire Protection Association (NFPA): 70, National Electrical Code. (NEC)
 - 7. Underwriters Laboratories, Inc. (UL):
 - a. 1, Standard for Safety Flexible Metal Conduit.
 - b. 6, Standard for Safety Rigid Metal Conduit.
 - c. 360, Standard for Safety Liquid-Tight Flexible Steel Conduit.
 - d. 514B, Standard for Safety Fittings for Conduit and Outlet Boxes.
 - e. 514C, Standard for Safety Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers.
 - f. 651, Standard for Safety Schedule 40 and 80 PVC Conduit.
 - g. 651A, Standard for Safety Type EB and Rigid PVC Conduit and HDPF Conduit.
 - h. 797, Standard for Safety Electrical Metallic Tubing.
 - i. 870, Standard for Safety Wireways, Auxiliary Gutters, and Associated Fittings.
 - j. 1242, Standard for Safety Intermediate Metal Conduit.
 - k. 1660, Standard for Safety Liquid-Tight Flexible Nonmetallic Conduit.

1.02 SUBMITTALS

- A. Shop Drawings:
 - 1. Manufacturer's Literature:
 - a. Rigid galvanized steel conduit.
 - b. Electric metallic tubing.

- c. Rigid aluminum conduit.
- d. PVC Schedule 40 conduit.
- e. PVC-coated rigid galvanized steel conduit.
- f. Flexible metal, liquid-tight conduit.
- g. Flexible, nonmetallic, liquid-tight conduit.
- h. Conduit fittings.
- i. Wireways.
- 2. Precast Manholes and Handholes:
 - a. Dimensional drawings and descriptive literature.
 - b. Traffic loading calculations.
 - c. Accessory information.
- 3. Cable Tray Systems:
 - a. Dimensional drawings, calculations, and descriptive information.
 - b. NEMA load/span designation and how it was selected.
 - c. Support span length and pounds-per-foot actual and future cable loading at locations, with safety factor used.
 - d. Location and magnitude of maximum simple beam deflection of tray for loading specified.
 - e. Layout drawings and list of accessories being provided.
- 4. Conduit Layout:
 - a. Plan and section type, showing arrangement and location of conduit and duct bank required for:
 - 1) Low and medium voltage feeder and branch circuits.
 - 2) Instrumentation and control systems.
 - 3) Communications systems.
 - 4) Empty conduit for future use.
 - b. Reproducible mylar; scale not greater than 1 inch equals 20 feet.
 - 1) Equipment and machinery proposed for bending metal conduit.
 - 2) Method for bending PVC conduit less than 30 degrees.

1.03 UL COMPLIANCE

A. Materials manufactured within scope of Underwriters Laboratories shall conform to UL Standards and have an applied UL listing mark.

PART 2 - PRODUCTS

2.01 CONDUIT AND TUBING

- A. Rigid Galvanized Steel Conduit (RGS):
 - 1. Meet requirements of ANSI C80.1 and UL6.
 - 2. Material: Hot-dip galvanized, with chromated protective layer.
- B. Electric Metallic Tubing (EMT):
 - 1. Meet requirements of ANSI C80.3 and UL 797.
 - 2. Material: Hot-dip galvanized, with chromated and lacquered protective layer.
- C. Rigid Aluminum Conduit:

- 1. Meet requirements of ANSI C80.5 and UL 6.
- 2. Material: Type 6063, copper-free aluminum alloy.
- D. PVC Schedule 40 Conduit:
 - 1. Meet requirements of NEMA TC 2 and UL 651.
 - 2. UL listed for concrete encasement, underground direct burial, concealed or direct sunlight exposure, and 90 degrees C insulated conductors.
- E. PVC-Coated Rigid Galvanized Steel Conduit:
 - 1. Meet requirements of NEMA RN 1.
 - 2. Material:
 - a. Conduit: Meet requirements of ANSI C80.1 and UL 6
 - b. PVC Coating: 40 mils nominal thickness, bonded to metal.
- F. Flexible Metal, Liquid-Tight Conduit:
 - 1. UL 360 listed for 105 degrees C insulated conductors.
 - 2. Material: Galvanized steel, with an extruded PVC jacket.
- G. Flexible, Nonmetallic, Liquid-Tight Conduit:
 - 1. Material: PVC core with fused flexible PVC jacket.
 - 2. UL 1660 listed for:
 - a. Dry Conditions: 80 degrees C insulated conductors.
 - b. Wet Conditions: 60 degrees C insulated conductors.
 - 3. Manufacturers:
 - a. Carlon; Carflex or X-Flex.
 - b. T & B; Xtraflex LTC or EFC.

2.02 FITTINGS

- A. Rigid Galvanized Steel and Intermediate Metal Conduit:
 - 1. General:
 - a. Meet requirements of UL 514B.
 - b. Type: Threaded, galvanized. Set screw fittings not permitted.
 - 2. Bushing:
 - a. Material: Malleable iron with integral insulated throat, rated for 150 degrees C.
 - b. Manufacturers:
 - 1) Thomas & Betts; Type BIM.
 - 2) O.Z./Gedney; Type HB.
 - 3. Grounding Bushing:
 - a. Material: Malleable iron with integral insulated throat rated for 150 degrees C, with solderless lugs.
 - b. Manufacturers:
 - 1) Appleton; Series GIB.
 - 2) O.Z. Gedney; Type HBLG.

- 4. Conduit Hub:
 - a. Material: Malleable iron with insulated throat.
 - b. Manufacturers:
 - 1) O.Z. Gedney; Series CH.
 - 2) T & B; Series 370.
- 5. Conduit Bodies:
 - a. Material: Malleable iron, sized as required by NFPA 70.
 - b. Manufacturers (For Normal Conditions):
 - 1) Appleton; Form 35 threaded Unilets.
 - 2) Crouse-Hinds; Form 7 or 8 threaded condulets.
 - 3) Killark; Series O Electrolets.
 - c. Manufacturers (For Hazardous Locations):
 - 1) Appleton.
 - 2) Crouse-Hinds.
 - 3) Killark.
- 6. Couplings: As supplied by conduit manufacturer.
- 7. Conduit Sealing Fitting Manufacturers:
 - a. Appleton; Type EYF, EYM, or ESU.
 - b. Crouse-Hinds; Type EYS or EZS.
 - c. Killark; Type EY or EYS.
- 8. Drain Seal Manufacturers:
 - a. Appleton; Type SF.
 - b. Crouse-Hinds; Type EYD or EZD.
- 9. Drain/Breather Fitting Manufacturers:
 - a. Appleton; Type ECDB.
 - b. Crouse-Hinds; ECD.
- 10. Expansion Fitting Manufacturers:
 - a. Deflection/Expansion Movement:
 - 1) Appleton; Type DF.
 - 2) Crouse-Hinds; Type XD.
 - b. Expansion Movement Only:
 - 1) Appleton; Type XJ.
 - 2) Crouse-Hinds; Type XJ.
- 11. Cable Sealing Fittings:
 - a. To form watertight nonslip cord or cable connection to conduit.
 - b. For Conductors With OD of 1/2 Inch or Less: Neoprene bushing at connector entry.
 - c. Manufacturers:
 - 1) Crouse-Hinds; CGBS.
 - 2) Appleton; CG-S.
- B. Electric Metallic Tubing:
 - 1. Meet requirements of UL 514B.
 - 2. Type: Steel body and locknuts with steel or malleable iron compression nuts. Set screw and drive-on fittings not permitted.
 - 3. Compression Ring: Stainless steel.
 - 4. Coupling Manufacturers:
 - a. Appleton; Type 95T.
 - b. Crouse-Hinds; Type CPR.
 - 5. Connector Manufacturers:

- a. Appleton; Type 86T.
- b. Crouse-Hinds; Type CPR.
- C. Rigid Aluminum Conduit:
 - 1. General:
 - a. Meet requirements of UL 514B.
 - b. Type: Threaded, copper-free. Set screw fittings not permitted.
 - 2. Insulated Bushing:
 - a. Material: Cast aluminum, with integral insulated throat, rated for 150 degrees C.
 - b. Manufacturer: O.Z. Gedney; Type AB.
 - 3. Grounding Bushing:
 - a. Material: Cast aluminum with integral insulated throat, rated for 150 degrees, with solderless lugs.
 - b. Manufacturer: O.Z. Gedney; Type ABLG.
 - 4. Conduit Hub:
 - a. Material: Cast aluminum, with insulated throat.
 - b. Manufacturers:
 - 1) O.Z. Gedney; Type CHA.
 - 2) T & B; Series 370AL.
 - 5. Conduit Bodies:
 - a. Manufacturers (For Normal Conditions):
 - 1) Appleton; Form 85 threaded Unilets.
 - 2) Crouse-Hinds; Mark 9 or Form 7-SA threaded condulets.
 - 3) Killark; Series O Electrolets.
 - b. Manufacturers (For Hazardous Locations):
 - 1) Appleton.
 - 2) Crouse-Hinds.
 - 3) Killark.
 - 6. Couplings: As supplied by conduit manufacturer.
 - 7. Conduit Sealing Fitting Manufacturers:
 - a. Appleton; Type EYF-AL or EYM-AL.
 - b. Crouse-Hinds; Type EYS-SA or EZS-SA.
 - c. Killark; Type EY or EYS.
 - 8. Drain Seal Manufacturers:
 - a. Appleton; Type EYDM-A.
 - b. Crouse-Hinds; Type EYD-SA or EZD-SA.
 - 9. Drain/Breather Fitting Manufacturers:
 - a. Appleton; Type ECDB.
 - b. Crouse-Hinds; ECD.
 - 10. Expansion Fitting Manufacturers:
 - a. Deflection/Expansion Movement: Steel City; Type DF-A.
 - b. Expansion Movement Only: Steel City; Type AF-A.
 - 11. Cable Sealing Fittings: To form watertight nonslip cord or cable connection to conduit.
 - a. Bushing: Neoprene at connector entry.
 - b. Manufacturer: Appleton CG-S.
- D. PVC Conduit and Tubing:
 - 1. Meet requirements of NEMA TC-3.
- 2. Type: PVC, slip-on.
- E. PVC-Coated Rigid Galvanized Steel Conduit:
 - 1. Meet requirements of UL 514B.
 - 2. Type: Rigid galvanized steel, PVC coated by conduit manufacturer.
 - 3. Overlapping pressure sealing sleeves.
 - 4. Conduit Hangers, Attachments, and Accessories: PVC-coated.
- F. Flexible Metal, Liquid-Tight Conduit:
 - 1. Metal insulated throat connectors with integral nylon or plastic bushing rated for 105 degrees C.
 - 2. Insulated throat and sealing O-rings.
 - 3. Long design type extending outside of box or other device at least 2 inches.
 - 4. Manufacturer: T & B; Series 5300.
- G. Flexible, Nonmetallic, Liquid-Tight Conduit: Meet requirements of UL 514B.
 - 1. Type: One-piece fitting body, complete with lock nut, O-ring, threaded ferrule, sealing ring, and compression nut.
 - 2. Manufacturers:
 - a. Carlon; Type LT.
 - b. Kellems; Polytuff.
 - c. T & B; LT Series.
- H. Watertight Entrance Seal Device:
 - 1. New Construction:
 - a. Material: Oversized sleeve, malleable iron body with sealing ring, pressure ring, grommet seal, and pressure clamp.
 - b. Manufacturer: O.Z./Gedney; Type FSK or WSK, as required.
 - 2. Gored-Hole Application:
 - a. Material: Assembled dual pressure disks, neoprene sealing ring, and membrane clamp.
 - b. Manufacturer: O.Z./Gedney; Series CSM.
- I. Hazardous Locations: Approved for use in the atmosphere involved.
 - 1. Manufacturer: Crouse-Hinds; Type ECGJH.
- J. Corrosive Locations:
 - 1. Material: 40-mil PVC-coated rigid steel.
 - 2. Manufacturers:
 - a. Robroy Industries.
 - b. Carlon.
 - c. Crouse-Hinds.
- 2.03 WIREWAYS

- A. Meet requirements of UL 870.
- B. Type: Steel-enclosed, with removable, hinged cover.
- C. Rating: Outdoor raintight if outdoor, and indoor if indoor.
- D. Finish: Gray, baked enamel.
- E. Manufacturers:
 - 1. Square D.
 - 2. B-Line Systems, Inc.

2.04 CABLE TRAYS

- A. Meet requirements of NEMA VE 1.
- B. Type: Ladder of welded construction.
- C. Material: Copper-free aluminum alloy 6063-T6 finish.
- D. Cover: Louvered, minimum 0.40-inch thick aluminum.
- E. Barrier Strip: Vertical, solid type, with horizontal fittings and strip clamps.
- F. Fittings of same cross-sectional tray area, and hardware of same material as cable tray.
- G. Tray Grounding: Conform to NFPA 70 and NEMA VE 1.
- H. Provide next higher NEMA VE 1 class designation than required for support of designed span length.
- I. Design Loads: Use working load adequate for actual cable installed plus 50 percent additional weight allowance for future cables plus 200-pound concentrated static load applied between side rails at midspan, with safety factor of 2 in accordance with NEMA VE 1, Table 3-1.
- J. Expansion Joints: NEMA VE 1 for 50 degrees F maximum temperature variation.
- K. Furnish Cable Tray with no sharp edges, burrs, or weld projections.
- L. Manufacturers:
 - 1. B-Line Systems, Inc.
 - 2. Square-D.
 - 3. P. W. Industries.

2.05 PRECAST MANHOLES AND HANDHOLES

A. Concrete Strength: Minimum, 3,000 psi compressive, in 28 days.

- B. Loading: AASHTO Division 1, H-20 in accordance with ASTM C857.
- C. Access: Provide cast concrete 6- or 12-inch risers and access hole adapters between top of manhole and finished grade at required elevations.
- D. Drainage:
 - 1. Slope floors toward drain points, leaving no pockets or other non-draining areas.
 - 2. Provide drainage outlet or sump at low point of floor constructed with a heavy, cast iron, slotted or perforated hinged cover, and 4-inch minimum outlet and outlet pipe.
- E. Raceway Entrances:
 - 1. Provide on all four sides.
 - 2. For raceways to be installed under this Contract, provide knockout panels or precast individual raceway openings.
 - 3. At entrances where raceways are to be installed by others, provide minimum 12-inch high by 24-inch wide knockout panels for future raceway installation.
- F. Embedded Pulling Iron:
 - 1. Material: 3/4-inch diameter stock, fastened to overall steel reinforcement before concrete is placed.
 - 2. Location:
 - a. Wall: Opposite each raceway entrance and knockout panel for future raceway entrance.
 - b. Floor: Centered below manhole or handhole cover.
- G. Cable Racks:
 - 1. Arms and Insulators: Adjustable, of sufficient number to accommodate cables for each raceway entering or leaving manhole, including spares.
 - 2. Wall Attachment:
 - a. Adjustable inserts in concrete walls. Bolts or embedded studs not permitted.
 - b. Insert Spacing: Maximum 3-foot on center entire inside perimeter of manhole.
 - c. Arrange so that spare raceway ends are clear for future cable installation.
- H. Manhole Frames and Covers:
 - 1. Material: Machined cast iron.
 - 2. Diameter: 32 inches.
 - 3. Cover Type: Indented, solid top design, with two drop handles each.
 - 4. Cover Loading: AASHTO Division I, H-20.
 - 5. Cover Designation: Cast, on upper side, in integral letters, minimum 2 inches in height, appropriate titles:
 - a. Above 600 Volts: ELECTRIC HV.
 - b. 600 Volts and Below: ELECTRIC LV.
 - c. TELEPHONE.
- I. Handhole Frames and Covers:

- 1. Material: Steel, hot-dipped galvanized.
- 2. Cover Type: Solid, bolt-on, of checkered design.
- 3. Cover Loading: H-20.
- 4. Cover Designation: Burn by welder, on upper side in integral letters, minimum 2 inches in height, appropriate titles:
 - a. 600 Volts and Below: ELECTRIC LV.
 - b. TELEPHONE.
- J. Hardware: Steel, hot-dip galvanized.
- K. Furnish knockout for ground rod in each handhole and manhole.
- L. Manufacturers:
 - 1. U.S. Precast.
 - 2. Brooks Products, Inc.
 - 3. Penn-Cast Products, Inc.
 - 4. Concrete Conduit Co.
 - 5. Associated Concrete Products, Inc.
 - 6. Utility Vault Co.
 - 7. Pipe,Inc.
- 2.06 ACCESSORIES
 - A. Duct Bank Spacers:
 - 1. Type: Nonmetallic, interlocking, for multiple conduit sizes.
 - 2. Suitable for all types of conduit.
 - 3. Manufacturer: Underground Device, Inc.; Type WUNPEECE.
 - B. Identification Devices:
 - 1. Raceway Tags:
 - a. Material: Permanent, nylon.
 - b. Shape: Round.
 - c. Raceway Designation: Pressure stamped, embossed, or engraved.
 - d. Tags relying on adhesives or taped-on markers not permitted.
 - 2. Electric Detectable Warning Tape:
 - a. Material: Polyethylene, 4-mil gauge with solid aluminum foil core.
 - b. Color: Red, unless otherwise noted.
 - c. Width: Minimum 6-inch.
 - d. Designation: Warning on tape that electric circuit is located below tape.
 - e. Manufacturers:
 - 1) Blackburn.
 - 2) Griffolyn Co.
 - 3) Or approved equal.
 - 3. Buried Raceway Marker:
 - a. Material: 6["]x6"x12" concrete monument, consisting of double-ended arrows, straight for straight runs and bent at locations where runs change direction.
 - b. Designation: Incise to depth of 3/32 inch, ELECTRIC CABLES. in letters 1/4-inch high.

- c. Minimum Dimension: 1/4-inch thick, 10 inches long, and 3/4-inch wide.
- C. Raceway Coating:
 - 1. Material: Bitumastic or plastic tape coating.
 - 2. Manufacturers:
 - a. Koppers bitumastic; No. 505.
 - b. Scotchwrap; No. 51, plastic tape.
- D. Wraparound Duct Band:
 - 1. Material: Heat-shrinkable, cross-linked polyolefin, precoated with hot-melt adhesive.
 - 2. Manufacturer: Raychem; Type TWDB.

PART 3 - EXECUTION

- 3.01 GENERAL
 - A. Conduit and Tubing sizes shown are based on the use of copper conductors. Reference Section 16120, CONDUCTORS, concerning conduit sizing for aluminum conductors.
 - B. All installed Work shall comply with NECA 5055.
 - C. Crushed or deformed raceways not permitted.
 - D. Maintain raceway entirely free of obstructions and moisture.
 - E. Immediately after installation, plug or cap raceway ends with watertight and dust-tight seals until time for pulling in conductors.
 - F. Aluminum Conduit: Do not install in direct contact with concrete, unless painted with 2 coats of Bitumastic.
 - G. Sealing Fittings: Provide drain seal in vertical raceways where condensate may collect above sealing fitting.
 - H. Avoid moisture traps where possible. When unavoidable in exposed conduit runs, provide junction box and drain fitting at conduit low point.
 - I. Group raceways installed in same area.
 - J. Proximity to Heated Piping: Install raceways minimum 12 inches from parallel runs.
 - K. Follow structural surface contours when installing exposed raceways. Avoid obstruction of passageways.
 - L. Run exposed raceways parallel or perpendicular to walls, structural members, or intersections of vertical planes.
 - M. Block Walls: Do not install raceways in same horizontal course with reinforcing steel.

- N. Install watertight fittings in outdoor, underground, or wet locations.
- 0. Paint threads, before assembly of fittings, of galvanized conduit or IMC installed in exposed or damp locations with zinc-rich paint or liquid galvanizing compound.
- P. All metal conduit to be reamed, burrs removed, and cleaned before installation of conductors, wires, or cables.
- Q. Do not install raceways in concrete equipment pads, foundations, or beams.
- R. Horizontal raceways installed under floor slabs shall lie completely under slab, with no part embedded within slab.
- S. Install concealed, embedded, and buried raceways so that they emerge at right angles to surface and have no curved portion exposed.
- 3.02 INSTALLATION IN CAST-IN-PLACE STRUCTURAL CONCRETE
 - A. Minimum cover 1-1/2 inches.
 - B. Provide support during placement of concrete to ensure raceways remain in position.
 - C. Floor Slabs:
 - 1. Outside diameter of conduit not to exceed one-third of the slab thickness.
 - 2. Separate conduit by minimum six times conduit outside diameter, except at crossings.

3.03 CONDUIT APPLICATION

- A. Diameter: Minimum 3/4 inch.
- B. Exterior, Exposed:
 - 1. Rigid galvanized steel.
- C. Interior, Exposed:
 - 1. Rigid galvanized steel.
 - 2. Electric metallic tubing for ceiling portion of lighting circuits in a conditioned environment.
- D. Interior, Concealed (Not Embedded in Concrete):
 - 1. Rigid galvanized steel.
 - 2. PVC Schedule 40 for frame walls.
 - 3. Electric metallic tubing for block walls.
- E. Aboveground, Embedded in Concrete Walls, Ceilings, or Floors: PVC Schedule 40.
- F. Direct Earth Burial: PVC Schedule 40.

- G. Concrete-Encased Raceways: PVC Schedule 40.
- H. Under Slabs-On-Grade: PVC Schedule 40.
- I. Corrosive Areas, Exterior: PVC-coated rigid galvanized steel.
- J. Corrosive Areas, Interior: PVC Schedule 80.
- K. Conduits between VFDs and motors rigid aluminum (inside and outside).
- L. Interior, Ozone Equipment Area: PVC coated rigid galvanized steel.

3.04 CONNECTIONS

- A. For motors, wall or ceiling mounted fans and unit heaters, dry type transformers, electrically operated valves, instrumentation, and other equipment where flexible connection is required to minimize vibration:
 - 1. Conduit Size 4 Inches or Less: Flexible metal, liquid-tight conduit.
 - 2. Conduit Size Over 4 Inches: Nonflexible.
 - 3. Corrosive Areas: Flexible, nonmetallic, liquid or PVC-coated metallic, liquid-tight.
 - 4. Length: 18-inch minimum, 60-inch maximum, of sufficient length to allow movement or adjustment of equipment.
- B. Lighting Fixtures in Dry Areas: Flexible steel, nonliquid-tight conduit.
- C. Outdoor Areas, Process Areas Exposed to Moisture, and Areas Required to be Oiltight and Dust-Tight: Flexible metal, liquid-tight conduit.
- D. Transition From Underground or Concrete Embedded to Exposed: PVC Coated Rigid galvanized steel conduit.
- E. Under Equipment Mounting Pads: Rigid galvanized steel conduit.
- F. Exterior Light Pole Foundations: Rigid galvanized steel conduit.
- 3.05 **PENETRATIONS**
 - A. Make at right angles, unless otherwise shown.
 - B. Notching or penetration of structural members, including footings and beams, not permitted.
 - C. Fire-Rated Walls, Floors, or Ceilings: Fire-stop openings around penetrations to maintain fire-resistance rating.
 - D. Apply single layer of wraparound duct band to all metallic conduit in contact with concrete floor slabs to a point 2 inches above concrete surface.

- E. Concrete Walls, Floors, or Ceilings (Aboveground): Provide nonshrink grout dry-pack, or use watertight seal device.
- F. Entering Structures:
 - 1. General: Seal raceway at the first box or outlet with minimum 2 inches thick expandable plastic compound to prevent the entrance of gases or liquids from one area to another.
 - 2. Concrete Roof or Membrane Waterproofed Wall or Floor:
 - a. Provide a watertight seal.
 - b. Without Concrete Encasement: Install watertight entrance seal device on each side.
 - c. With Concrete Encasement: Install watertight entrance seal device on the accessible side.
 - d. Securely anchor malleable iron body of watertight entrance seal device into construction with one or more integral flanges.
 - e. Secure membrane waterproofing to watertight entrance seal device in a permanent, watertight manner.
 - 3. Heating, Ventilating, and Air Conditioning Equipment:
 - a. Penetrate equipment in area established by manufacturer.
 - b. Terminate conduit with flexible metal conduit at junction box or condulet attached to exterior surface of equipment prior to penetrating equipment.
 - c. Seal penetration with silicone type sealant as specified in Section 07270, FIRE STOPPING.
 - 4. Corrosive-Sensitive Areas:
 - a. Seal all conduit passing through chlorine and ammonia room walls.
 - b. Seal all conduit entering equipment panel boards and field panels containing electronic equipment.
 - c. Seal penetration with silicone type sealant as specified in Section 07270, FIRE STOPPING.
 - 5. Existing or Precast Wall (Underground): Core drill wall and install a watertight entrance seal device.
 - 6. Nonwaterproofed Wall or Floor (Underground, without Concrete Encasement):
 - a. Provide Schedule 40 galvanized pipe sleeve, or watertight entrance seal device.
 - b. Fill space between raceway and sleeve with an expandable plastic compound on each side.
 - 7. Manholes and Handholes:
 - a. Metallic Raceways: Provide insulated grounding bushings.
 - b. Nonmetallic Raceways: Provide bell ends flush with wall.
 - c. Install such that raceways enter as near as possible to one end of wall, unless otherwise shown.

3.06 SUPPORT

- A. Support from structural members only, at intervals not exceeding NFPA 70 requirements, and in any case not exceeding 10 feet. Do not support from piping, pipe supports, or other raceways.
- B. Multiple Adjacent Raceways: Provide ceiling trapeze. For trapeze-supported conduit, allow 40 percent extra space for future conduit.
- C. Provide and attach wall brackets, strap hangers, or ceiling trapeze as follows:
 - 1. Wood: Wood screws.
 - 2. Hollow Masonry Units: Toggle bolts.

- 3. Concrete or Brick: Expansion shields, or threaded studs driven in by powder charge, with lock washers and nuts.
- 4. Steelwork: Machine screws.
- D. Nails or wooden plugs inserted in concrete or masonry for attaching raceway not permitted. Do not weld raceways or pipe straps to steel structures. Do not use wire in lieu of straps or hangers.
- 3.07 BENDS
 - A. Install concealed raceways with a minimum of bends in the shortest practical distance.
 - B. Make bends and offsets of longest practical radius.
 - C. Install with symmetrical bends or cast metal fittings.
 - D. Avoid field-made bends and offsets, but where necessary, make with acceptable hickey or bending machine. Do not heat metal raceways to facilitate bending.
 - E. Make bends in parallel or banked runs from same center or centerline with same radius so that bends are parallel.
 - F. Factory elbows may be installed in parallel or banked raceways if there is change in plane of run, and raceways are same size.
 - G. PVC Conduit:
 - 1. Bends 30-Degree and Larger: Provide factory-made elbows.
 - 2. 90-Degree Bends: Provide rigid steel elbows.
 - 3. Use manufacturer's recommended method for forming smaller bends.
 - H. Flexible Conduit: Do not make bends that exceed allowable conductor bending radius of cable to be installed or that significantly restricts conduit flexibility.
- 3.08 EXPANSION/DEFLECTION FITTINGS
 - A. Provide on all raceways at all structural expansion joints, and in long tangential runs.
 - B. Provide expansion/deflection joints for 50 degrees F maximum temperature variation.
 - C. Install in accordance with manufacturer's instructions.
- 3.09 PVC CONDUIT
 - A. Solvent Welding:
 - 1. Provide manufacturer recommended solvent; apply to all joints.
 - 2. Install such that joint is watertight.
 - B. Adapters:

- 1. PVC to Metallic Fittings: PVC terminal type.
- 2. PVC to Rigid Metal Conduit or IMC: PVC female adapter.
- C. Belied-End Conduit: Bevel the unbelled end of the joint prior to joining.
- 3.10 PVC-COATED RIGID STEEL CONDUIT
 - A. Install in accordance with manufacturer's instructions.
 - B. Provide PVC boot to cover all exposed threading.
- 3.11 WIREWAYS
 - A. Install in accordance with manufacturer's instructions.
 - B. Locate with cover on accessible vertical face of wireway, unless otherwise shown.
- 3.12 CABLE TRAYS
 - A. Install in accordance with Application Information Section of NEMA VE 1.
 - B. Provide accessories as necessary for a complete system.
 - C. Install such that joints are not made at support brackets.
 - D. Install horizontal section support brackets between support point and quarter point of tray span.
 - E. Provide ceiling trapeze for all horizontal cable tray.
 - F. Install support within 2 feet on each side of expansion joints and within 2 feet of fitting extremity.
 - G. Provide expansion joints in accordance with NEMA VE 1 for 50 degrees F maximum temperature variation.
 - H. Install horizontal tray level, plumb, straight, and true to line or grade within a tolerance of 1/8 inch in 10 feet and within a cumulative maximum of 1/2 inch.
 - I. Install vertical tray plumb within a tolerance of 1/8 inch in 10 feet.
 - J. Install without exposed raw edges.
 - K. Maintain 9-inch vertical separation between multi-tiered trays having a common support, and at all crossover locations.
 - L. Provide bonding jumper at each expansion joint and adjustable connection.
 - M. Ground Conductor: Provide properly sized clamps for each section, elbow, tee, cross, and reducer.
- 3.13 TERMINATION AT ENCLOSURES

- A. Cast Metal Enclosure: Provide manufacturer's premolded insulating sleeve inside metallic conduit terminating in threaded hubs.
- B. Sheet Metal Boxes, Cabinets, and Enclosures:
 - 1. Rigid Galvanized Conduit:
 - a. Provide one lock nut each on inside and outside of enclosure.
 - b. Install grounding bushing.
 - c. Provide bonding jumper from grounding bushing to equipment ground bus or ground pad; if neither ground bus nor pad exists, connect jumper to lag bolt attached to metal enclosure.
 - d. Install insulated bushing on ends of conduit where grounding is not required.
 - e. Provide insulated throat when conduit terminates in sheet metal boxes having threaded hubs.
 - 2. Electric Metallic Tubing: Provide gland compression, insulated connectors.
 - 3. Flexible Metal Conduit: Provide two screw type, insulated, malleable iron connectors.
 - 4. Flexible, Nonmetallic Conduit: Provide nonmetallic, liquid-tight strain relief connectors.
 - 5. PVC-Coated Rigid Galvanized Steel Conduit: Provide PVC-coated, liquid-tight, metallic connector.
 - 6. PVC Schedule 40 Conduit: Provide PVC terminal adapter with lock nut.
- C. Motor Control Center, Switchboard, Switchgear, and Free-Standing Enclosures: Terminate conduit entering bottom with grounding bushing; provide a grounding jumper extending to equipment ground bus or grounding pad.
- 3.14 UNDERGROUND RACEWAYS
 - A. Grade: Maintain minimum grade of 4 inches in 100 feet, either from one manhole, handhole, or pull box to the next, or from a high point between them, depending on surface contour.
 - B. Cover: Maintain minimum 2-foot cover above conduit and concrete encasement, unless otherwise shown.
 - C. Make routing changes as necessary to avoid obstructions or conflicts.
 - D. Couplings: In multiple conduit runs, stagger so that couplings in adjacent runs are not in same transverse line.
 - E. Union type fittings not permitted.
 - F. Spacers:
 - 1. Provide preformed, nonmetallic spacers, designed for such purpose, to secure and separate parallel conduit runs in a trench or concrete encasement.
 - 2. Install at intervals not greater than that specified in NFPA 70 for support of the type conduit used, but in no case greater than 10 feet.
 - G. Support conduit so as to prevent bending or displacement during backfilling or concrete placement.
 - H. Installation with Other Piping Systems:

- 1. Crossings: Maintain minimum 12-inch vertical separation.
- 2. Parallel Runs: Maintain minimum 12-inch separation.
- 3. Installation over valves or couplings not permitted.
- I. Metallic Raceway Coating: At couplings and joints and along entire length, apply wraparound duct band with one-half tape width overlap to obtain two complete layers.
- J. Concrete Encasement: As specified in Section 03300, CAST-IN-PLACE CONCRETE.
 - 1. Concrete Color: Gray, dust top of concrete ductbank with powdered red concrete dye before concrete sets and trowel dry onto top of ductbank.
- K. Backfill:
 - 1. As specified in Section 02225, TRENCH BACKFILL.
 - 2. Do not backfill until inspected by ENGINEER.

3.15 MANHOLES AND HANDHOLES

- A. Excavate, shore, brace, backfill, and final grade back to original state.
- B. Do not install until final raceway grading has been determined.
- C. Install such that raceways enter at nearly right angles and as near as possible to one end of wall, unless otherwise shown.
- D. Grounding: As specified in Section 16450, GROUNDING.
- E. Identification: Field stamp covers with manhole or handhole number as shown. Stamped numbers to be i-inch minimum height.
- 3.16 EMPTY RACEWAYS
 - A. Provide permanent, removable cap over each end.
 - B. Provide PVC plug with pull tab for underground raceways with end bells.
 - C. Provide nylon pull cord.
 - D. Identify, as specified in Paragraph IDENTIFICATION DEVICES, with waterproof tags attached to pull cord at each end, and at intermediate pull point.
- 3.17 IDENTIFICATION DEVICES
 - A. Raceway Tags:
 - 1. Identify origin and destination.
 - 2. Install at each terminus, near midpoint, and at minimum intervals of every 50 feet of exposed Raceway, whether in ceiling space or surface mounted.
 - 3. Provide nylon strap for attachment.

- B. Electric Detectable Warning Tape: Install approximately 12 inches above underground or concreteencased raceways. Align parallel to, and within 12 inches of, centerline of runs.
- C. Buried Raceway Markers:
 - 1. Install at grade to indicate direction of underground raceways.
 - 2. Install at all bends and at intervals not exceeding 100 feet in straight runs.
- 3.18 PROTECTION OF INSTALLED WORK
 - A. Protect products from effects of moisture, corrosion, and physical damage during construction.
 - B. Provide and maintain manufactured watertight and dust-tight seals over all conduit openings during construction.
 - C. Touch up painted conduit threads after assembly to cover nicks or scars.
 - D. Touch up damage to coating on PVC-coated conduit with patching compound approved by manufacturer.

END OF SECTION

SECTION 16120 CONDUCTORS

PART 1 -- GENERAL

1.01 REFERENCES

- A. The following is a list of standards that may be referenced in this section:
 - 1. American National Standards Institute (ANSI): 386, Standard for Separable Insulated Connector Systems for Power Distribution Systems Above 600V.
 - 2. American Society for Testing and Materials (ASTM):
 - a. A167, Standard Specification for Stainless and Heat Resisting Chromium-Nickel-P1ated Steel Plate, Sheet, and Strip.
 - b. B3, Standard Specification for Soft or Annealed Copper Wire.
 - c. B8, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
 - d. B263, Standard Test Method for Determination of Cross- Sectional Area of Stranded Conductors.
 - 3. Association of Edison Illuminating Companies (AEIC):
 - a. CS 5, Crosslinked Polyethylene Insulated Shielded Power Cables Rated 5 Through 35 kV.
 - b. CS 6, Ethylene- Propylene-Rubber-Insulated Shielded Power Cables Rated 5 Through 69 kV.
 - 4. Insulated Cable Engineer's Association, Inc. (ICEA): T-29-250, Procedure for Conducting Vertical Cable Tray Flame Test With a Theoretical Heat Input of 210,000 Btu/hour.
 - 5. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - a. 48, Standard Test Procedures and Requirements or High-Voltage Alternating Current Cable Terminations.
 - b. 404, Standard for Cable Joints for Use with Extruded Dielectric Cable Rated 5,000V through 46,000V and Cable Joints for Use with Laminated Dielectric Cable Rated 2,500V through 500,000V.
 - 6. National Electrical Contractors Association, Inc. (NECA): 5055, Standard of Installation.
 - 7. National Electrical Manufacturers' Association (NEMA):
 - a. CC 1, Electric Power Connectors for Substations.
 - b. WC 3, Rubber-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
 - c. WC 5, Thermoplastic Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
 - d. WC 7, Crosslinked-Thermosetting-Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
 - e. WC 8, Ethylene-Propylene-Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
 - f. WC 55, Instrumentation Cables and Thermocouple Wire.
 - 8. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).

- 9. Underwriters Laboratories, Inc. (UL):
 - a. 13, Standard for Safety Power-Limited Circuit Cables.
 - b. 44, Standard for Safety Rubber-Insulated Wires and Cables.
 - c. 62, Standard for Safety Flexible Cord and Fixture Wire.
 - d. 486A, Standard for Safety Wire Connector and Soldering Lugs for Use with Copper Conductors.
 - e. 486B, Standard for Safety Wire Connectors and Soldering Lugs for Use with Aluminum Conductors.
 - f. 510, Standard for Safety Insulating Tape.
 - g. 854, Standard for Safety Service-Entrance Cables.
 - h. 910, Standard for Safety Test Method for Fire and Smoke Characteristics of Electrical and Optical-Fiber Cables Used in Air Handling Spaces.
 - i. 1072, Standard for Safety Medium-Voltage Power Cables.
 - j. 1277, Standard for Safety Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.
 - k. 1581, Standard for Safety Reference Standard for Electrical Wires, Cables, and Flexible Cords.

1.02 SUBMITTALS

- A. Shop Drawings:
 - 1. Wire and cable descriptive product information.
 - 2. Wire and cable accessories descriptive product information.
 - 3. Cable fault detection system descriptive product information.
 - 4. Manufactured wiring systems descriptive product information.
 - 5. Manufactured wire systems rating information.
 - 6. Manufactured wire systems dimensional drawings.
 - 7. Manufactured wire systems special fittings.
 - 8. Busway descriptive product information.
 - 9. Busway rating information.
 - 10. Busway dimensional drawings.
 - 11. Busway special fitting information.
 - 12. Busway-equipment interface information for equipment to be connected to busways.
 - B. Quality Control Submittals:
 - 1. Certified Factory Test Report for conductors 600 volts and below.
 - 2. Certified Factory Test Report per AEIC CS6, including AEIC qualification report for conductors above 600 volts.
 - 1.03 UL COMPLIANCE

A. Materials manufactured within scope of Underwriters Laboratories shall conform to UL Standards and have an applied UL listing mark.

PART 2 -- PRODUCTS

2.01 CONDUCTORS 600 VOLTS AND BELOW

- A. Conform to applicable requirements of NEMA WC 3, WC 5, and WC 7.
- B. Conductor Type:
 - 1. 120- and 277-Volt Lighting, No. 10 AWG and Smaller: Stranded copper.
 - 2. 120-Volt Receptacle Circuits, No. 10 AWG and Smaller: Stranded copper.
 - 3. All Other Circuits: Stranded copper.
- C. Insulation: Type THHN/THWN, except for sizes No. 6 and larger, with XHHW insulation.
- D. Direct Burial and Aerial Conductors and Cables:
 - 1. Type USE/RHH/RHW insulation, UL t(54 listed, Type RHW-2/USE-2.
 - 2. Conform to physical and minimum thickness requirements of NEMA WC 3.
- E. Flexible Cords and Cables:
 - 1. Type SOW-A50 with ethylene propylene rubber insulation in accordance with UL 62.
 - 2. Conform to physical and minimum thickness requirements of NEMA WC 8.
- F. Cable Tray Conductors and Cables: Type TC.
 - 2.02 CONDUCTORS ABOVE 600 VOLTS
- A. EPR Insulated Cable:
 - 1. Extrusion: Single-pass, triple-tandem, of conductor screen, insulation, and insulation screen.
 - 2. Type: 5 kV, shielded, UL 1072, Type MV-90.
 - 3. Conductors: Copper, concentric lay Class B round stranded in accordance with ASTM B3, ASTM B8, and ASTM B263.
 - 4. Conductor Screen: Extruded, semiconducting ethylene-propylene rubber in accordance with NEMA WC 8 and AEIC CS 6.
 - 5. Insulation: 133 percent insulation level, ethylene-propylene-rubber (EPR), containing no polyethylene in accordance with NEMA WC 8, and AEIC CS 6.
 - 6. Insulation Thickness: 90 mils, 5 kV, nominal.

- 7. Insulation Screen: Thermosetting, semiconducting ethylene-propylene rubber (EPR), extruded directly over insulation in accordance with NEMA WC 8, and AEIC CS 6.
- 8. Metallic Shield: Uncoated, copper shielding tape helically applied with 17-1/2 percent minimum overlap.
- 9. Jacket: Extruded polyvinyl chloride (PVC) compound applied over the metallic shield in accordance with NEMA WC 8.
- 10. Operating Temperature: 90 degrees C continuous normal operations, 130 degrees C emergency operating conditions, and 250 degrees C short-circuit conditions.
- 11. Manufacturers:
 - a. Okonite Co.
 - b. Pirelli Wire and Cable.
 - c. Cablec Corp.
 - d. Southwire.

2.03 600-VOLT RATED CABLE

- A. General:
 - 1. Type: TC, meeting requirements of UL 1277, including Vertical Tray Flame Test at 20,000 Btu/hr, and NFPA 70, Article 340, or UL 13 Listed Power Limited Circuit Cable meeting requirements of NFPA 70, Article 725.
 - 2. Permanently and legibly marked with manufacturer's name, maximum working voltage for which cable was tested, type of cable, and UL listing mark.
 - 3. Suitable for installation in open air, in cable trays, or conduit.
 - 4. Minimum Temperature Rating: 90 degrees C dry locations, 75 degrees C wet locations.
 - 5. Overall Outer Jacket: PVC, flame-retardant, sunlight- and oil-resistant.
- B. Wire and Connectors:
 - 1. Cable shall be rated for 600 volts and shall meet the requirements below:
 - 2. Conductors shall be stranded
 - 3. All wire shall be brought to the job in unbroken packages and shall bear the data of manufacturing; not older than 12 months.
 - 4. Type of wire shall be XHHW or THHN, rated 75 degrees C suitable for wet locations except where required otherwise by the drawings.
 - 5. No wire smaller than No. 12 gauge shall be used unless specifically indicated.
 - 6. Conductor metal shall be copper.
 - 7. All conductors shall be megger tested after installation and insulation must be in compliance with the Insulated Power Cable Engineers Association Minimum Values of Insulation Resistance.
- C. Type l-Multiconductor Control Cable:
 - 1. Conductors:
 - a. No. 14 AWG, seven-strand copper.
 - b. Insulation: 15-mil PVC with 4-mil nylon.

- c. UL 1581 listed as Type THHN/THWN rated VW-I.
- d. Conductor group bound with spiral wrap of barrier tape.
- e. Color Code: In accordance with NEMA WC 5, Method 1, Sequence K-2.
- 2. Cable: Passes the ICEA T-29-520 210,000 Btu/hr Vertical Tray Flame Test.
- 3. Cable Sizes:

No. of Conductors	Max. Outside Diameter (inches)	Jacket Thickness (mils)
3	0.41	45
5	0.48	45
7	0.52	45
12	0.72	60
19	00.83	60
25	1.00	60
37	1.15	80

- 4. Manufacturers:
 - a. Okonite Co.
 - b. Rome Cable.
- D. Type 2-Multiconductor Power Cable:
 - 1. Conductors:
 - a. Class B stranded, coated copper.
 - b. Insulation: Chemically crosslinked ethylene-propylene with Hypalon jacket.
 - c. UL 1581 listed as Type EPR, rated VW-1.
 - d. Color Code: Conductors, size No. 8 AWG and smaller, colored conductors, NEMA WC5 Method 1, color 5 per Article POWER CONDUCTOR COLOR CODING. Conductors, size No. 6 AWG and larger, NEMA WC5, Method 4.
 - 2. Cable pass the ICEA T-29-520 210,000 Btu/hr Vertical Tray Flame Test.
 - 3. Cable Sizes:

Conductor	Minimum	No. of	Max.Outside	Nominal Jacket
Size	Ground Wire	Conductors	Diameter	Thickness
	Size		(Inches)	(Mils)
12	12	2	0.42	45
		3	0.45	45
		4	0.49	45
10	10	2	0.54	60
		3	0.58	60

		4	0.63	60
8	10	3	0.66	60
		4	0.72	
6	8	3	0.74	60
		4	0.81	
4	6	3	0.88	60
		4	0.97	80
2	6	3	1.01	80
		4	1.11	
1/0	6	3	1.22	80
		4	1.35	
2/0	4	3	1.32	80
		4	1.46	
4/0	4	3	1.56	80
		4	1.78	

- 4. Manufacturers:
 - a. Okonite Co.
 - b. Pome Cable.
- E. Type B-No. 16 AWG, Twisted, Shielded Pair, Instrumentation Cable: Single pair, designed for noise rejection for process control, computer, or data log applications meeting NEMA WC 55 requirements.
 - 1. Outer Jacket: 45-mil nominal thickness.
 - 2. Individual Pair Shield: 1.35-mil, double-faced aluminum/synthetic polymer overlapped to provide 100 percent coverage.
 - 3. Dimension: 0.31-inch nominal OD.
 - 4. Conductors:
 - a. Bare soft annealed copper, Class B, seven-strand concentric, meeting requirements of ASTM B8
 - b. 20 AWG, seven-strand tinned copper drain wire.
 - c. Insulation: 15-mil nominal PVC.
 - d. Jacket: 4-mil nominal nylon.
 - e. Color Code: Pair conductors black and red.
 - 5. Manufacturers:
 - a. Okonite Co.
 - b. Alpha Wire Corp.
 - 6. The following test shall be performed on instrumentation and control system cables. All tests shall be end-to-end test of installed cables with the ends supported in free air, not adjacent to any ground object. All test data shall be recorded on forms acceptable to the Engineer. Complete records of all tests shall be made and delivered to the Engineer.

- a. Continuity tests shall be performed by measuring wire/shield loop resistances of signal cable as the wires, taken one at a time, are shorted to the channel shield. No loop resistance measurement shall carry by more than ± 2 ohms from the calculated average loop resistance valve.
- b. Insulation resistance tests shall be performed by using a 500 volt megohmeter to measure the insulation resistance between each channel wire and channel shield, between individual channel shields in a multi-channel cable, between each individual channel and the overall cable shield in multi-channel cable, between each wire and ground, and between each shield and ground. Values of resistance less than 10 megohms shall be unacceptable.
- F. Type B1-No. 16 AWG, Twisted, Shielded Triad Instrumentation Cable: Single triad, designed for noise rejection for process control, computer, or data log applications meeting NEMA WC 55 requirements.
 - 1. Outer Jacket: 45-mil nominal.
 - 2. Individual Pair Shield: 1.35-mil, double-faced aluminum/synthetic polymer, overlapped to provide 100 percent coverage.
 - 3. Dimension: 0.32-inch nominal OD.
 - 4. Conductors:
 - a. Bare soft annealed copper, Class B, seven-strand concentric, meeting requirements of ASTM B8.
 - b. 20 AWG, seven-strand, tinned copper drain wire.
 - c. Insulation: 15-mil nominal PVC.
 - d. Jacket: 4-mil nylon.
 - e. Color Code: Triad conductors black, red, and white.
 - 5. Manufacturers:
 - a. Okonite Co.
 - b. Alpha Wire Corp.
- G. Type B2-No. 18 AWG, Multi-Twisted, Shielded Pairs with a Common, Overall Shield Instrumentation Cable: Designed for use as instrumentation, process control, and computer cable, meeting NEMA WC 55 requirements.
 - 1. Conductors:
 - a. Bare soft annealed copper, Class B, seven-strand concentric, in accordance with ASTM B8
 - b. Tinned copper drain wires.
 - c. Pair drain wire size AWG 20, group drain wire size AWG 18.
 - d. Insulation: 15-mil PVC.
 - e. Jacket: 4-mil nylon.
 - f. Color Code: Pair conductors black and red with red conductor numerically printed for group identification.
 - g. Individual Pair Shield: 1.35-mil, double-faced aluminum/synthetic polymer.
 - 2. Cable Shield: 2.35-mil, double-faced aluminum/synthetic polymer, overlapped for 100 percent coverage.

3. Cable Sizes:

	-	
Number	Maximum	Nominal Jacket
of Pairs	Outside	Thickness
	Diameter	(mils)
	(inches)	
4	0.50	45
8	0.68	60
12	0.82	60
16	0.95	80
24	1.16	80
36	1.33	80
50	1.56	80

- 4. Manufacturers:
 - a. Okonite Co.
 - b. Alpha Wire Corp.
- H. Type B3-No. 18 AWG, Multi-twisted Pairs with a Common Overall Shield Instrumentation Cable: Designed for use as instrumentation, process control, and computer cable meeting NEMA WC 55.
 - 1. Conductors:
 - a. Bare soft annealed copper, Class B, seven-strand concentric, in accordance with ASTM B8.
 - b. Tinned copper drain wire size 18 AWG
 - c. Insulation: 15-mil nominal PVC.
 - d. Jacket: 4-mil nylon.
 - e. Color Code: Pair conductors black and red, with red conductor numerically printed for group identification.
 - 2. Cable Shield: 2.35-mil, double-faced aluminum/synthetic polymer, overlapped for 100 percent coverage.
 - 3. Cable Sizes:

Number	Maximum	Nominal Jacket
Of Pairs	Outside	Thickness
	Diameter	(mils)
	(inches)	
4	0.46	45
8	0.63	60
12	0.75	60
16	0.83	60
24	1.06	80
36	1.21	80

Number	Maximum	Nominal Jacket
Of Pairs	Outside Th	Thickness
	Diameter	(mils)
	(inches)	
50	1.42	80

- 4. Manufacturers:
 - a. Okonite Co.
 - b. Alpha Wire Corp.
- I. Variable Frequency Drive (VFD) Output Power Cable:
 - 1. Section applies to power cables routed between the output of VFD's and motor terminals.
 - 2. Cable shall be rated for 600 volts type MC and shall meet the requirements below:
 - a. Conductors shall be stranded copper.
 - b. All wire shall be brought to the job in unbroken packages and shall bear the data of manufacturing; not older than 12 months.
 - c. Type of wire shall be XHHW or RHW rated 75 degrees C suitable for wet locations.
 - d. No wire smaller than No. 12 gauge shall be used unless specifically indicated.
 - e. Cable construction shall consist of three insulated current-carrying phase conductors and three bare ground conductors, symmetrically placed between the phase conductors, and twisted beneath a continuous aluminum armor and overall polymeric jacket.
 - f. Armor must be continuous corrugated aluminum armor (CCA) manufacture. Aluminum interlocked armor (AIA) construction is not acceptable.
 - 3. Each ground conductor size (circular mil area) shall be one-third (1/3) of the NEC required size (circular mil area) for a single ground conductor. If one third of the required circular mil area does not correspond to a standard size (circular mil area) of construction, the next largest size of standard construction shall be us All conductors shall be megger tested after installation and insulation must be in compliance with the Insulated Power Cable Engineers Association Minimum Values of Insulation Resistance.
 - 4. Manufacturers:
 - a. Southwire ARMOR-X.
 - b. Approved Equal.
- J. Ethernet Cat. 6e UTP Cable (Copper):
 - 1. Section applies to all Ethernet Cable (Copper) except for Fiber Optic cable.
 - Conductor Physical Characteristics: 4 twisted pairs (8 conductors), 23 AWG solid bare Copper with Polyolefin Insulation. Overall Nominal Diameter: 0.235 inch. Operating Temperature Range: -20'C to +75'C. Model Number – 7881A, Belden Inc.
 - 3. NEC/UL specification CMR, UL444, UL verified category 6.
 - 4. Manufacturer:
 - a. Belden Inc.

2.04 GROUNDING CONDUCTORS

- A. Equipment: Stranded copper with green, Type USE/RHH/RHW-XLPE or THHN/THWN, insulation.
- B. Direct Buried: Bare stranded copper.

2.05 ACCESSORIES FOR CONDUCTORS 600 VOLTS AND BELOW

- A. Tape:
 - 1. General Purpose, Flame Retardant: 7-mil, vinyl plastic, Scotch Brand 33, rated for 90 degrees C minimum, meeting requirements of UL 510.
 - 2. Flame Retardant, Cold and Weather Resistant: 8.5-mil, vinyl plastic, Scotch Brand 88.
 - 3. Arcs and Fireproofing:
 - a. 30-mil, elastomer
 - b. Manufacturers and Products:
 - 1) Scotch; Brand 77, with Scotch Brand 69 glass cloth tape binder.
 - 2) Plytnount; Plyarc 30, with Plymount Plyglas glass cloth tape binder.
- B. Identification Devices:
 - 1. Sleeve: Permanent, PVC, yellow or white, with legible machine-printed black markings.
 - 2. Marker Plate: Nylon, with legible designations permanently hot stamped on plate.
 - 3. Grounding Conductor: Permanent green heat-shrink sleeve, 2-inch minimum.
- C. Connectors and Terminations:
 - 1. Nylon, Self-Insulated Crimp Connectors:
 - a. Manufacturers and Products:
 - 1) Thomas & Betts; Sta-Kon.
 - 2) Burndy; Insulink.
 - 3) ILSCO.
 - 2. Nylon, Self-Insulated, Crimp Locking-Fork, Torque-Type Terminator:
 - a. Manufacturers and Products:
 - 1) Thomas & Betts; Sta-Kon.
 - 2) Burndy; Insulink.
 - 3) ILSCO.
- D. Cable Lugs:
 - 1. In accordance with NEMA CC I.
 - 2. Rated 600 volts of same material as conductor metal.
 - 3. Insulated, Locking-Fork, Compression Lugs:
 - a. Manufacturers and Products:
 - 1) Thomas & Betts; Sta-Kon.
 - 2) ILSCO; ILSCONS.
 - 4. Un-insulated Crimp Connectors and Terminators:
 - a. Manufacturers and Products:

- 1) Square D; Versitide.
- 2) Thomas & Betts; Color-Keyed.
- 3) ILSCO.
- 5. Un-insulated, Bolted, Two-Way Connectors and Terminators:
 - a. Manufacturers and Products:
 - 1) Thomas & Betts; Locktite.
 - 2) Burndy; Quiklug.
 - 3) ILSCO.
- E. Cable Ties: Nylon, adjustable, self-locking, and reusable.
 - 1. Manufacturers and Product: Thomas & Betts; TY-RAP.
- F. Heat Shrinkable Insulation: Thermally stabilized, crosslinked polyofin.
 - 1. Manufacturers and Product: Thomas & Betts; SHRINK-KON.
 - 2.06 ACCESSORIES FOR CONDUCTORS ABOVE 600 VOLTS
- A. Molded Splice Kits:
 - 1. Components necessary to provide insulation, metallic shielding and grounding systems, and overall jacket.
 - 2. Capable of making splices that has a current rating equal to, or greater than the cable ampacity, conforming to IEEE 404.
 - 3. 25 kV class, with compression connector, EPDM molded semiconductive insert, peroxide-cured EPDM insulation, and EPDM molded semiconductive outer shield.
 - 4. Pre-molded splice shall be re-jacketed with a heat shrinkable adhesive-lined sleeve to provide a waterproof seal.
 - 5. Manufacturers:
 - a. Elastimold.
 - b. Cooper industries.
- B. Heat Shrinkable Splice Kits:
 - 1. Components necessary to provide insulation, metallic shielding and grounding systems, and overall jacket.
 - 2. Capable of making splices that has a current rating equal to, or greater than the cable ampacity, conforming to IEEE 404.
 - 3. 25 kV class, with compression connector, splice insulating and conducting sleeves, stress-relief materials, shielding braid and mesh, and abrasion-resistant heat shrinkable adhesive-lined rejacketing sleeve to provide a waterproof seal.
 - 4. Manufacturers:

- a. Raychem.
- b. 3M Co.
- C. Termination Kits:
 - 1. Capable of terminating a 25 kV, single-conductor, polymeric-insulated shielded cables plus a shield ground clamp.
 - 2. Capable of producing a termination with a current rating equal to, or greater than, the cable ampacity, meeting Class 1 requirements of IEEE 48.
 - 3. Capable of accommodating any form of cable shielding or construction without the need for special adapters and/or accessories.
 - 4. Manufacturers:
 - a. Raychem.
 - b. 3M Co.
- D. Bus Connection Insulation:
 - 1. Heat shrinkable tubing, tape, and sheets of flexible crosslinked polymeric material formulated for high dielectric strength.
 - 2. Tape and sheet products to have coating to prevent adhesion to metal surfaces.
 - 3. Insulating materials to be removable and reusable.
 - 4. Manufacturer: Raychem.
- E. Cable Lugs:
 - 1. In accordance with NEMA CCI.
 - 2. Rated 25 kV of same material as conductor metal.
 - 3. Manufacturers and Products, Uninsulated Crimp Connectors and Terminators:
 - a. Square D; Versitide.
 - b. Thomas & Betts; Color-Keyed.
 - c. ILSCO.
 - 4. Manufacturers and Products, Uninsulated, Bolted, Two-Way Connectors and Terminators:
 - a. Thomas & Betts; Locktite.
 - b. Burndy; Quiklug.
 - c. JLSCO.

2.07 PULLING COMPOUND

- A. Nontoxic, non-corrosive, noncombustible, nonflammable, wax-based lubricant; UL listed.
- B. Suitable for rubber, neoprene, PVC, polyethylene, hypalon, CPE, and lead-covered wire and cable.
- C. Suitable for zinc-coated steel, aluminum, PVC, bituminized fiber, and fiberglass raceways.

- D. Manufacturers and Products:
 - 1. Ideal Co.; Yellow 77.
 - 2. Polywater, Inc.
 - 3. Cable Grip Co.

2.08 BUSWAY

- A. Low impedance, copper bus bar, outdoor copper-free 1/8-inch extruded aluminum housing with full neutral (where specified) and internal ground bus, totally enclosed non-ventilated and joint insulation of polyester film.
- B. UL listed for support and spacing provided, meeting NFPA 70 requirements, NEMA BU-1, UL B57, ANSI C37.23, and totally enclosed throughout its length.
- C. Suitable for mounting in vertical (edgewise) or horizontal position without derating, and capable of withstanding short-circuit of 100,000 amperes symmetrical.
- D. Provide expansion fitting when the bus crosses a building expansion joint.
- E. Provide integral weather seal on all outdoor entrance points.
- F. Provide flanged ends or end cable tap box on all indoor end points.
- G. Manufactured by Square D, Model I-Line II, or approved equal.
 - 2.09 WARNING TAPE
- A. As specified in Section 16110, RACEWAYS.
 - 2.10 SOURCE QUALITY CONTROL
- A. Conductors 600-Volts and Below: Test in accordance with UL 44 and 854 Standards.
- B. Conductors Above 600 Volts: Test in accordance with NEMA W8 and AEIC CS 6 partial discharge level test for EPR insulated cable.
- 3.02 PART 3 -- EXECUTION
 - 3.01 GENERAL
 - A. Conductor installation to be in accordance with NECA 5055.

- B. Conductor and cable sizing shown is based on copper conductors, unless noted otherwise.
- C. Do not exceed cable manufacturer's recommendations for maximum pulling tensions and minimum bending radii.
- D. Tighten screws and terminal bolts in accordance with UL 486A for copper conductors.
- E. Cable Lugs: Provide with correct number of holes, bolt size, and center-to-center spacing as required by equipment terminals.
- F. Bundling: Where single conductors and cables in manholes, hand holes, vaults, and other indicated locations are not wrapped together by some other means, bundle conductors from each conduit throughout their exposed length with cable ties placed at intervals not exceeding 18 inches on center.
- G. Ream, remove burrs, and clear interior of installed conduit before pulling wires or cables.
- H. Concrete-Encased Raceway Installation: Prior to installation of conductors, pull through each raceway a mandrel approximately 1/4-inch smaller than raceway inside diameter.
- I. Cable Tray Installation:
 - 1. Install wire and cable parallel and straight in tray.
 - 2. Bundle, in groups, all wire and cable of same voltage having a common routing and destination; use cable ties, at maximum intervals of 8 feet.
 - 3. Clamp cable bundles prior to making end termination connections.
 - 4. Separate cables of different voltage rating in same cable tray with barriers.
 - 5. Fasten wires, cables, and bundles to tray with nylon cable straps at the following maximum intervals:
 - a. Horizontal Runs: 20 feet.
 - b. Vertical Runs: 5 feet.

3.02 POWER CONDUCTOR COLOR CODING

- A. Conductors 600 Volts and Below:
 - 1. No. 6 AWG and Larger: Apply general purpose, flame retardant tape at each end, and at accessible locations wrapped at least six full overlapping turns, covering an area 1-1/2 to 2 inches wide.
 - 2. No. 8 AWG and Smaller: Provide colored conductors.
 - 3. Colors:

System	Conductor	Color	
All Systems	Equipment Grounding	Green	
240/120 Volts	Grounded Neutral	White	
Single-Phase, Three-	One Hot Leg	Black	
Wire	Other Hot Leg	Red	
208Y/120 Volts	Grounded Neutral	White	
Three-Phase, Four-	Phase A	Black	
Wire	Phase B	Red	
	Phase C	Blue	
240/120 Volts	Grounded Neutral	White	
Three-Phase, Four-	Phase A	Black	
Wire	High (wild) Leg	Orange	
Delta, Center Tap	Phase C	Blue	
Ground on Single-			
Phase			
480Y/277 Volts	Grounded Neutral	Gray	
Three-Phase, Four-	Phase A	Brown	
Wire	Phase B	Orange	
	Phase C	Yellow	
NOTE: Phase A, B, C implies direction of positive phase rotation			

- 4. Tracer: Outer covering of white with an identifiable colored strip other than green in accordance with NFPA 70.
- B. Conductors Above 600 Volts: Apply general purpose, flame retardant tape at each end, and at accessible locations wrapped at least six full overlapping turns, covering an area 1-1/2 to 2 inches wide.
 - 1. Colors:
 - a. Grounded Neutral: White.
 - b. Phase A: Brown.
 - c. Phase B: Orange.
 - d. Phase C: Yellow.

3.03 CIRCUIT IDENTIFICATION

- A. Circuits Appearing in Circuit Schedules: identify power, instrumentation, and control conductor circuits, using circuit schedule designations, at each termination and in accessible locations such as manholes, hand holes, panels, switchboards, motor control centers, pull boxes, and terminal boxes.
- B. Circuits Not Appearing in Circuit Schedules:

- 1. Assign circuit name based on device or equipment at load end of circuit.
- 2. Where this would result in same name being assigned to more than one circuit, add number or letter to each otherwise identical circuit name to make it unique.
- C. Method:
 - 1. Conductors No. 3 AWG and Smaller: Identify with sleeves.
 - 2. Cables, and Conductors No. 2 AWG and Larger:
 - a. Identify with marker plates.
 - b. Attach marker plates with nylon tie cord.
 - 3. Taped-on markers or tags relying on adhesives not permitted.

3.04 CONDUCTORS 600 VOLTS AND BELOW

- A. Install 10 AWG or 12 AWG conductors for branch circuit power wiring in lighting and receptacle circuits.
- B. Do not splice incoming service conductors and branch power distribution conductors No. 6 AWG and larger unless specifically indicated or approved by ENGINEER.
- C. Connections and Terminations:
 - 1. Install wire nuts only on branch circuit conductors.
 - 2. Install nylon self-insulated crimp connectors and terminators for instrumentation, control, and power circuit conductors No. 6 AWG and smaller.
 - 3. Install un-insulated crimp connectors and terminators for instrumentation, control, and power circuit conductors No. 4 AWG through No. 2/0 AWG.
 - 4. Install un-insulated, bolted, two-way connectors and terminators for power circuit conductors No. 4/0 AWG and larger.
 - 5. Install un-insulated bolted, two-way connectors for motor circuit conductors No. 12 and larger.
 - 6. Tape insulates all un-insulated connections.
 - 7. Place no more than one conductor in any single-barrel pressure connection.
 - 8. Install crimp connectors with tools approved by connector manufacturer.
 - 9. Install terminals and connectors acceptable for type of material used.
 - 10. Compression Lugs
 - a. Attach with a tool specifically designed for purpose.
 - b. Tool shall provide complete controlled crimp and shall not release until crimp is complete.
 - c. Do not use plier type crimpers.
- D. Do not use soldered mechanical joints.
- E. Splices and Terminations:

- 1. Indoors: Use general purpose, flame retardant tape.
- 2. Outdoors: Use flame retardant, cold- and weather-resistant tape.
- F. Cap spare conductors and conductors with UL listed end caps.
- G. Cabinets, Panels, and Motor Control Centers:
 - 1. Remove surplus wire, bridle and secure.
 - 2. Where conductors pass through openings or over edges in sheet metal, remove bums, chamfer edges, and install bushings and protective strips of insulating material to protect the conductors.
- H. Control and Instrumentation Wiring:
 - 1. Where terminals provided will accept such lugs, terminate control and instrumentation wiring, except solid thermocouple leads, with insulated, locking-fork compression lugs.
 - 2. Terminate with methods consistent with terminals provided, and in accordance with terminal manufacturer's instructions.
 - 3. Locate splices in readily accessible cabinets or junction boxes using terminal strips.
 - 4. Where connections of cables installed under this section are to be made under Section 13400, PROCESS INSTRUMENTATION AND CONTROL SYSTEMS (PICS), leave pigtails of adequate length for bundled connections.
 - 5. Cable Protection:
 - a. Under Infinite Access Floors: May be installed without bundling.
 - b. All Other Areas: Install individual wires, pairs, or triads in flex conduit under the floor or grouped into bundles at least 1/2-inch in diameter.
 - c. Maintain integrity of shielding of instrumentation cables.
 - d. Ensure grounds do not occur because of damage to jacket over the shield.
- I. Extra Conductor Length: For conductors to be connected by others, install minimum 6 feet of extra conductor in freestanding panels and minimum 2 feet in other assemblies.
- J. Variable Frequency Drive (VFD) Output Power Cable:
 - 1. Install cables in raceway.
 - 2. Terminate the three ground conductors together at the motor and at the ground bus of the VFD.
 - 3. Terminate aluminum armor at motor and at VFD. At motor, terminate shield with cable manufacturer recommended termination kit. Termination shall be to the motor junction box. At the VFD, terminate armor to the invertor drive frame. The termination kit must provide a 360-degree connection of the armor to frame and motor junction box.

3.05 CONDUCTORS ABOVE 600 VOLTS

A. Do not splice unless specifically indicated or approved by the ENGINEER.

- B. Make joints and terminations with splice and termination kits, in accordance with kit manufacturer's instructions
- C. Install splices or terminations as continuous operation in accessible locations under clean, dry conditions.
- D. Single Conductor Cable Terminations: Provide heat shrinkable stress control and outer nontracking insulation tubing, high relative permittivity stress relief mastic for insulation shield cutback treatment, and a heat-activated sealant for environmental sealing, plus a ground braid and clamp.
- E. Install terminals or connectors acceptable for type of conductor material used.
- F. Provide outdoor rain skirts for all riser pole and outdoor switchgear terminations.
- G. Provide shield termination and grounding for all terminations.
- H. Provide necessary mounting hardware, covers, and connectors.
- I. Where elbow connectors are specified, install in accordance with manufacturer's instructions.
- J. Connections and Terminations:
 - 1. Install un-insulated crimp connectors and terminators for instrumentation, control, and power circuit conductors No. 4 AWG through No. 210 AWG.
 - 2. Install un-insulated, bolted, two-way connectors and terminators for power circuit conductors No. 4/0 AWG and larger.
 - 3. Install un-insulated, bolted, two-way connectors for motor circuit conductors No. 12 and larger.
 - 4. Insulate bus connections with heat shrinking tubing, tape, and sheets.
 - 5. Make all bus connections removable and reusable in accordance with manufacturer's instructions.
- K. Give 2 working days' notice to ENGINEER prior to making splices or terminations.

3.06 CONDUCTOR ARC AND FIREPROOFING

- A. Install arc and fireproofing, tape on 600-volt single conductors and cables except those rated Type TC in manholes, hand holes, vaults, cable trays, and other indicated locations.
- B. Install arc and fireproofing tape on 25 kV cables throughout their entire exposed length in manholes, hand holes, vaults, cable trays, and other indicated locations.
- C. Wrap conductors of same circuit entering from separate conduit together as a single cable.

- D. Follow tape manufacturer's installation instructions.
- E. Secure tape at intervals of 5 feet with bands of tape binder. Each tape band shall consist of a minimum of two wraps directly over each other.

3.07 BUSWAY

- A. Install in strict accordance with manufacturer's recommendations and NFPA 70.
- B. Maximum Support Spacing: 10 feet.

3.08 UNDERGROUND DIRECT BURIAL CABLE

- A. Install in trench as required.
- B. Warning Tape: Install approximately 12 inches above cable, aligned parallel to, and within 12 inches of centerline of the run.

END OF SECTION

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SECTION 16780

S.C.A.D.A. SYSTEM R.T.U. INSTALLATION

PART 4 - GENERAL

4.01 SCOPE

- A. All conditions of the existing contract shall apply.
- B. The Contractor shall coordinate all work with the local Electrical Supervisor for the area. The Contractor shall review the installation with the area Electrical Supervisor before starting the work. The installation shall be completed and inspected by the local supervisor or his representative.
- C. The Contractor shall be responsible for location of all utilities..

4.02 REFERENCE STANDARDS

A. All work shall be in accordance with the Florida Building Code and the National Electrical Code.

PART 5 - PRODUCTS

5.01 MATERIALS

- A. R.T.U. in a NEMA 4X enclosure. Note that batteries are to be furnished and installed inside the 4X enclosure by the contractor.
- B. Radio
- C. Antenna with mounting cap and cable
- D. Force main pressure transmitter assembly consisting of a 1-inch diameter threaded nipple, manifold with test port and pressure gage with isolation diaphragm and the pressure transmitter unit.
- E. Low level pressure switch
- F. Wet well level transformer (for the RTU)
- G. Current transformer
- H. Amp transmitter
- I. "Station Flooding" (drywell) and "High Level" (wetwell) float switches; Mini Float, model SM N.O.

- J. "Low Level" (wetwell) float switch; Mini Float, model SM N.C.
- K. "Intrusion Alarm", Square D 9007 Series A, Type C54D, Type C54RC, Type C54A2, Microswitch #MC7711-BZ-2R-A2 or equal as required for that type of installation.
- L. Unless otherwise specifically called out elsewhere herein, all other labor, materials and equipment required for SCADA System R. T. U. Installation will be provided by the Contractor whether or not said items are specifically called out in the Contract Documents.
- M. Individual wires shall be 600 volt, 75E C insulation, 14 gauge stranded copper. Ends shall be terminated with compression lugs. Wires shall be color coded according to Miami-Dade Water and Sewer Department supplied drawings and identified by wire marking labels. Any circuits designated as "spare" shall each have individual ends securely taped and marked "spare".
- N. Shielded multi-conductor transducer wire shall be Belden twisted #16 stranded copper with shield, 600 volt rated. The shield shall be terminated at the R. T. U. end only. Shield shall be cut back to insulation and taped at other end. Shielded wire shall be run in a raceway with no other power circuits.
- 0. The antenna ground rod shall be copper weld 3/4", 10 feet long and driven by the Contractor.
- P. Tapping saddle assembly for pressure transmitter consisting of: solid brass, single strap (silicon bronze), tapping saddle with Buna-N-gasket, Ford Style 101B with 1-inch tap; brass corporation stop with 1-inch inlet, outlet and valve AWWA/CC taper thread inlet by flare copper outlet, Ford FB600-4; brass adapter for flare copper connection (replaces flare nut) 1-inch female copper thread x 1-inch female iron pipe thread, Ford part no. C01-44. All items specified as brass shall be ASTM B-62, UNS C83600 allow and shall conform with NSF 61..

PART 6 - EXECUTION

6.01 ANALOG INPUTS

A. Three transducers are involved at each site with standard or microprocessor control (current, wetwell pressure level, and force main pressure). The pressure transmitters will be installed by Medley WASD forces in coordination with, and as a part of, the Contractor's permitted work. The Contractor shall mount the current transformer on the leg of the power cable from which the control power is derived and connect shielded wiring to all three transducers. The current transformer shall be installed to indicate power used whether on normal or generator power where applicable. The current transducer shall be installed in existing cabinets as close as possible to the current transformer.

- B. At sites identified by Medley WASD only two types of transducers, (force main pressure and current), will be used. Shielded wire from the level logic control device to the R. T. U. shall be installed for level indication. Termination of the shielded cable to the control unit shall be performed by Medley WASD forces.
- C. Other analog inputs may include flow recorders, suction pressure, discharge pressure, vibration or R. P. M. input. The Medley WASD shall supply devices and the Contractor will supply and install circuits. These circuits will be installed by the Contractor, but terminated by Medley WASD forces.

6.02 ANALOG OUTPUTS

A. At sites determined by Medley WASD shielded wire and conduit shall be installed for analog outputs such as VFD speed control, valve control, or other positioning devices. Circuits shall be installed by the Contractor, but terminated by Medley WASD.

6.03 DISCRETE INPUTS

- A. Feedback signal circuits are "Pump On", "Station Flooding" (drywell), "High Level" (wetwell), "Low Level" (wetwell), "Generator Run", "Intrusion Alarm" and "Common Alarm". Except where noted, the Contractor shall provide all materials and devices to complete these two wire circuits. The power will be from the R. T. U. and all devices shall be normally open in the safe or off condition.
 - 1. "Pump On" shall be provided by a Contractor furnished and installed auxiliary contact on each pump motor starter. (Note: two speed pumps require two per pump.) No other devices shall be used to indicate "Pump On".
 - 2. "Station Flooding" (drywell), "High Level" (wetwell), and "Low Level" (wetwell), shall be supplied by Medley WASD and installed by the Contractor. In pump stations with pneumatic controls (bubbler system) Medley WASD will provide a pneumatic pressure switch for "Low Level" (wetwell) to be installed by the Contractor.
 - 3. "Intrusion Alarm" will be supplied by Medley WASD and installed by the Contractor.

6.04 DISCRETE OUTPUTS

- A. Active control circuits to start each pump, (or each speed), stop pump, and reset alarms shall be installed and connected.
 - 1. The normally closed stop relay in the R. T. U. shall be connected in series to the existing stop control circuit.
 - 2. The normally open start relay shall be connected in parallel to the existing auto start control circuit. No existing safety or process orderly shutdown circuits shall be bypassed or defeated for either the start or stop control circuit.
3. The "Common Alarm" circuit shall be from a normally open R.T.U. relay in parallel with the existing reset switch.

6.05 R. T. U.

- A. There shall be no holes or entrance of any type into the top of the R.T.U. enclosure.
- B. The R. T. U. shall not be mounted below grade or inside the drywell. If existing structure does not provide mounting for the R.T.U. a separate Medley WASD approved stanchion shall be constructed and installed by the Contractor. The R.T.U. stanchions shall be installed in accordance with current Medley WASD approved S. C. A. D. A., R. T. U. installation drawings. Equivalent parts shall require approval by the S.C.A.D.A. Section representative.
- C. All abraded galvanized hardware shall be cleaned and then recoated with two coats of cold galvanized compound.

6.06 CONDUITS

- A. Rigid galvanized conduit shall be used in all exterior below grade installations. It shall be coated with two coats of Bitumastic No. 50 or equal. Rigid galvanized conduit shall extend completely through all concrete penetrations at which point it may be converted to PVC conduit in the interior of the drywell. Rigid aluminum conduit may be used in installations above grade where exposed.
- B. All concrete penetrations shall be sealed with epoxy grout compound. All conduits shall have minimum 1/4" spacing where installed on concrete surfaces.
- C. All conduits below grade and/or extending from the wetwell shall have seal off fittings installed before entry into the R. T. U. enclosure. All conduits shall be sealed with duct seal compound during the construction phase to limit the exposure of electronic circuitry to corrosive atmosphere.

6.07 MISCELLANEOUS

- A. A separate circuit shall be provided for and installed by the Contractor from the existing lighting/control panel, to provide 120 VAC power to the R. T. U. This circuit shall be routed through an available phase monitor relay normally open contact. This circuit will be switched on by the SCADA Section at start-up.
- B. For wetwell/drywell pump stations with the pump controller in the drywell a Medley WASD supplied enclosure and terminal strips shall be installed for circuits entering and exiting the drywell.

- C. Additional work such as sidewalk or street cutting may be required. This work must be authorized by the Project Manager and validated by a detailed, itemized invoice showing exact labor and material used.
- D. An as-built drawing, (schematic and point-to-point) of the final installation and approved by the SCADA representative shall be provided by the Contractor for the installation before final payment is made.
- E. A Certificate of Completion and original approved permits shall be supplied to the Department before final payment is made.
- F. Install SCADA tapping saddle at location shown on Plans, pressure test, perform 1-inch tap, in coordination with Medley WASD forces, connect remainder of pressure transmitting system, and test.

END OF SECTION

Construction Drawings



MAYOR **ROBERTO MARTELL**

VICE-MAYOR **GRISELIA DIGIACOMO**

COUNCILPERSON EDGAR AYALA

COUNCILPERSON **JACK MORROW**

COUNCILPERSON SUSANA GUASCH

TOWN OF MEDLEY

SANITARY SEWER LIFT STATION No. 100-A UPGRADE CIP Task No. WS-0102.02



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		LIST OF SHEETS
NO. SHEET		DESCRIPTION
1	G-001	COVER SHEET
2	G-002	GENERAL NOTES
3	G-003	GENERAL NOTES
4	V-101	EXISTING CONDITIONS AND LEGEND
5	D-101	DEMOLITION PLAN
6	C-101	LIFT STATION PLAN
7	C-501	WATER AND SEWER DETAILS
8	M-101	MOPS PUMP STATION
9	E-001	ELECTRICAL LEGEND AND GENERAL NOTES
10	E-002	ELECTRICAL DEMOLITION PLAN
11	E-003	PROPOSED ELECTRICAL PLAN
12	E-004	ELECTRICAL SCHEMATIC
13	E-005	ELECTRICAL DETAILS









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2244 4TH AVENUE NORTH LAKE WORTH, FL 33461 PHONE: (561) 547-8080 FAX: (561) 547-3999 FLORIDA EB# 26398

AND



HILLERS ELECTRICAL ENGINEERING, INC. 23257 STATE ROAD 7, SUITE 100 BOCA RATON, FLORIDA 33428 PHONE: (561) 451-9165 FAX: (561) 451-4886 FLORIDA EB# 6877

	1 2	3 4	5 6
	GENERAL NOTES:	WATER AND SEWER NOTES:	EROSION AND SEDIMENTATION CONTR
	1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL UTILITIES AND MODIFICATIONS OF THE EXISTING CONDITIONS AT THE JOB SITE. CALL SUNSHINE STATE ONE-CALL OF FLORIDA AT 811 OR	 SEE SHEET C-101 FOR TOWN OF MEDLEY WATER & SEWER DEPARTMENT (MEDLEY WASD) GENERAL CONSTRUCTION NOTES. 	NOTES:
	 SITE CONDITIONS MAY HAVE CHANGED SINCE SURVEY WAS PERFORMED. CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO SUBMITTING BID. 	 AT THE COMPLETION OF THE PROJECT, "AS-BUILT" DRAWINGS SHALL BE PREPARED BY THE CONTRACTOR IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE MEDLEY WASD "AS-BUILT STANDARDS." 	RUNOFF BY THE USE OF GRAVEL FILLED BAGS. PROPOSED SWALE IN SHALL BE PROTECTED WITH GEOTEXTILE (FILTER) FABRIC.
	3. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO SAFEGUARD ALL EXISTING STRUCTURES AND UTILITIES. THE LOCATION OF EXISTING UTILITIES SHOWN ON THESE DAYS AND ADDRESS	 THE PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MOST RECENT VERSIONS OF ALL MEDLEY WASD STANDARD DETAILS FOR WATER CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO: 	 DUMP TRUCKS IMPORTING FILL MATERIALS TO THE SITE SHALL COVER THEIR LOADS WITH A TARPAULIN TO AVOID UNNECESSARY GENERATION DUST.
	AND ARE BASED UPON AVAILABLE INFORMATION. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY AND ALL CONFLICTS WITH EXISTING UTILITIES SHALL BE REPORTED TO THE CONSTRUCTION ENGINEER AND INSPECTOR (CEI) AND THE ENGINEER OF RECORD (EOR).	 3.1. MGS 0.5 - STANDARD REQUIREMENTS FOR WATER CONSTRUCTION 3.2. MWS 2.16 STANDARD WATER SUPPLY DETAIL TYPICAL 1-1/2" & 2" SERVICE INSTALLATION 3.3. MWS 4.18 REDUCED PRESSURE ZONE BACKFLOW PREVENTER FOR 1-1/2" & 2" WATER SERVICE 	 ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF AS PER LOCAL AND/OR STATE REGULATIONS OR AS RECOMMENDED BY THE MANUFACTURER. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEII THAT THESE PROCEDURES ARE FOLLOWED.
	ANY ADDITIONAL WORK REQUIRED BY THE CONTRACTOR IN CONJUNCTION WITH UNKNOWN UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.		4. THE GENERAL CONTRACTOR'S STE SUPERINTENDENT SHALL SELECT A LEAST ONE INDIVIDUAL WHO WILL BE RESPONSIBLE FOR INSPECTIONS MAINTENANCE AND REPAIR ACTIVITIES. PERSONNEL SELECTED FOR INSPECTION AND MAINTENANCE RESPONSIBILITIES SHALL RECEIVE PRO TRAINING IN ALL THE INSPECTION AND MAINTENANCE PRACTICES
	4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SCHEDULING OF, AND PAYMENT FOR, SUCH TESTS THAT MAY BE DEEMED NECESSARY BY THE CEI, AND AS CALLED FOR IN THE DRAWINGS AND SPECIFICATIONS.	EXCAVATING, TRENCHING AND BACKFILLING NOTES:	NECESSARY FOR KEEPING EROSION AND SEDIMENT CONTROLS USED ONSITE IN GOOD WORKING ORDER.
۵	5. DIMENSIONS AND GRADING OF THE SITE ARE BASED UPON AVAILABLE INFORMATION AT THE TIME OF LAYOUT. DEVIATIONS MAY BE NECESSARY IN THE FIELD. ANY SUCH CHANGES OR CONFLICTS BETWEEN THESE DRAWINGS AND FIELD CONDUCIONS ARE TO BE DEPORTED TO THE CEL	CONTRACTOR SHALL UNDERPIN ADJACENT STRUCTURES, WHICH MAY BE DAMAGED BY EXCAVATING WORK. CONTRACTOR SHALL GRADE TOP	 CONTRACTOR SHALL PROTECT SOIL STOCKPILES FROM WIND EROSION COVERING OR SEEDING/MULCHING. WIND EROSION CONTROLS SHALL BE LISED TO KEEP DUST LINDER
	PRIOR TO STARTING CONSTRUCTION. 6. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO APPLICABLE	PERIMELER OF EXCAVATION TO PREVENT WATER FROM DRAINING INTO EXCAVATION. PREVENT DISPLACEMENT OR LOOSE SOIL FROM FALLING INTO EXCAVATION, AND MAINTAIN SOIL STABILITY.	CONTROL. THIS CAN INCLUDE SPRINKLING OR WIND BARRIERS. 7. TEMPORARY AND PERMANENT SEEDING AND PLANTING SHALL BE
	STATE, COUNTY, AND/OR TOWN OF MEDLEY CODES. 7. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING TREES, STRUCTURES, AND UTILITIES WHICH MAY NOT BE SHOWN ON	 EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING OR THAT IS UNSUITABLE FOR BACKFILL SHALL BE DISPOSED OF BY THE CONTRACTOR AT HIS OWN EXPENSE. CONTRACTOR SHALL PROVIDE DISPOSAL MANIFEST TO THE CEL DISPOSAL MANIFESTS ARE RECEIPTS FROM A LICENSED AND 	 INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH. INSPECTION OF EROSION AND SEDIMENTATION CONTROLS BY THE CONTRACTOR'S REPRESENTATIVE SHALL BE PERFORMED EVERY SEVEN
	PLANS. ANY EXISTING STRUCTURE, PAVEMENT, TREES OR OTHER EXISTING IMPROVEMENT NOT SPECIFIED FOR REMOVAL WHICH IS TEMPORARILY DAMAGED, EXPOSED, OR IN ANY OTHER WAY DISTURBED BY CONSTRUCTION PERFORMED UNDER THIS CONTRACT SHALL BE REPAIRED	APPROVED DISPOSAL FACILITY. (E.G. LANDFILL) 3. TRENCHES 5 FEET DEEP OR GREATER REQUIRE A PROTECTIVE SYSTEM	CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM T IS 0.50 INCHES OR GREATER. THE CONTRACTOR SHALL CORRECT DA OR PROVIDE MAINTENANCE AS RECOMMENDED AS SOON AS PRACTICA BUT IN NO CASE LATER THAN SEVEN CALENDAR DAYS FOLLOWING TH
	PATCHED, OR REPLACED AT NO ADDITIONAL COST TO THE OWNER. ALL SIDEWALKS, DRIVEWAYS, LANDSCAPE, MAILBOXES, FENCES, AND GRASS AREAS DISTURBED DURING CONSTRUCTION MUST BE RETURNED TO THEIR ORIGINAL CONDITION OR BETTER AS DETERMINED BY THE TOWN OR ITS	 3.1. SLOPING - PROTECTS WORKERS BY CUTTING BACK THE TRENCH WALL AT AN ANGLE INCLINED AWAY FROM THE EXCAVATION. 2.2. SUBDING - PROTECTS WORKERS BY INSTALLING AUXIMUM 	INSPECTION. ALL CONTROLS MUST BE IN GOOD OPERATING CONDITION UNTIL THE AREA THEY PROTECT HAS BEEN COMPLETELY STABILIZED / THE CONSTRUCTION IS COMPLETED.
O	REPRESENTATIVE. 8. EXISTING TREES SHALL BE REMOVED ONLY IF REQUIRED FOR	 SHORING - PROTECTS WORKERS BY INSTALLING ALUMINUM HYDRAULIC OR OTHER TYPES OF SUPPORTS TO PREVENT SOIL MOVEMENT. SHUELING - PROTECTS WORKERS BY USING TEENOL POVES OF 	RER NOTES ON WATER-SEWER
	SHALL BE PROTECTED IN PLACE. THE CONTRACTOR IS ADVISED THAT A TREE PERMIT MAY BE REQUIRED FOR TREE REMOVAL. CONTRACTOR SHALL NOTIFY THE MIAMI-DADE DEPARTMENT OF PERMITTING,	 Shielding - PROJECTS WORKERS BY USING TRENCH BOXES OR OTHER TYPES OF SUPPORTS TO PREVENT SOIL CAVE-INS. OSHA STANDARDS REQUIRE THAT TRENCHES BE INSPECTED DAILY AND AS 	INSTALLATION
	ENVIRONMENT AND REGULATORY AFFAIRS (PERA) AND THE TOWN PRIOR TO REMOVING ANY TREES.	CONDITIONS CHANGE BY A COMPETENT PERSON PRIOR TO WORKER ENTRY TO ENSURE ELIMINATION OF EXCAVATION HAZARDS.	MINIMUM OF 6 FEET SHALL BE MAINTAINED BETWEEN GRAVITY OR PRESSURE SEWER PIPES AND WATER MAINS. THE HORIZONTAL SEPARATION CAN BE REDUCED TO A MINIMUM OF 3 FEET ONLY FOR
	DISPOSED OF PROPERLY BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.	FOLLOWING A RAINSTORM OR AFTER ANY HAZARDOUS EVENT. TEST FOR LOW OXYGEN, HAZARDOUS FUMES AND TOXIC GASES BEFORE ENTERING A TRENCH. KEEP HEAVY EQUIPMENT AND EXCAVATION SPOILS AT LEAST	GRAVITY SEWER PIPES WHERE THE BOTTOM OF THE WATER MAIN IS AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SANITARY SEW WHEN THE ABOVE SPECIFIED HORIZONTAL DISTANCE CRITERIA CANNO' MET DUE TO AN EXISTING UNDERGROUND FACILITY CONFLICT, SMALLE
	10. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN FOR APPROVAL BY THE TOWN, THE CEI, AND THE TOWN OF MEDLEY POLICE DEPARTMENT.	LADDERS, RAMPS OR OTHER SAFE MEANS OF ACCESS IN ALL TRENCHES 4 FEET DEEP OR DEEPER.	SEPARATIONS ARE ALLOWED IF: - THE SEWER PIPES ARE DESIGNED AND CONSTRUCTED EQUAL TO " WATER PIPE AND PRESSURE TESTED AT 150 PSI. - THE SEWER IS ENCASED IN A WATERTIGHT CARRIER PIPE OR
ш	11. IF ADDITIONAL GEOTECHNICAL INFORMATION IS NECESSARY TO DETERMINE THE CONDITION OF THE EXISTING MATERIAL AT THE JOB SITE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THE GEOTECHNICAL EXPLORATION AT NO ADDITIONAL COST TO THE TOWN	 OSHA STANDARDS FOR CONFINED SPACES, PROVIDED IN 29 CFR 1926, SHALL BE FOLLOWED BY THE CONTRACTOR. PIPES SHALL BE INSPECTED BEFORE ANY BACKFILL IS PLACED: ANY 	CONCRETE. — THE TOP OF THE SEWER IS AT LEAST 18 INCHES BELOW THE BOTTOM F THE WATER PIPE.
	12. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY DEWATERING PERMITS WHICH MAY BE REQUIRED.	PIPES FOUND TO BE OUT OF ALIGNMENT, UNDULY SETTLED, OR DAMAGED SHALL BE REMOVED AND RE-LAID OR REPLACED BY AND AT THE CONTRACTOR'S EXPENSE.	 A VERTICAL DISTANCE OF AT LEAST 12 INCHES (OUTSIDE TO OUTSID SHALL BE MAINTAINED BETWEEN ANY WATER AND SEWER MAINS WITH SEWER PIPES PREFERABLY CROSSING UNDER WATER MAINS. THE
	13. ANY SURVEY REQUIRED BY THE CONTRACTOR SHALL BE AT NO ADDITIONAL COST TO THE TOWN.	8. MATERIAL FOR TRENCH BACKFILL SHALL BE TYPE A-1, A-3, OR A-2-4 IN ACCORDANCE WITH THE AASHTO DESIGNATION M 145 AND SHALL BE FREE FROM VEGETATION AND ORGANIC MATERIAL.	MINIMUM VERTICAL SEPARATION CAN BE REDUCED TO 6 INCHES FOR GRAVITY SEWERS WHERE THE SEWER PIPE IS CROSSING BELOW THE WATER MAIN. THE CROSSING SHALL BE ARRANGED SO THAT ALL WAT MAIN JOINTS ARE AT LEAST 6 FEET FROM AU JOINTS IN GRAVITY AN
	 NO CHANGE IN THE DESIGN SHALL BE ACCEPTED WITHOUT THE APPROVAL OF THE EOR AND THE TOWN. THE CONTRACTOR. BY VIRTUE OF SIGNING THE CONTRACT 	9. DAMAGE CAUSED BY MOVEMENT OF CONSTRUCTION MACHINERY OVER A PIPE OR CULVERT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.	PRESSURE SEWER PIPES. WHEN THE ABOVE SPECIFIED VERTICAL DISTANCE CRITERIA CANNOT BE MET DUE TO AN EXISTING UNDERGRO FACILITY CONFLICT, SMALLER SEPARATIONS ARE ALLOWED IF:
	ACKNOWLEDGES THAT HE AND ALL OF HIS SUBCONTRACTORS ARE FAMILIAR WITH THE LOCAL WEATHER CONDITIONS. IN THE EVENT OF INCLEMENT WEATHER, THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO THE DOWN LOOSE MATERIAL AND EQUIPMENT, OR SHALL REMOVE THEM FROM THE PROJECT SITE, AT NO COST TO THE TOWN.	10. SYSTEMATICALLY BACKFILL TO ALLOW MAXIMUM TIME FOR NATURAL SETTLEMENT. DO NOT BACKFILL OVER POROUS, WET, OR SPONGY SUBGRADE SURFACES. MAINTAIN OPTIMUM MOISTURE CONTENT OF BACKFILL MATERIALS TO ATTAIN REQUIRED COMPACTION DENSITY. CONTRACTOR SHALL REMOVE SURPLUS BACKFILL MATERIAL FROM THE SITE.	 HE SEWER PIPES ARE DESIGNED AND CONSTRUCTED EQUAL TO TWATER PIPE AND PRESSURE TESTED AT 150 PSI. THE SEWER IS ENCASED IN A WATERTIGHT CARRIER PIPE OR CON THE CONTRACTOR SHALL VERIFY NATURE, DEPTH, AND CHARACTER OEXISTING UNDERGROUND UTILITIES PRIOR TO START CONSTRUCTION.
V	16. IN THE EVENT OF A HURRICANE WATCH, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE FROM THE PROJECT SITE, OR SECURE TO THE CEI'S SATISFACTION, ALL LOOSE CONSTRUCTION MATERIALS AND EQUIPMENT AND THE CONTRACTOR SHALL PROTECT STRUCTURES UNDER CONSTRUCTION. THE CONTRACTOR SHALL ALSO COOPERATE IN THIS REGARD WITH TOWN PERSONNEL IN PROTECTING OTHER STRUCTURES WITHIN THE PROJECT SITE. THE CONTRACTOR SHALL CONFORM TO THE	11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY BEDDING MATERIAL ASSOCIATED WITH THE INSTALLATION THE NEW PUMP STATION, WET WELL, PIPE, AND OTHER PROPOSED IMPROVEMENTS.	 ALL OTHER PUBLIC OR PRIVATE UTILITY FACILITIES SHALL BE CONSTRUCTED AT LEAST 5 FEET FROM ANY WATER AND SEWER MAIN MEASSURED FROM THE OUTSIDE BELL OF THE WATER OF THE UTILIT PIPE. WHEN THE 5 FEET SEPARATION BETWEEN PROPOSED AND EXISTING I IS NOT POSSIBLE, THE CONTRACTOR SHALL HAND DIG OR EXPOSE T WATER AND SEWER PIPES BEFORE PROCEEDING WITH POWER EQUIPM
	REQUIREMENTS OF THE TOWN OF MEDLEY HURRICANE PLAN.		EXCAVATION.



1 2	3 4	5 6	7	
RER NOTES ON WATER-SEWER	LIFT STATION BYPASS SYSTEM REQUIREMENTS:	7.6. DISCHARGE PIPING — IN ORDER TO PREVENT THE ACCIDENTAL SPILLAGE OF FLOWS ALL DISCHARGE SYSTEMS SHALL BE TEMPORARILY CONSTRUCTED OF RIGID PIPE WITH POSITIVE, RESTRAINED JOINTS. UNDER NO CIRCUMSTANCES WILL ALUMINUM "IRRIGATION" TYPE PIPING		Kimley »Horn
 6. IN NO CASE SHALL A CONTRACTOR INSTALL UTILITY PIPES, CONDUITS, CABLES, ETC. IN THE SAME TRENCH PARALLEL AND ABOVE AN EXISTING WATER OR SEWER PIPE EXCEPT WHERE THE CROSS. ANY DEVIATION FROM NOTES 3, 4, AND 5 SHALL BE APPROVED IN WRITING BY THE RESPONSIBLE WATER AND SEWER UTILITY. 	 THE CONTRACTOR IS REQUIRED TO FURNISH ALL MATERIALS, LABOR, EQUIPMENT, POWER, MAINTENANCE, ETC. TO IMPLEMENT A TEMPORARY PUMPING SYSTEM FOR THE PURPOSE OF DIVERTING THE EXISTING FLOW AROUND THE WORK AREA FOR THE DURATION OF THE PROJECT. 	OR GLUED PVC PIPE BE ALLOWED. DISCHARGE HOSE WILL ONLY BE ALLOWED IN SHORT SECTIONS AND BY SPECIFIC PERMISSION FROM THE TOWN AND ENGINEER. 7.7. PLUGGING OR BLOCKING OF SEWAGE FLOWS SHALL INCORPORATE A PRIMARY AND SECONDARY PLUGGING DEVICE. WHEN PLUGGING OR BLOCKING IS NO LONCER DEFOR DEPEREDEMANCE AND		1221 BRICKELL AVENUE SUITE 400 MIAMI, EN SIST PH: 30 572 CPM J.
7. IN HIGHLY CONGESTED AREAS, WHERE EITHER WATER OR SEWER FACILITIES ARE EXISTING OR THE SEPARATION REQUIREMENTS CANNOT BE MET, SPECIAL CONSIDERATION MAY BE GIVEN SUBJECT TO SUBMITTAL OF DOCUMENTATION SHOWING THAT THE PROPOSED ALTERNATIVE WILL	2. WHEN WORKING INSIDE MANHOLE OR FORCE MAIN, THE CONTRACTOR SHALL EXERCISE CAUTION AND COMPLY WITH OSHA REQUIREMENTS WHEN WORKING IN THE PRESENCE OF SEWER GASES, COMBUSTIBLE OR OXYGEN-DEFICIENT ATMOSPHERES, AND CONFINED SPACES.	ACCEPTANCE OF WORK, IT IS TO BE REMOVED IN A MANNER THAT PERMITS THE SEWAGE FLOW TO SLOWLY RETURN TO NORMAL WITHOUT SURGE, TO PREVENT SURCHARGING OR CAUSING OTHER MAJOR DISTURBANCES DOWNSTREAM.		ABODOSSE ENS
 RESULT IN AN EQUIVALENT LEVEL OF RELIABILITY AND PUBLIC HEALTH PROTECTION. 8. GRAVITY SANITARY SEWERS CONSTRUCTED WITHIN A PUBLIC WELLFIELD PROTECTION AREA SHALL BE PVC-900 OR DUCTILE IRON PIPE. THE MAXIMUM ALLOWABLE EXELLIBRATION. INFILTRATION. OR LEAKAGE FOR 	3. THE DESIGN, INSTALLATION AND OPERATION OF THE TEMPORARY PUMPING SYSTEM SHALL BE THE CONTRACTOR'S RESPONSIBILITY, THE CONTRACTOR SHALL PREPARE WITH A SPECIFIC, DETAILED DESCRIPTION OF THE PROPOSED PUMPING SYSTEM AND SUBMIT IT WITH HIS BID PROPOSAL. THE BYPASS SYSTEM SHALL MEET THE REQUIREMENTS OF ALL CODES AND REGULATORY AGENCIES HAVING JURISDICTION.	 THE CONTRACTOR SHALL PERFORM LEAKAGE AND PRESSURE TESTS OF THE BYPASS PUMPING DISCHARGE PIPING USING CLEAN WATER PRIOR TO ACTUAL OPERATION. THE CEI WILL BE GIVEN 24 HOURS NOTICE PRIOR TO TESTING. THE CONTRACTOR SHALL ENSURE THAT THE TEMPORARY RUMPING 		BARTON J. FYE. P.E. FL # 2349ATE OF
GRAVITY SANITARY SEWERS CONSTRUCTED WITHIN A PUBLIC WELLFIELD PROTECTION AREA SHALL BE FIFTY (50) GALLONS PER INCH PIPE DIAMETER PER MILE PER DAY FOR RESIDENTIAL LAND USE AND TWENTY (2) GALLONS PER INCH PER INCH PIPE DIAMETER PER MILE PER DAY FOR NON-RESIDENTIAL LAND USE WITH NO ALLOWANCES FOR MANHOLES	4. THE CONTRACTOR SHALL SUBMIT TO THE TOWN AND ENGINEER DETAILED PLANS AND DESCRIPTIONS OUTLINING ALL PROVISIONS AND PRECAUTIONS TO BE TAKEN BY THE CONTRACTOR REGARDING THE HANDLING OF EXISTING WASTEWATER FLOWS. THIS PLAN MUST BE SPECIFIC AND	 9. THE CONTRACTOR SHALL ENSURE THAT THE TEMPORATE POMPTING SYSTEM IS PROPERLY MAINTAINED AND A RESPONSIBLE OPERATOR SHALL BE ON HAND AT ALL TIMES WHEN PUMPS ARE OPERATING. 10. PRECAUTIONS: 10.1. CONTRACTOR IS RESPONSIBLE FOR LOCATING ANY EXISTING UTILITIES 		SSIONAL ENTER
OR LATERALS. THE MAXIMUM ALLOWABLE EXFILTRATION, INFILTRATION, OR LEAKAGE ON GRAVITY SANITARY SEWERS CONSTRUCTED OUTSIDE A PUBLIC WELLFIELD PROTECTION AREA SHALL BE ONE HUNDRED (100) GALLONS PER INCH PIPE DIAMETER PER MILE PER DAY. THE DURATION OF ALL TESTS SHALL BE A MINIMUM OF TWO (2) HOURS. ANY OBSERVED LEAKS OR ANY OBVIOUSLY DEFECTIVE JOINTS OR PIPES SHALL BE REPLACED EVEN WHEN THE TOTAL LEAKAGE IS BELOW THAT ALLOWED.	COMPLETE, INCLUDING SUCH TIEMS AS SCHEDULES, LOCATIONS, ELEVATIONS, CAPACITIES OF EQUIPMENT, MATERIALS AND ALL OTHER INCIDENTAL ITEMS NECESSARY AND/OR REQUIRED TO ENSURE PROPER PROTECTION OF THE FACILITIES, INCLUDING PROTECTION OF THE ACCESS AND BYPASS PUMPING LOCATIONS FROM DAMAGE DUE TO THE DISCHARGE FLOWS, AND COMPLIANCE WITH THE REQUIREMENTS AND PERMIT CONDITIONS SPECIFIED IN THESE CONTRACT DOCUMENTS. NO CONSTRUCTION SHALL BEGIN UNTIL ALL PROVISIONS AND REQUIREMENTS HAVE BEEN REVIEWED BY THE ENGINEER.	IN THE AREA THE CONTRACTOR SELECTS TO LOCATE THE BYPASS PIPELINES. THE CONTRACTOR SHALL LOCATE HIS BYPASS PIPELINES TO MINIMIZE ANY DISTURBANCE TO EXISTING UTILITIES AND SHALL OBTAIN APPROVAL OF THE PIPELINE LOCATIONS FROM THE TOWN AND THE ENGINEER. ALL COSTS ASSOCIATED WITH RELOCATING UTILITIES AND OBTAINING ALL APPROVALS SHALL BE PAID BY THE CONTRACTOR. 10.2. DURING ALL BYPASS PUMPING OPERATION, THE CONTRACTOR SHALL PROTECT THE LIFT STATION, FORCE MAIN, AND ALL LOCAL SEWER LINES FROM DAMAGE INFLICTED BY ANY EQUIPMENT. THE CONTRACTOR		SANITARY SEWER LIFT
 9. FORCE MAIN SEWERS CONSTRUCTED INA PUBLIC WELLFIELD PROTECTION AREA SHALL BE EITHER DUCTILE IRON OR REINFORCED CONCRETE PRESSURE SEWER PIPES. – FOR DUCTILE IRON PIPE EXFILTRATION RATE SHALL NOT BE GREATER THAN THE ALLOWABLE LEAKAGE RATE SPECIFIED IN AMERICAN WATER WORKS ASSOCIATION STANDARD (AWWAS) C600–82 AT A TEST PRESSURI OF 100 PSI. – FOR REINFORCED CONCRETE PRESSURE SANITARY SEWER EXFILTRATION RATE SHALL BE GREATER THAN HALF (1/2) THE ALLOWABLE LEAKAGE 	5. IT IS ESSENTIAL TO THE OPERATION OF THE EXISTING SEWERAGE SYSTEM THAT THERE BE NO INTERRUPTION IN THE FLOW OF SEWAGE THROUGHOUT THE DURATION OF THE PROJECT. TO THIS END, THE CONTRACTOR SHALL PROVIDE, MAINTAIN AND OPERATE ALL TEMPORARY FACILITIES SUCH AS DAMS, PLUGS, PUMPING EQUIPMENT (BOTH PRIMARY AND BACK-UP UNITS AS REQUIRED), CONDUITS, ALL NECESSARY POWER, AND ALL OTHER LABOR AND EQUIPMENT NECESSARY TO INTERCEPT THE SEWAGE FLOW BEFORE IT REACHES THE POINT WHERE IT WOULD	SHALL BE RESPONSIBLE FOR ALL PHYSICAL DAMAGE TO THE LIFT STATION, FORCE MAIN, LOCAL SEWER LINES, AND ANY OTHER PUBLICLY OR PRIVATELY OWNED FACILITY CAUSED BY HUMAN OR MECHANICAL FAILURE OF THE BYPASS SYSTEM.		UPGRADE
RATE SPECIFIED IN AWWA C600-82 AT TEST PRESSURE OF 100 PSI.	TO THE EXISTING SEWER DOWNSTREAM OF HIS WORK.			x.
EACH PUMP TO RECORD THE TOTAL NUMBER OF OPERATING HOURS OF THE STATION.	 6. DESIGN: 6.1. BYPASS PUMPING SYSTEMS SHALL HAVE SUFFICIENT CAPACITY TO PUMP A PEAK FLOW OF 230 GPM. THE CONTRACTOR SHALL PROVIDE ALL PIPELINE PLUGS, PUMPS OF ADEQUATE SIZE TO HANDLE PEAK FLOW, AND TEMPORARY DISCHARGE PIPING TO ENSURE THAT THE TOTAL FLOW AN BE SAFELY DIVERTED AROUND THE LIFT STATION TO BE REPLACED. BYPASS PUMPING SYSTEM WILL BE REQUIRED TO BE OPERATED 24 HOURS PER DAY. 6.2. THE CONTRACTOR SHALL HAVE ADEQUATE STANDBY EQUIPMENT AVAILABLE AND READY FOR IMMEDIATE OPERATION AND USE IN THE EVENT OF AN EMERGENCY OR BREAKDOWN. ONE STANDBY PUMP FOR EACH SIZE PUMP UTILIZED SHALL BE INSTALLED AT THE MAINLINE FLOW BYPASSING LOCATIONS, READY FOR USE IN THE EVENT OF 			OWNER: 7777 N.W. 72 AVENUE MEDLEY, FL 33166 PHONE: (305) 887-9541
α	 PRIMARY PUMP FAILURE. 6.3. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR BYPASS PUMPING DURING THE TIME WHEN THE LIFT STATION IS SHUT DOWN FOR ANY REASON. 6.4. THE CONTRACTOR SHALL MAINTAIN SEWER FLOW AROUND THE WORK AREA IN A MANNER THAT WILL NOT CAUSE SURCHARGING OF SEWERS, DAMAGE TO SEWERS AND THAT WILL PROTECT PUBLIC AND PRIVATE PROPERTY FROM DAMAGE AND FLOODING. 6.5. THE CONTRACTOR WILL NOT BE PERMITTED TO STOP OR IMPEDE THE FLOWS UNDER ANY CIRCUMSTANCES. 6.6. THE CONTRACTOR SHALL PROTECT WATER RESOURCES, WETLANDS AND 			# DATE ISSUED FOR 1 7/23/14 DERM ▲ 9/19/14 CONSTRUCTION ▲ 11/19/14 BYPASS REQ.
	 OTHER INATURAL RESOURCES. 7. EQUIPMENT: 7.1. THE CONTRACTOR SHALL PROVIDE THE NECESSARY STOP/START CONTROLS FOR EACH PUMP. 7.2. ALL PUMPS USED SHALL BE FULLY AUTOMATIC SELF-PRIMING UNITS THAT DO NOT REQUIRE THE USE OF FOOT-VALVES OR VACUUM PUMPS IN THE PRIMING SYSTEM. THE PUMPS MAY BE ELECTRIC OR DIESEL POWERED. ALL PUMPS USED MUST BE CONSTRUCTED TO ALLOW DRY RUNNING FOR LONG PERIODS OF TIME TO ACCOMMODATE THE CYCLICAL NATURE OF EFFLUENT FLOWS. 7.3. THE CONTRACTOR SHALL INCLUDE ONE STAND-BY PUMP OF EACH SIZE TO BE MAINTAINED ON SITE. BACK-UP PUMPS SHALL BE ON-LINE, ISOLATED FROM THE PRIMARY SYSTEM BY A VALVE. 7.4. SPARE PARTS FOR PUMPS AND PIPING SHALL BE KEPT ON SITE AS 			DATE 5/7/2014 JOB NO. 043637002 DESIGN BY B.J.F. DRAWN BY B.J.F./M.G. CHECKED BY B.J.W. SHEET: GENERAL
	REQUIRED BY THE TOWN, CEI, AND/OR ENGINEER. 7.5. ADEQUATE HOISTING EQUIPMENT FOR EACH PUMP AND ACCESSORIES SHALL BE MAINTAINED ON THE SITE.			G-003
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LEGEND AND ABBREVIATIONS:	Kimley» <mark>Horn</mark>
	1221 BRICKELL AVENUE SUITE 400 MIAMLA 3346N J. FINAN HI OS 073.2025 NO 73890 BARTON - FYEP.EOF R. # 73000 SANITARY
	SANITARY SEWER LIFT STATION 100-A UPGRADE
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\bowtie^{MV} = SEWER VALVE \Rightarrow^{MLP} = METAL LIGHT POLE \circledast = WATER MANHOLE O = TELEPHONE MANHOLE O = DRAINAGE MANHOLE S = SANITARY SEWER MANHOLE	OWNER: 7777 N.W. 72 AVENUE MEDLEY, FL 33166 PHONE: (305) 887-9541
 ●● = MANHOLE ● ● = CENTERLINE ● = EASEMENT LINE ● = CHAIN LINK FENCE ● = EXISTING FORCE MAIN 	# DATE ISSUED FOR 1 7/23/14 DERM 2 9/19/14 CONSTRUCTION 3 11/19/14 BYPASS REQ.
SHEET NOTES: 1. ALL ELEVATIONS SHOWN ARE NGVD. 2. BASED ON A SURVEY DATED JUNE 7, 2011 PREPARED BY HADONNE CORP. 3. LOCATION OF WATER AND SEWER LINES AND FORCE MAINS ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR LOCATING EXISTING UTILITIES PRIOR TO CONSTRUCTION ACTIVITIES.	DATE 5/7/2014 JOB NO. 043637002 DESIGN BY A B.J.F. DRAWN BY B.J.F./M.G. CHECKED BY B.J.W. SHEET: EXISTING CONDITIONS AND LEGEND V-101 4 OF 13
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MEDLEY WATER & SEWER DEPARTMENT GENERAL CONSTRUCTION NOTES:

1. ALL MATERIALS AND LABOR UNDER THIS PROJECT SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE TOWN OF MEDLEY WATER SEWER DEPARTMENT (MEDLEY WASD) AND SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS AVAILABLE, AND ON FILE, WITH MEDLEY WASD UNLESS OTHERWISE DIRECTED BY AN AUTHORIZED REPRESENTATIVE OF MEDLEY WASD. AS A MINIMUM REQUIREMENT, THE STANDARDS OF THE AWWA AND THE MIAMI-DADE WATER AND SEWER DEPARTMENT (MIAMI-DADE WASD) SHALL APPLY, UNLESS OTHERWISE INSTRUCTED.

COVER OVER WATER MAINS SHALL BE 3'-O UNLESS SPECIFIC WRITTEN EXCEPTION IS ISSUED OR REQUIRE BY AN AUTHORIZED REPRESENTATIVE

3. "DETECTOR TAPE" SHALL BE INSTALLED 18" (+/-) ABOVE CENTERLINE

4. ALL WATER MAIN LINE VALVES SHALL BE INSTALLED COMPLETE WITH 10" RISER PIPES AND FIRE HYDRANTS AND SERVICE VALVES SHALL BE INSTALLED COMPLETE WITH 6" RISER PIPES AND NO. 2 VALVE BOXES.

5. ALL WATER METERS WILL BE INSTALLED IN ACCORDANCE WITH MEDLEY WASD REQUIREMENTS, PROVIDING THE APPROPRIATE CHARGES HAVE BEEN PREPAID. PROVISION OF SERVICE PIPES, BACKFLOW PREVENTERS, VALVES AND METER BOXES OR PITS WILL BE IN ACCORD WITH CONSTRUCTION PLANS AND SPECIFICATIONS APPROVED BY AN AUTHORIZED

6. MEDLEY WASD <u>MUST</u> BE NOTIFIED AND A PRE-CONSTRUCTION MEETING SCHEDULED NOT LESS THAN 48 HOURS PRIOR TO START OF CONSTRUCTION. MEDLEY WASD OFFICE TO BE CALLED FOR FIELD LOCATIONS AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.

7. MEDLEY WASD PERSONNEL WILL INSPECT ONLY THOSE FACILITIES THAT

8. WORK PERFORMED UNDER THIS PROJECT WILL NOT BE CONSIDERED COMPLETE, AND CONNECTION TO MEDLEY WASD SYSTEM WILL NOT BE PERMITTED, UNTIL FINAL ACCEPTANCE OF THE SYSTEM BY MEDLEY WASD, AND UNTIL THE FOLLOWING DOCUMENTS ARE RECEIVED AND APPROVED

EASEMENTS, WHETHER BY DEED OR PLAT, SUITABLY RECORDED.

LETTER OF WARRANTY, (I.E. LETTER AGREEMENT, ONE [1] YEAR

TWO 24" X 36" BOND PAPER AND TWO 11" BY 17" "AS-BUILT" DRAWINGS SHOWING SPECIFIC LOCATIONS, DEPTHS, ETC., OF ALL WATER AND SEWER FACILITIES AS LOCATED BY A LICENSED SURVEYOR WHICH HAVE BEEN SIGNED AND SEALED BY A REGISTERED SURVEYOR OR ENGINEER, AND ENDORSED BY THE CONTRACTOR. IN ADDITION, THE CONTRACTOR MUST PROVIDE AN ELECTRIC COPY OF THE "AS=BUILT DRAWINGS IN CAD (.DWG) FORMAT WITH ALL WATER FACILITIES LOCATED IN THE FLORIDA EAST FIPS 0901 STATE PLANE COORDINATE SYSTEM (NAD83) AND AN ELECTRONIC COPY IN PDF FORMAT OF THE SIGNED

ALL TAPS AND CONNECTIONS TO EXISTING MEDLEY WASD MAINS TO BE INSPECTED BY MEDIEY WASD FORCES AT THE TIME OF CONSTRUCTION.

10. ALL GATE VALVES TO BE RESILIENT SEAT PER AWWA-C509.

11. LOCATION OF MEDLEY WASD WATER SEWER FACILITIES INDICATED ON PLANS IS FROM BEST AVAILABLE INFORMATION; HOWEVER, THE ACTUAL LOCATIONS MAY VARY FROM THOSE SHOWN. MEDLEY WASD ASSUMES NO

12. ALL FITTINGS AT REACTIONS POINTS SHALL BE FITTED WITH RETAINER GLANDS OR APPROVED EQUAL MEETING MEDLEY WASD REQUIREMENTS. VALVES ARE TO BE RESTRAINED WITH RETAINER GLANDS.

13. WHERE FIELD CONDITIONS REQUIRE, AS DETERMINED BY MEDLEY WASD, THE WATER MAIN SHALL BE POLYETHYLENE ENCASED IN ACCORDANCE

14. CONTRACTOR IS RESPONSIBLE FOR THE COST OF INSPECTIONS FOR ANY CONSTRUCTION ACTIVITIES OCCURRING OUTSIDE NORMAL WORKING HOURS (8:00 AM TO 5:00 PM), SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED, AND ARRANGEMENTS FOR INSPECTIONS OUTSIDE NORMAL WORKING HOURS MUST BE MADE A MINIMUM OF 48 HOURS IN ADVANCE OF THE

15. ALL TRENCHES ARE TO BE OVER-EXCAVATED A MINIMUM OF 6" TO PROVIDE FOR INSTALLATION OF ROCK BEDDING IN ACCORDANCE WITH

Kimley»Horn

1221 BRICKELL AVENUE SUITE 400 SUITE 400 MIAMI, FL 31101 MY AND FL 3101 MANY KOULEY HORN COM J Nø 73898 R 1= 11/9/14 BARTON J. FYE, P.E. FL#73898TE OF :41 DP. O ~ THISSIONAL SOHI SIONALEN SANITARY SEWER LIFT **STATION 100-A** UPGRADE **OWNER:** 7777 N.W. 72 AVENUE MEDLEY, EL 33166 PHONE: (305) 887-9541 **ISSUED FOR** # DATE 7/23/14 DERM 2 9/19/14 CONSTRUCTION 3 11/19/14 BYPASS REQ. DATE 5/7/2014 JOB NO. 043637002 DESIGN BY B.J.F. DRAWN BY B.J.F./M.G CHECKED BY B.J.W SHEET: LIFT STATION PLAN

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A TLANTIC E NVIRONMENTAL AVENUE NORTH AVENUE NORTH ATHINE OR DA 33467 161) 547-80809 2044 ANALEVENUE NORTH 2244 ANAWENUE NORTH LACE WORTH INTORIDA 33461 PHONE: (561) 547-3090 FAX: (561) 547-3999 IFLORIDA BB# 26398 EOD 1/1/ ONNIE MCLEOD, DE P.OF ENGINEERING 4 TOTOTORIDA. ONAL ENGINI Willin 77711111 **PUMP STATION** UPGRADE 7777 NIW 72nd AVENIE MEDLEY, FLORIDA 33166 PHONE: (305) 887-9541 # DATE ISSUED FOR 06/14/2011 MED10711 CHECKED BY MOPS PUMP STATION **M-101** 8 OF 13

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		FL FCTRICA	AL LEGEND		GENERAL NOTES	
	SYMBOL	DESCRIPTION	SYMBOL D	ESCRIPTION	1. THE SCOPE OF WORK IS DESCRIBED) IN THE DRAWINGS AND SPEC
	۲	CONNECTION POINT TO EQUIPMENT SPECIFIED, FURNISHED AND INSTALLED UNDER OTHER SECTIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS SECTION		AD GROUND ROD	2. THE CONTRACTOR SHALL PROVIDE A THE DRAWINGS. ITEMS NOT SHOWN	LL MATERIALS AND LABOR TO BUT OBVIOUSLY NECESSARY FO
ш	1"C,2#12,1#12G 1"C,1-25/C TYPE 1	INDICATES RACEWAY AND CIRCUIT CONDUCTORS. FIRST NUMBER IS RACEWAY SIZE. THE FOLLOWING NUMBERS ARE THE CONDUCTOR QUANTITIES, SIZES, AND TYPES.	120/240V 15 KVA	APPLICABLE	3. THE INSTALLATION SHALL BE IN ACC TOWN OF MEDLEY CODES AND THE PERMITS, INSPECTIONS AND APPROV.	CORDANCE WITH THE NATIONAL FLORIDA BUILDING CODE. THE ALS AND SHALL COORDINATE H
	MCC-A	MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN.		, MOMENTARY CONTACT,	4. THE CONTRACTOR SHALL, BEFORE S THE EXISTING CONDITIONS. NO ALLO CONTRACTOR TO OBSERVE THEM.	SUBMITTING HIS BID, VISIT THE WANCE WILL BE MADE FOR EX
	5		PUSH-BUTTON SWITCH NORMALLY CLOSED	, MOMENTARY CONTACT,	5. GROUNDING SHALL BE INSTALLED IN EXCEED A 48 HOUR SPAN DRY RES SHALL BE INSTALLED AT NO EXTRA	I ACCORDANCE WITH NEC, ARTI SISTANCE OF 25 OHMS. ADDITIC COST. GROUNDING AND BONDI
ŀ	s	WALL SWITCH: 2– DOUBLE POLE P– PILOT LIGHT 3– THREE WAY K– KEY OPERATED	H O A SELECTOR SWITCH: MA	INTAINED CONTACT WITH	EQUIPMENT GROUND WIRE SIZED PE WHETHER OR NOT INDICATED ON TH	R NEC SHALL BE PULLED IN A
		4- FOUR WAY D- DIMMER WP-WEATHERPROOF CRE-CORROSION RESISTANT		N	6. ALL EQUIPMENT AND MATERIAL SHAL 7. THE CONTRACTOR IS RESPONSIBLE	TO TEST ALL SYSTEMS AND RE
	SM	MANUAL MOTOR STARTER SWITCH, NEMA 4X UNLESS OTHERWISE NOTED. NUMBER OF POLES AS REQUIRED	1 X OF 2 0 0	E AUTO O X – CLOSED CONTACT X 0 – OPEN CONTACT	8. ALL EQUIPMENT FURNISHED AND IN:	D OWNER. STALLED BY THE CONTRACTOR
C	d d d	VARD CUNDUIT X CONVENIENCE RECEPTACLE – DUPLEX UNLESS SPECIFIED	D INDICATING LIGHT - LI A A - AMBER C B - BLUE	ETTER INDICATES COLOR – GREEN – GREED	9. COORDINATE ALL ELECTRICAL EQUIP	MENT LOCATIONS AND VERIFY A
		OTHERWISE WP-WEATHERPROOF C- CLOCK HANGER TL- TWIST LOCK CRE-CORROSION RESISTANT	C - CLEAR A PUSH TO TEST AND C	V – WHITE ONNECT INDICATING LIGHT	LOCATION OF CONDUIT RUNS. THESI AVOIDED PRIOR TO INSTALLATIONS.	E ARE TO BE COORDINATED WI
		TELEPHONE RECEPTACLE (OUTLET BOX, 18" AFF) W — WALL MOUNTED, 48" AFF	ABBR	REVIATIONS	10. ALL CONDUCTORS SHALL BE 600V, TYPE XHHW IN WET LOCATIONS OR SHIELDED PAIR WITH DRAIN WIRE IN	U.L. LISTED, POWER CABLES S IN UNDERGROUND RACEWAYS.
		GENERAL CONTROL OR WIRING DEVICE. NEMA 4X ENCLOSURE UNLESS INDICATED OTHERWISE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE.	AFF ABOVE FINISHED FLOOR BC BYPASS CONTACTOR	MCC MOTOR CONTROL CENTER MDP MAIN DISTRIBUTION PANEL	ALLOWED.	IREMENTS, ALL CIRCUITS SHALL
	ÿ□	NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	C CONDUIT, CONTACTOR CB CIRCUIT BREAKER CKT CIRCUIT	MERC MERCURY VAPOR MH MOTOR HEATER, MANHOLE MLO MAIN LUGS ONLY MCP MOTOR CIRCUIT PROTECTOR	AND PANELBOARDS. IDENTIFICATION INSTALLED WITH RUNS PARALLEL OF VERTICAL PLANES AND CEILINGS, W	SHALL MATCH PANELBOARD SC R PERPENDICULAR TO WALLS, S ITH RIGHT ANGLE TURNS CONSI
	60/40 [FP	(60/40, 60 = SWITCH RATING: 40 = FUSE RATING) 3 POLE UNLESS INDICATED OTHERWISE.	CPT CONTROL POWER TRANSFORM CR CONTROL POWER TRANSFORM CR CONTROL RELAY CT CURRENT TRANSFORMER	IER MPC MINI POWER CENTER MS MOTOR STARTER MTD MOTOR TEMPERATURE	12. ALL EXCAVATIONS FOR CONDUITS A	DS AND OFFSETS SHALL BE AV
c	ŷ¤	MAGNETIC STARTER, NEMA SIZE INDICATED, SEE CONTROL SCHEMATIC DIAGRAM.	DIV DIVISION ETM ELAPSED TIME METER EXST EXISTING	N NEUTRAL NC NORMALLY CLOSED NEMA NATIONAL_ELECTRIC	NOTED.	
	x y	ELECTRICAL DEVICE ENCLOSURE × — ENCLOSED DEVICE RATING y — NEMA ENCOSURE RATING	FI FLOW INDICATOR FI FLOW METER FS FLOAT SWITCH	MANUFACTURER'S ASSOCIATION NO NORMALLY OPEN NTS NOT TO SCALE	PULL BOXES TO MEET MANUFACTUR	ER'S REQUIREMENTS.
	30 4x	NONFUSED DISCONNECT SWITCH, SIZE INDICATED, NEMA SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	FT FLOW TRANSMITTER FUT FUTURE FVNR FULL VOLTAGE NON-REVERS STARTER	OL OVERLOAD RELAY PB PULL BOX PC PHOTOCELL PH PHASE	VOLTAGE DISTANCE 480V 2 FT 120V 1 FT	
	1	CONTACT – NORMALLY OPEN WITH NEMA SIZE INDICATED OR COIL IDENTIFICATION AS APPLICABLE	G GREEN, GROUND GALV GALVANIZED GEN GENERATOR GFI GROUND FAULT INTERRUPTEF	PM PHASE MONITOR PNL PANEL PP POWER PANEL (480VAC) PS PRESSURE SWITCH	15. INSTRUMENTATION IS LOW VOLTAGE COMMUNICATION. POWER CONDUIT S SEPARATION.	SIGNALS SUCH AS 4-20MA, TI SHALL ONLY CROSS INSTRUMEN
		CONTACT - NORMALLY CLOSED WITH NEMA SIZE INDICATED OR COIL IDENTIFICATION AS APPLICABLE	GFR GROUND FAULT RELAY GND GROUND GRS GALVANIZED RIGID STEEL HH HANDHOL F	PVC POLYVINYL CHLORIDE CONDUI RTU REMOTE TELEMETRY UNIT SA SURGE ARRESTOR SF SUPPLY FAN	T 16. ALL LOCATIONS OF EQUIPMENT, PAI EXACT LOCATION AND SIZE AND INS	NELS ETC. ARE SHOWN FOR IL STALL AS SUCH WITH CORRESP
c		MAGNETIC STARTER WITH NEMA SIZE INDICATED	HOA HAND/OFF/AUTO HOR HAND/OFF/REMOTE HVAC HEATING VENTILATING & AIR	SH SPACE HEATER SSRVS SOLID STATE REDUCED VOLTAGE STARTER	17. THE CONTRACTOR SHALL BE RESPO EQUIPMENT (PACKAGE SYSTEMS) IN FACILITIES, THE CONTRACTOR SHALL	DNSIBLE FOR ALL CONDUIT AND CLUDING OWNER SUPPLIED. IF . REDESIGN AND SUBMIT THE F
	M 	INDICATED OTHERWISE.	IC INTERRUPTING CAPACITY I & C INSTRUMENTATION AND CONTROL	SV SOLENOID VALVE SV SWITCH T THERMOSTAT	18. DURING SUBMITTAL THE CONTRACTO	OST TO THE OWNER.
	400 400	S POLE UNLESS INDICATED OTHERWISE. CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE UNLESS	IP INSTRUMENT PANEL (PANELBOARD) J, J–BOX JUNCTION BOX	TB TERMINAL BOARD TDR TIME DELAY RELAY TJB TERMINAL JUNCTION BOX TS THERMAL SWITCH	ACCORDINGLY WITHOUT ANY ADDITIC	UNAL COST TO THE OWNER.
$\left \right $	100	INDICATED OTHERWISE. SWITCH – CURRENT RATING INDICATED, 3 POLE	LC LIGHTING CONTACTOR LP LIGHTING PANEL (PANELBOAP LR LOCAL/REMOTE	TSP TWISTED SHIELDED PAIR TVSS TRANSIENT VOLTAGE SURGE PROTECTION TYP TYPICAL	FLOORS SHALL BE INSTALLED WITH PENETRATED.	U.L. APPROVED DEVICES TO M
		UNDERGROUND CONDUIT AND CONDUCTORS, SEE RISER FOR SIZES	LS LIMIT SWITCH LTG LIGHTING M MAGNETIC CONTACTOR COIL OR MOTORIZED	V VOLTMETER, VOLT VD VOLTAGE DROP VFD VARIABLE FREQUENCY DRIVE	20. INSTALLATION SHALL BE IN ACCORD 30A.	ANCE WITH APPROPRIATE PORT
	F	FPL HAND HOLE SUPPLIED BY FPL AND INSTALL BY CONTRACTOR PULL BOX		WP WEATHERPROOF – NEMA 4X XFMR TRANSFORMER	21. CONTRACTOR SHALL REMOVE AND T FROM EXISTING PUMP STATION. REI TO BE SALVAGED BY THE OWNER.	IURN OVER THE OWNER; AT TH MOVE AND PROPERLY DISPOSE
					22. GAS SEAL ALL EXISTING AND NEW	CONDUITS FROM WET WELL.
		DEMOLITION TO BE REMOVED OR DELETED			23. ALL UNDERGROUND CONDUIT SHALL STEEL (RGS). PAINT ALL RGS COND CONCRETE.	BE PVC SCHEDULE 40. ALL DUITS AND SUPPORTS WITH 2
					24. CONTRACTOR SHALL PAY ALL ASSO	CIATED FPL FEES FOR DISCON
	L	1 2	3	4	5	6
		·		T		









PROPOSED ELECTRICAL PLAN SCALE: 1" = 40'

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INSTALLATION NOTES:

- CONTRACTOR SHALL COORDINATE WITH PUMP SUPPLIER FOR THE ACTUAL FULL LOAD AMPS AND ADJUST THE STARTER, OVERLOAD, CONDUIT, CABLE, ETC. ACCORDINGLY.
- (2) CONTRACTOR SHALL COORDINATE WITH FPL FOR CONNECTION OF NEW ELECTRICAL SERVICE. CONTRACTOR SHALL PAY ALL ASSOCIATED FPL FEES.
- (3) CONTRACTOR SHALL PROVIDE MINIMUM WORKING CLEARANCE PER NEC IN FRONT OF ALL ELECTRICAL EQUIPMENT.
- PROVIDE TVSS PROTECTION FOR ALL 4-20mg ANALOG SIGNALS IN THE PANEL AND AT THE INSTRUMENTS. SEE SPECIFICATION FOR ADDITIONAL INFORMATION.
- 5 COORDINATE WITH THE OWNER FOR GENERATOR RECEPTACLE STYLE TO MATE WITH EXISTING PORTABLE GENERATOR CONNECTOR USED BY THE TOWN OF MEDLEY.

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Signa

KEY SYMBOLS:

SEE MATERIALS LIST ON SHEE
 'X' DENOTES NUMBER

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	AND A STATE OF A STATE
SCALE: 1" = 40' Note: This lung is 1" long when Printed at full size	PUMP STATION
	UPGRADE
	100-A
TOVED	
APPROVEDLEY	OWNER:
ER AND SEWER DEFT.	
ture:	7777 N.W. 72 nd AVENUE MEDLEY, FLORIDA 33166 PHONE: (305) 887-9541
ET E-004	# DATE ISSUED FOR
	DATE 4/15/2014
	JOB NO. MED10711
	DESIGN BY P.F.H.
	CHECKED BY
	SHEET:
	PROPOSED
	ELECTRICAL
	PLAN
	F 002
	E-003
~	11 of 13





List of Approvals

SANITARY SEWER LIFT STATION No. 100A UPGRADE CIP PROJECT No. WS-0102

LIST OF PROJECT APPROVALS

Agency	Description	Issue Date	Expiration Date	Permit Number
Town of Medley Utility Department	Plans Review	8/7/2014	N/A	N/A
Florida Department of Environmental Protection by Miami Dade Division of Environmental Resources Management	Domestic Wastewater Collection/Transmission System Construction Permit	8/19/2014	8/18/2019	FDEP: 253651-428-DWC DERM: 2014-SEW-EXT-00087
Miami-Dade County Water and Sewer Department	Utilities Collection and Transmission Capacity Certification	6/6/2014	N/A	N/A









8101 BISCAYNE BOULEVARD SUITE 307 MIAMI, FLORIDA 33138 PHONE: (305) 759-4757 FAX: (305) 759-4758 FLORIDA EB# 7916

IN ASSOCIATION WITH



A TLANTIC E NVIRONMENTAL S YSTEMS, INC

2244 4TH AVENUE NORTH LAKE WORTH, FL 33461 PHONE: (561) 547-8080 FAX: (561) 547-3999 FLORIDA EB# 26398

AND

AUG 0 7 2014

HILLERS ELECTRICAL ENGINEERING, INC. 23257 STATE ROAD 7, SUITE 100 BOCA RATON, FLORIDA 33428 PHONE: (561) 451-9165 FAX: (561) 451-4886 FLORIDA EB# 6877

	1 2	3 4	5 6
	GENERAL NOTES:	WATER AND SEWER NOTES:	EROSION AND SEDIMENTATION CONTR
	1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL UTILITIES AND MODIFICATIONS OF THE EXISTING CONDITIONS AT THE JOB SITE. CALL SUNSHINE STATE ONE-CALL OF FLORIDA AT 811 OR	 SEE SHEET C-101 FOR TOWN OF MEDLEY WATER & SEWER DEPARTMENT (MEDLEY WASD) GENERAL CONSTRUCTION NOTES. 	NOTES: 1. CURB INLETS SHALL BE PROTECTED FROM EROSION AND SEDIMENT
ш	 SITE CONDITIONS MAY HAVE CHANGED SINCE SURVEY WAS PERFORMED. CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO STARTING 	 AT THE COMPLETION OF THE PROJECT, "AS-BUILT" DRAWINGS SHALL BE PREPARED BY THE CONTRACTOR IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE MEDLEY WASD "AS-BUILT STANDARDS." 	RUNOFF BY THE USE OF GRAVEL FILLED BAGS. PROPOSED SWALE SHALL BE PROTECTED WITH GEOTEXTILE (FILTER) FABRIC. 2. DUMP TRUCKS IMPORTING FILL MATERIALS TO THE SITE SHALL COVI
	CONSTRUCTION. 3. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO SAFEGUARD ALL EXISTING STRUCTURES AND UTILITIES. THE LOCATION OF	3. THE PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MOST RECENT VERSIONS OF ALL MEDLEY WASD STANDARD DETAILS FOR WATER CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO:	THEIR LOADS WITH A TARPAULIN TO AVOID UNNECESSARY GENERATI- DUST. 3. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF AS PER
	AND ARE BASED UPON AVAILABLE INFORMATION. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL UTILITIES DECEMBER CONSTRUCTION AND ADDITIONAL UTILITIES	 3.1. MGS 0.5 - STANDARD REQUIREMENTS FOR WATER CONSTRUCTION 3.2. MWS 2.16 STANDARD WATER SUPPLY DETAIL TYPICAL 1-1/2" & 2" SERVICE INSTALLATION 	LOCAL AND/OR STATE REGULATIONS OR AS RECOMMENDED BY THE MANUFACTURER. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR SE THAT THESE PROCEDURES ARE FOLLOWED.
	EXISTING UTILITIES SHALL BE REPORTED TO THE CONSTRUCTION ENGINEER AND INSPECTOR (CEI) AND THE ENGINEER OF RECORD (EOR). ANY ADDITIONAL WORK REQUIRED BY THE CONTRACTOR IN CONJUNCTION WITH UNKNOWN UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.	3.3. MWS 4.18 REDUCED PRESSURE ZONE BACKFLOW PREVENTER FOR 1-1/2" & 2" WATER SERVICE	4. THE GENERAL CONTRACTOR'S SITE SUPERINTENDENT SHALL SELECT LEAST ONE INDIVIDUAL WHO WILL BE RESPONSIBLE FOR INSPECTION MAINTENANCE AND REPAIR ACTIVITIES. PERSONNEL SELECTED FOR INSPECTION AND MAINTENANCE RESPONSIBILITIES SHALL RECEIVE PF TRAINING IN ALL THE INSPECTION AND MAINTENANCE PRACTICES
	4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SCHEDULING OF, AND PAYMENT FOR, SUCH TESTS THAT MAY BE DEEMED NECESSARY BY THE CEI, AND AS CALLED FOR IN THE DRAWINGS AND SPECIFICATIONS.	EXCAVATING, TRENCHING AND BACKFILLING NOTES:	NECESSARY FOR KEEPING EROSION AND SEDIMENT CONTROLS USED ONSITE IN GOOD WORKING ORDER.
	5. DIMENSIONS AND GRADING OF THE SITE ARE BASED UPON AVAILABLE INFORMATION AT THE TIME OF LAYOUT. DEVIATIONS MAY BE NECESSARY IN THE FIELD. ANY SUCH CHANGES OR CONFLICTS BETWEEN THESE	1. CONTRACTOR SHALL UNDERPIN ADJACENT STRUCTURES, WHICH MAY BE DAMAGED BY EXCAVATING WORK. CONTRACTOR SHALL GRADE TOP PERIMETER OF EXCAVATION TO PREVENT WATER FROM DRAINING INTO	 6. WIND EROSION CONTROLS SHALL BE USED TO KEEP DUST UNDER 6. WIND EROSION CONTROLS SHALL BE USED TO KEEP DUST UNDER
	DRAWINGS AND FIELD CONDITIONS ARE TO BE REPORTED TO THE CEL PRIOR TO STARTING CONSTRUCTION.	EXCAVATION. PREVENT DISPLACEMENT OR LOOSE SOIL FROM FALLING INTO EXCAVATION, AND MAINTAIN SOIL STABILITY.	 THIS CAN INCLUDE SPRINKLING OR WIND BARRIERS. TEMPORARY AND PERMANENT SEEDING AND PLANTING SHALL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
	STATE, COUNTY, AND/OR TOWN OF MEDLEY CODES. 7. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING	2. EXCAVALED MATERIAL NOT REQUIRED FOR BACKFILLING OR THAT IS UNSUITABLE FOR BACKFILL SHALL BE DISPOSED OF BY THE CONTRACTOR AT HIS OWN EXPENSE. CONTRACTOR SHALL PROVIDE DISPOSAL MANIFEST TO THE CEI. DISPOSAL MANIFESTS ARE RECEIPTS FROM A LICENSED AND	8. INSPECTION OF EROSION AND SEDIMENTATION CONTROLS BY THE CONTRACTOR'S REPRESENTATIVE SHALL BE PERFORMED EVERY SEVE CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM
	TREES, STRUCTORES, AND UTILITIES WHICH MAY NOT BE SHOWN ON PLANS. ANY EXISTING STRUCTURE, PAVEMENT, TREES OR OTHER EXISTING IMPROVEMENT NOT SPECIFIED FOR REMOVAL WHICH IS TEMPORARILY DAMAGED, EXPOSED, OR IN ANY OTHER WAY DISTURBED BY	APPROVED DISPOSAL FACILITY. (E.G. LANDFILL) 3. TRENCHES 5 FEET DEEP OR GREATER REQUIRE A PROTECTIVE SYSTEM THAT CONSISTS OF:	IS 0.50 INCHES OR GREATER. THE CONTRACTOR SHALL CORRECT LO OR PROVIDE MAINTENANCE AS RECOMMENDED AS SOON AS PRACTI BUT IN NO CASE LATER THAN SEVEN CALENDAR DAYS FOLLOWING
0	CONSTRUCTION PERFORMED UNDER THIS CONTRACT, SHALL BE REPAIRED, PATCHED, OR REPLACED AT NO ADDITIONAL COST TO THE OWNER. ALL SIDEWALKS, DRIVEWAYS, LANDSCAPE, MAILBOXES, FENCES, AND GRASS AREAS DISTURBED DURING CONSTRUCTION MUST BE RETURNED TO THEIR ORIGINAL CONDITION OR BETTER AS DETERMINED BY THE TOWN OR ITS	 3.1. SLOPING - PROTECTS WORKERS BY CUTTING BACK THE TRENCH WALL AT AN ANGLE INCLINED AWAY FROM THE EXCAVATION. 3.2. SHORING - PROTECTS WORKERS BY INSTALLING ALUMINUM HYDRAUULC OR OTHER TYPES OF SUPPORTS TO PREVENT SOIL 	UNTIL THE AREA THEY PROTECT HAS BEEN COMPLETELY STABILIZED THE CONSTRUCTION IS COMPLETED.
	REPRESENTATIVE. 8. EXISTING TREES SHALL BE REMOVED ONLY IF REQUIRED FOR CONSTRUCTION. THOSE TREES NOT INTERFERING WITH CONSTRUCTION	MOVEMENT. 3.3. SHIELDING – PROTECTS WORKERS BY USING TRENCH BOXES OR OTHER TYPES OF SUPPORTS TO PREVENT SOIL CAVE-INS.	RER NOTES ON WATER-SEWER INSTALLATION
	SHALL BE PROTECTED IN PLACE. THE CONTRACTOR IS ADVISED THAT A TREE PERMIT MAY BE REQUIRED FOR TREE REMOVAL. CONTRACTOR SHALL NOTIFY THE MIAMI-DADE DEPARTMENT OF PERMITTING, ENVIRONMENT AND REGULATORY AFFAIRS (PERA) AND THE TOWN PRIOR TO PENDUKIC ANY TREES	4. OSHA STANDARDS REQUIRE THAT TRENCHES BE INSPECTED DAILY AND AS CONDITIONS CHANGE BY A COMPETENT PERSON PRIOR TO WORKER ENTRY TO ENSURE ELIMINATION OF EXCAVATION HAZARDS.	 A PREFERRED HORIZONTAL DISTANCE (OUTSIDE TO OUTSIDE) OF 10 MINIMUM OF 6 FEET SHALL BE MAINTAINED BETWEEN GRAVITY OR PRESSURE SEWER PIPES AND WATER MAINS. THE HORIZONTAL PRESSURE SEWER PIPES FOR TO A MAINTAIN OF A FEET ON X FEET
-	9. ALL EXCAVATED MATERIAL REMOVED FROM THIS PROJECT SHALL BE DISPOSED OF PROPERLY BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.	5. CONTRACTOR SHALL INSPECT TRENCHES AT THE START OF EACH SHIFT, FOLLOWING A RAINSTORM OR AFTER ANY HAZARDOUS EVENT. TEST FOR LOW OXYGEN, HAZARDOUS FUMES AND TOXIC GASES BEFORE ENTERING A TRENCH. KEEP HEAVY EQUIPMENT AND EXCAVATION SPOILS AT LEAST THING FEFT. MANY FEDAL THE TRENCH EDOS. DEPONDED STATUS	GRAVITY SEWER PIPES WHERE THE BOTTOM OF THE WATER MAIN IS AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SANITARY SI WHEN THE ABOVE SPECIFIED HORIZONTAL DISTANCE CRITERIA CANN MET DUE TO AN EXISTING UNDERGROUND FACILITY CONFLICT, SMAL
	 THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN FOR APPROVAL BY THE TOWN, THE CEI, AND THE TOWN OF MEDLEY POLICE DEPARTMENT. 	LADDERS, RAMPS OR OTHER SAFE MEANS OF ACCESS IN ALL TRENCHES 4 FEET DEEP OR DEEPER.	SEPARATIONS ARE ALLOWED IF: — THE SEWER PIPES ARE DESIGNED AND CONSTRUCTED EQUAL TO WATER PIPE AND PRESSURE TESTED AT 150 PSI. — THE SEWER IS ENCASED IN A WATERTIGHT CARRIER PIPE OR
8	, 11. IF ADDITIONAL GEOTECHNICAL INFORMATION IS NECESSARY TO DETERMINE THE CONDITION OF THE EXISTING MATERIAL AT THE JOB SITE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THE	 OSHA STANDARDS FOR CONFINED SPACES, PROVIDED IN 29 CFR 1926, SHALL BE FOLLOWED BY THE CONTRACTOR. PIPES SHALL BE INSPECTED BEFORE ANY BACKFILL IS PLACED; ANY 	CONCRETE. – THE TOP OF THE SEWER IS AT LEAST 18 INCHES BELOW THE BOTTOM F THE WATER PIPE.
	GEOTECHNICAL EXPLORATION AT NO ADDITIONAL COST TO THE TOWN. 12. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY DEWATERING DEFINITS WHICH MAY BE REQUIRED	PIPES FOUND TO BE OUT OF ALIGNMENT, UNDULY SETTLED, OR DAMAGED SHALL BE REMOVED AND RE—LAID OR REPLACED BY AND AT THE CONTRACTOR'S EXPENSE.	2. A VERTICAL DISTANCE OF AT LEAST 12 INCHES (OUTSIDE TO OUTS SHALL BE MAINTAINED BETWEEN ANY WATER AND SEWER MAINS WI SEWER PIPES PREFERABLY CROSSING UNDER WATER MAINS. THE MINIMUM VERTICAL SEPARATION CAN BE REPUECTD TO 6 INCHES TO
	13. ANY SURVEY REQUIRED BY THE CONTRACTOR SHALL BE AT NO ADDITIONAL COST TO THE TOWN.	8. MATERIAL FOR TRENCH BACKFILL SHALL BE TYPE A-1, A-3, OR A-2-4 IN ACCORDANCE WITH THE AASHTO DESIGNATION M 145 AND SHALL BE FREE FROM VEGETATION AND ORGANIC MATERIAL.	MINIMUM VERTICAL SEPARATION CAN BE REDUCED TO 6 INCHES FO GRAVITY SEWERS WHERE THE SEWER PIPE IS CROSSING BELOW TH WATER MAIN. THE CROSSING SHALL BE ARRANGED SO THAT ALL W MAIN JOINTS ARE AT LEAST 6 FEET FROM ALL JOINTS IN GRAVITY
	14. NO CHANGE IN THE DESIGN SHALL BE ACCEPTED WITHOUT THE APPROVAL OF THE EOR AND THE TOWN.	9. DAMAGE CAUSED BY MOVEMENT OF CONSTRUCTION MACHINERY OVER A PIPE OR CULVERT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.	PRESSURE SEWER PIPES. WHEN THE ABOVE SPECIFIED VERTICAL DISTANCE CRITERIA CANNOT BE MET DUE TO AN EXISTING UNDERG FACILITY CONFLICT, SMALLER SEPARATIONS ARE ALLOWED IF: — THE SEWER PIPES ARE DESIGNED AND CONSTRUCTED EQUAL TO
	15. THE CONTRACTOR, BY VIRTUE OF SIGNING THE CONTRACT, ACKNOWLEDGES THAT HE AND ALL OF HIS SUBCONTRACTORS ARE FAMILIAR WITH THE LOCAL WEATHER CONDITIONS. IN THE EVENT OF INCLEMENT WEATHER, THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO THE DOWN LOOSE MATERIAL AND EQUIPMENT, OR SHALL DEVENUENT FOR THE DEVICED OFFICE AND OPEN FOR THE TOWN	10. SYSTEMATICALLY BACKFILL TO ALLOW MAXIMUM TIME FOR NATURAL SETTLEMENT. DO NOT BACKFILL OVER POROUS, WET, OR SPONGY SUBGRADE SURFACES. MAINTAIN OPTIMUM MOISTURE CONTENT OF BACKFILL MATERIALS TO ATTAIN REQUIRED COMPACTION DENSITY. CONTRACTOR SHALL REMOVE SURPLUS BACKFILL MATERIAL FROM THE	WATER PIPE AND PRESSURE TESTED AT 150 PSI. – THE SEWER IS ENCASED IN A WATERTIGHT CARRIER PIPE OR CO 3. THE CONTRACTOR SHALL VERIFY NATURE, DEPTH, AND CHARACTER EXISTING UNDERGROUND UTILITIES PRIOR TO START CONSTRUCTION
A	 16. IN THE EVENT OF A HURRICANE WATCH, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE FROM THE PROJECT SITE, OR SECURE TO THE CEI'S SATISFACTION, ALL LOOSE CONSTRUCTION MATERIALS AND EQUIPMENT AND THE CONTRACTOR SHALL PROTECT STRUCTURES UNDER CONSTRUCTION. THE CONTRACTOR SHALL ALSO COOPERATE IN THIS REGARD WITH TOWN PERSONNEL IN PROTECTING OTHER STRUCTURES 	 STE. 11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY BEDDING MATERIAL ASSOCIATED WITH THE INSTALLATION THE NEW PUMP STATION, WET WELL, PIPE, AND OTHER PROPOSED IMPROVEMENTS. 	 ALL OTHER PUBLIC OR PRIVATE UTILITY FACILITIES SHALL BE CONSTRUCTED AT LEAST 5 FEET FROM ANY WATER AND SEWER MA MEASSURED FROM THE OUTSIDE BELL OF THE WATER OF THE UTIL PIPE. WHEN THE 5 FEET SEPARATION BETWEEN PROPOSED AND EXISTING IS NOT POSSIBLE, THE CONTRACTOR SHALL HAND DIG OR EXPOSE WATER AND SEWER PIPES BEFORE PROCEEDING WITH POWER EQUITION
	WITHIN THE PROJECT STE. THE CONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF THE TOWN OF MEDLEY HURRICANE PLAN.		EXCAVATION.
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	1 2 DED NOTES ON WATER SEWER	3	4	5	6
	INSTALLATION:				
ш	6. IN NO CASE SHALL A CONTRACTOR INSTALL UTILITY PIPES, CONDUITS, CABLES, ETC. IN THE SAME TRENCH PARALLEL AND ABOVE AN EXISTING WATER OR SEWER PIPE EXCEPT WHERE THE CROSS. ANY DEVIATION FROM NOTES 3, 4, AND 5 SHALL BE APPROVED IN WRITING BY THE RESPONSIBLE WATER AND SEWER UTILITY.				
	7. IN HIGHLY CONGESTED AREAS, WHERE EITHER WATER OR SEWER FACILITIES ARE EXISTING OR THE SEPARATION REQUIREMENTS CANNOT BE MET, SPECIAL CONSIDERATION MAY BE GIVEN SUBJECT TO SUBMITTAL OF DOCUMENTATION SHOWING THAT THE PROPOSED ALTERNATIVE WILL RESULT IN AN EQUIVALENT LEVEL OF RELIABILITY AND PUBLIC HEALTH PROTECTION.				
	8. GRAVITY SANITARY SEWERS CONSTRUCTED WITHIN A PUBLIC WELLFIELD PROTECTION AREA SHALL BE PVC-900 OR DUCTILE IRON PIPE. THE MAXIMUM ALLOWABLE EXFILTRATION, INFILTRATION, OR LEAKAGE FOR GRAVITY SANITARY SEWERS CONSTRUCTED WITHIN A PUBLIC WELLFIELD PROTECTION AREA SHALL BE FIFTY (50) GALLONS PER INCH PIPE DIAMETER PER MILE PER DAY FOR RESIDENTIAL LAND USE AND TWENTY (2) GALLONS PER INCH PER INCH PIPE DIAMETER PER MILE PER DAY FOR NON-RESIDENTIAL LAND USE WITH NO ALLOWANCES FOR MANHOLES OR LATERALS. THE MAXIMUM ALLOWABLE EXFILTRATION, INFILTRATION, OR LEAKAGE ON GRAVITY SANITARY SEWERS CONSTRUCTED OUTSIDE A PUBLIC WELLFIELD PROTECTION AREA SHALL BE ONE HUNDRED (100) GALLONS PER INCH PIPE DIAMETER PER MILE PER DAY. THE DURATION OF ALL TESTS SHALL BE A MINIMUM OF TWO (2) HOURS. ANY				
	OBSERVED LEAKS OR ANY OBVIOUSLY DEFECTIVE JOINTS OR PIPES SHALL BE REPLACED EVEN WHEN THE TOTAL LEAKAGE IS BELOW THAT ALLOWED.				
	 9. FORCE MAIN SEWERS CONSTRUCTED INA PUBLIC WELLFIELD PROTECTION AREA SHALL BE EITHER DUCTILE IRON OR REINFORCED CONCRETE PRESSURE SEWER PIPES. FOR DUCTILE IRON PIPE EXFLITRATION RATE SHALL NOT BE GREATER 				
	 THAN THE ALLOWABLE LEAKAGE RATE SPECIFIED IN AMERICAN WATER WORKS ASSOCIATION STANDARD (AWWAS) C600–82 AT A TEST PRESSURE OF 100 PSI. FOR REINFORCED CONCRETE PRESSURE SANITARY SEWER EXFILTRATION RATE SHALL BE GREATER THAN HALF (1/2) THE ALLOWABLE LEAKAGE RATE SPECIFIED IN AWWA C600–82 AT TEST PRESSURE OF 100 PSI. 				
c	10. A NON-RESETTALBLE ENLAPSED TIME METER SHALL BE INSTALLED AT EACH PUMP TO RECORD THE TOTAL NUMBER OF OPERATING HOURS OF THE STATION.			,	
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LEGE	ND AND		VI	1	
ABBR	EVIATIONS:		Asso	CIATES	
©_ = CIP = CONC. =	CENTER LINE CAST IRON PIPE CONCRETE	810 ⁻ SUI	1 BISCAYNE E	OULEVARD	
DIP = E = EI EV =	DUCTILE IRON PIPE EAST / EASTING	MIA	ML FLORIDA S NE: (305) 759	138. FYE	1111
FM =	FORCE MAIN	FLO	RIDA EB# 791	6 SE	
L = MAX. =	LENGTH MAXIMUM MINIMUM	*	NO	13050	
N = NGVD =	NORTH / NORTHING NATIONAL GEODETIC	F	ble	1-8544	:5
P.O.C. =	VERTICAL DADUM POINT OF COMMENCEMENT	1	FL # 73698	CLIFE- OL	N.
PB = PG = P =	PAGE PROPERTY LINE	1	A SOL	ORI	53
PVC = R =	POLYVINYL CHLORIDE PIPE RADIUS		111111	DNAL	
	SOUTH TANGENT VITRIFIED CLAY PIPE				
W = WM =	WEST WATER MAIN				
Δ =	CENTRAL ANGLE	S	ANITA	RY	
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M =	WOOD UTILITY POLE	S	ΤΑΤΙΟ	N 100-	A
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© =	DRAINAGE MANHOLE	777	7 N.W. 72 AVI	ENUE	
S =	SANITARY SEWER MANHOLE	ME PH	DLEY, FL 3316 ONE: (305) 88	66 7-9541	
(MH) =	MANHOLE	#	DATE	ISSUED FOR	
	E CENTERLINE	$\overline{\mathbb{A}}$	7/23/2014	DERM	
=	CHAIN LINK FENCE	-	<i>u</i>		_
=	EXISTING FORCE MAIN				
		DA	TE	5/7/:	2014
SHEE	T NOTES:	JO	BNO. ME	D10711 / MED1	3514
1. ALL E	EVATIONS SHOWN ARE	DF	AWN BY	E	B.J.F.
2 BASED	ON A SURVEY DATED JUNE	CH	IECKED BY		M.G.
7, 20 CORP.	11 PREPARED BY HADONNE	SH	IEET:		
3. LOCATI	ON OF WATER AND SEWER		VISII	NG FIONG	
APPRO	INTERIOR INTERIOR IS		ND LE	GEND	
EXISTI CONST	NG UTILITIES PRIOR TO RUCTION ACTIVITIES.		_104		
				12	
	7	- 4	OF	3	



	SHEET NOTES:	TTT T	1
	1. SEE SHEET C-101 FOR NEW PUMP STATION PLAN.	West	CLATES
	2. THE DEMOLITION OF THE EXISTING SANITARY SEWER LIFT STATION SHALL INCLUDE THE REMOVAL AND DISPOSAL OF PUMP STATION, INCLUDING, BUT NOT LIMITED TO, THE ASSOCIATED CONCRETE STRUCTURES, INTERNAL PIPING, PUMP EQUIPMENT AND OTHER ITEMS WITHIN THE LIFT STATION.	8101 BISOANNE E SUITE 307 MUMIL AL ORIDAS PAONE: (305)/358 FAX: (305),/359.47 FLOGID/WEB# 793	
	3. THE CONTRACTOR MAY BE REQUIRED TO MAINTAIN DISPOSAL MANIFESTS FOR CONSTRUCTION AND DEMOLITION DEBRIS.	9 50 RTOD J. 7 EE# 73998	FYE, P.E.O
	4. THE EFFLUENT FORCE MAIN PIPE FROM THE EXISTING LIFT STATION SHALL REMAIN AND SHALL BE CONNECTED TO THE NEW LIFT STATION AS SHOWN ON SHEET C-101 AND C-501.		IONAL ETTIC
	5. CONTRACTOR SHALL MAINTAIN FUNCTION OF SEWAGE PUMPING DURING CONSTRUCTION BY UTILIZING A BY-PASS PUMPING SYSTEM, FITTINGS AND VALVES AS REQUIRED. CONTRACTOR SHALL SUBMIT A PLAN OUTLINING SEWAGE "BY-PASS" PROCEDURE TO THE CEI AND EOR FOR APPROVAL PRIOR TO COMMENCING WORK.	SANITA SEWER STATIO UPGRA	ARY LIFT N 100-A DE
	6. THE CONTRACTOR MAY BE REQUIRED TO PERFORM AN ASBESTOS SURVEY PRIOR TO DEMOLITION. IF NECESSARY, IT SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.		-
		OWNER:	
APPF	ROVED F MEDLEY	7777 N.W. 72 AV MEDLEY, FL 331 PHONE: (305) 88	ENUE 66 7-9541
AND	SEWER DEPT.	# DATE	ISSUED FOR
	Pate: 8-7-1k	7/23/2014	DERM
		DATE	5/7/2014
		JOB NO. ME	:D10711 / MED13514
			B.J.F.
		CHECKED BY	M.G.
		SHEET:	W.O.
		DEMOL	ITION
		D-101	
			12
	7	3 OF	1.5



MEDLEY WATER & SEWER DEPARTMENT

1. ALL MATERIALS AND LABOR UNDER THIS PROJECT SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE TOWN OF MEDLEY WATER SEWER DEPARTMENT (MEDLEY WASD) AND SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS AVAILABLE, AND ON FILE, WITH MEDLEY WASD UNLESS OTHERWISE DIRECTED BY AN AUTHORIZED REPRESENTATIVE OF MEDLEY WASD, AS A MINIMUM REQUIREMENT, THE STANDARDS OF THE AWWA AND THE MIAMI-DADE WATER AND SEWER DEPARTMENT (MIAMI-DADE WASD) SHALL APPLY, UNLESS OTHERWISE INSTRUCTED.

2. COVER OVER WATER MAINS SHALL BE 3'-0 UNLESS SPECIFIC WRITTEN EXCEPTION IS ISSUED OR REQUIRE BY AN AUTHORIZED REPRESENTATIVE

"DETECTOR TAPE" SHALL BE INSTALLED 18" (+/-) ABOVE CENTERLINE

ALL WATER MAIN LINE VALVES SHALL BE INSTALLED COMPLETE WITH 10" RISER PIPES AND FIRE HYDRANTS AND SERVICE VALVES SHALL BE INSTALLED COMPLETE WITH 6" RISER PIPES AND NO. 2 VALVE BOXES.

ALL WATER METERS WILL BE INSTALLED IN ACCORDANCE WITH MEDLEY WASD REQUIREMENTS, PROVIDING THE APPROPRIATE CHARGES HAVE BEEN PREPAID. PROVISION OF SERVICE PIPES, BACKFLOW PREVENTERS, VALVES AND METER BOXES OR PITS WILL BE IN ACCORD WITH CONSTRUCTION PLANS AND SPECIFICATIONS APPROVED BY AN AUTHORIZED

MEDLEY WASD MUST BE NOTIFIED AND A PRE-CONSTRUCTION MEETING SCHEDULED NOT LESS THAN 48 HOURS PRIOR TO START OF CONSTRUCTION. MEDLEY WASD OFFICE TO BE CALLED FOR FIELD LOCATIONS AT LEAST 48 HOURS PRIOR TO CONSTRUCTION

7. MEDLEY WASD PERSONNEL WILL INSPECT ONLY THOSE FACILITIES THAT

WORK PERFORMED UNDER THIS PROJECT WILL NOT BE CONSIDERED COMPLETE, AND CONNECTION TO MEDLEY WASD SYSTEM WILL NOT BE PERMITTED, UNTIL FINAL ACCEPTANCE OF THE SYSTEM BY MEDLEY WASD, AND UNTIL THE FOLLOWING DOCUMENTS ARE RECEIVED AND APPROVED

8.1. EASEMENTS, WHETHER BY DEED OR PLAT, SUITABLY RECORDED.

LETTER OF WARRANTY, (I.E. LETTER AGREEMENT, ONE [1] YEAR

TWO 24" X 36" BOND PAPER AND TWO 11" BY 17" "AS-BUILT" DRAWINGS SHOWING SPECIFIC LOCATIONS, DEPTHS, ETC., OF ALL WATER AND SEWER FACILITIES AS LOCATED BY A LICENSED SURVEYOR WHICH HAVE BEEN SIGNED AND SEALED BY A REGISTERED SURVEYOR OR ENGINEER, AND ENDORSED BY THE CONTRACTOR. IN ADDITION, THE CONTRACTOR MUST PROVIDE AN ELECTRIC COPY OF THE "AS=BUILT" DRAWINGS IN CAD (.DWG) FORMAT WITH ALL WATER FACILITIES LOCATE IN THE FLORIDA EAST FIPS 0901 STATE PLANE COORDINATE SYSTEM (NAD83) AND AN ELECTRONIC COPY IN PDF FORMAT OF THE SIGNED

9. ALL TAPS AND CONNECTIONS TO EXISTING MEDLEY WASD MAINS TO BE INSPECTED BY MEDLEY WASD FORCES AT THE TIME OF CONSTRUCTION.

11. LOCATION OF MEDLEY WASD WATER SEWER FACILITIES INDICATED ON PLANS IS FROM BEST AVAILABLE INFORMATION; HOWEVER, THE ACTUAL LOCATIONS MAY VARY FROM THOSE SHOWN. MEDLEY WASD ASSUMES NO

12. ALL FITTINGS AT REACTIONS POINTS SHALL BE FITTED WITH RETAINER GLANDS OR APPROVED EQUAL MEETING MEDLEY WASD REQUIREMENTS. VALVES ARE TO BE RESTRAINED WITH RETAINER GLANDS.

13. WHERE FIELD CONDITIONS REQUIRE, AS DETERMINED BY MEDLEY WASD, THE WATER MAIN SHALL BE POLYETHYLENE ENCASED IN ACCORDANCE

14. CONTRACTOR IS RESPONSIBLE FOR THE COST OF INSPECTIONS FOR ANY CONSTRUCTION ACTIVITIES OCCURRING OUTSIDE NORMAL WORKING HOURS (8:00 AM TO 5:00 PM), SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED, AND ARRANGEMENTS FOR INSPECTIONS OUTSIDE NORMAL WORKING HOURS MUST BE MADE A MINIMUM OF 48 HOURS IN ADVANCE OF THE

15. ALL TRENCHES ARE TO BE OVER-EXCAVATED A MINIMUM OF 6" TO PROVIDE FOR INSTALLATION OF ROCK BEDDING IN ACCORDANCE WITH

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OF 13





lesthorp ASSOCIATES, INC 8101 BISCAYNE BOULEVARD SUITE 307 MIAMINPLORIDA 33129 PHONE (1905) 759 4757 AXA (305) 759 4758 FLORIDA EB# 7916 0 OR ESSIONA APPROVED TOWN OF MEDLEY WATER AND SEWER DEPT. SANITARY **SEWER LIFT STATION 100-A** Date: 8-7-14 UPGRADE **OWNER:** 7777 N.W. 72 AVENUE MEDLEY, FL 33166 PHONE: (305) 887-9541 **ISSUED FOR** # DATE 1 7/23/2014 DERM DATE 5/7/2014 JOB NO. MED10711 / MED13514 DESIGN BY BJF B.J.F. DRAWN BY CHECKED BY M.G. SHEET: WATER AND SEWER DETAILS **C-501** OF 13 7



A TLANTIC E NVIRONMENTAL AVENUE NORTH AVENUE NORTH ATHINE OR DA 33467 161) 547-80809 2044 ANALEVENUE NORTH 2244 ANAWENUE NORTH LACE WORTH INTORIDA 33461 PHONE: (561) 547-3090 FAX: (561) 547-3999 IFLORIDA BB# 26398 EOD 1/1/ ONNIE MCLEOD, DE P.OF ENGINEERING 4 TOTOTORIDA. ONAL ENGINI Willin 77711111 **PUMP STATION** UPGRADE 7777 NIW 72nd AVENIE MEDLEY, FLORIDA 33166 PHONE: (305) 887-9541 # DATE ISSUED FOR 06/14/2011 MED10711 CHECKED BY MOPS PUMP STATION **M-101** 8 OF 13

Г		1 2	3	4	5	6
		FL FCTRICA	AL LEGEND		GENERAL NOTES	
	SYMBOL	DESCRIPTION	SYMBOL D	ESCRIPTION	1. THE SCOPE OF WORK IS DESCRIBED) IN THE DRAWINGS AND SPEC
	۲	CONNECTION POINT TO EQUIPMENT SPECIFIED, FURNISHED AND INSTALLED UNDER OTHER SECTIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS SECTION		AD GROUND ROD	2. THE CONTRACTOR SHALL PROVIDE A THE DRAWINGS. ITEMS NOT SHOWN	LL MATERIALS AND LABOR TO BUT OBVIOUSLY NECESSARY FO
ш	1"C,2#12,1#12G 1"C,1-25/C TYPE 1	INDICATES RACEWAY AND CIRCUIT CONDUCTORS. FIRST NUMBER IS RACEWAY SIZE. THE FOLLOWING NUMBERS ARE THE CONDUCTOR QUANTITIES, SIZES, AND TYPES.	120/240V 15 KVA	APPLICABLE	3. THE INSTALLATION SHALL BE IN ACC TOWN OF MEDLEY CODES AND THE PERMITS, INSPECTIONS AND APPROV.	CORDANCE WITH THE NATIONAL FLORIDA BUILDING CODE. THE ALS AND SHALL COORDINATE H
	MCC-A	MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN.		, MOMENTARY CONTACT,	4. THE CONTRACTOR SHALL, BEFORE S THE EXISTING CONDITIONS. NO ALLO CONTRACTOR TO OBSERVE THEM.	SUBMITTING HIS BID, VISIT THE WANCE WILL BE MADE FOR EX
	5		PUSH-BUTTON SWITCH NORMALLY CLOSED	, MOMENTARY CONTACT,	5. GROUNDING SHALL BE INSTALLED IN EXCEED A 48 HOUR SPAN DRY RES SHALL BE INSTALLED AT NO EXTRA	I ACCORDANCE WITH NEC, ARTI SISTANCE OF 25 OHMS. ADDITIC COST. GROUNDING AND BONDI
ŀ	s	WALL SWITCH: 2– DOUBLE POLE P– PILOT LIGHT 3– THREE WAY K– KEY OPERATED	H O A SELECTOR SWITCH: MA	INTAINED CONTACT WITH	EQUIPMENT GROUND WIRE SIZED PE WHETHER OR NOT INDICATED ON TH	R NEC SHALL BE PULLED IN A
		4- FOUR WAY D- DIMMER WP-WEATHERPROOF CRE-CORROSION RESISTANT		N	6. ALL EQUIPMENT AND MATERIAL SHAL 7. THE CONTRACTOR IS RESPONSIBLE	TO TEST ALL SYSTEMS AND RE
	SM	MANUAL MOTOR STARTER SWITCH, NEMA 4X UNLESS OTHERWISE NOTED. NUMBER OF POLES AS REQUIRED	1 X OF 2 0 0	E AUTO O X – CLOSED CONTACT X 0 – OPEN CONTACT	8. ALL EQUIPMENT FURNISHED AND IN:	D OWNER. STALLED BY THE CONTRACTOR
C	d d	VARD CUNDUIT X CONVENIENCE RECEPTACLE – DUPLEX UNLESS SPECIFIED	D INDICATING LIGHT - LI A A - AMBER C B - BLUE	ETTER INDICATES COLOR – GREEN – GREED	9. COORDINATE ALL ELECTRICAL EQUIP	MENT LOCATIONS AND VERIFY A
		OTHERWISE WP-WEATHERPROOF C- CLOCK HANGER TL- TWIST LOCK CRE-CORROSION RESISTANT	C - CLEAR A PUSH TO TEST AND C	V – WHITE ONNECT INDICATING LIGHT	LOCATION OF CONDUIT RUNS. THESI AVOIDED PRIOR TO INSTALLATIONS.	E ARE TO BE COORDINATED WI
		TELEPHONE RECEPTACLE (OUTLET BOX, 18" AFF) W — WALL MOUNTED, 48" AFF	ABBR	REVIATIONS	10. ALL CONDUCTORS SHALL BE 600V, TYPE XHHW IN WET LOCATIONS OR SHIELDED PAIR WITH DRAIN WIRE IN	U.L. LISTED, POWER CABLES S IN UNDERGROUND RACEWAYS.
		GENERAL CONTROL OR WIRING DEVICE. NEMA 4X ENCLOSURE UNLESS INDICATED OTHERWISE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE.	AFF ABOVE FINISHED FLOOR BC BYPASS CONTACTOR	MCC MOTOR CONTROL CENTER MDP MAIN DISTRIBUTION PANEL	ALLOWED.	IREMENTS, ALL CIRCUITS SHALL
	ÿ□	NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	C CONDUIT, CONTACTOR CB CIRCUIT BREAKER CKT CIRCUIT	MERC MERCURY VAPOR MH MOTOR HEATER, MANHOLE MLO MAIN LUGS ONLY MCP MOTOR CIRCUIT PROTECTOR	AND PANELBOARDS. IDENTIFICATION INSTALLED WITH RUNS PARALLEL OF VERTICAL PLANES AND CEILINGS, W	SHALL MATCH PANELBOARD SC R PERPENDICULAR TO WALLS, S ITH RIGHT ANGLE TURNS CONSI
	60/40 [FP	(60/40, 60 = SWITCH RATING: 40 = FUSE RATING) 3 POLE UNLESS INDICATED OTHERWISE.	CPT CONTROL POWER TRANSFORM CR CONTROL POWER TRANSFORM CR CONTROL RELAY CT CURRENT TRANSFORMER	IER MPC MINI POWER CENTER MS MOTOR STARTER MTD MOTOR TEMPERATURE	12. ALL EXCAVATIONS FOR CONDUITS A	DS AND OFFSETS SHALL BE AV
c	ŷ¤	MAGNETIC STARTER, NEMA SIZE INDICATED, SEE CONTROL SCHEMATIC DIAGRAM.	DIV DIVISION ETM ELAPSED TIME METER EXST EXISTING	N NEUTRAL NC NORMALLY CLOSED NEMA NATIONAL_ELECTRIC	NOTED.	
	x y	ELECTRICAL DEVICE ENCLOSURE × — ENCLOSED DEVICE RATING y — NEMA ENCOSURE RATING	FI FLOW INDICATOR FI FLOW METER FS FLOAT SWITCH	MANUFACTURER'S ASSOCIATION NO NORMALLY OPEN NTS NOT TO SCALE	PULL BOXES TO MEET MANUFACTUR	ER'S REQUIREMENTS.
	30 4x	NONFUSED DISCONNECT SWITCH, SIZE INDICATED, NEMA SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	FT FLOW TRANSMITTER FUT FUTURE FVNR FULL VOLTAGE NON-REVERS STARTER	OL OVERLOAD RELAY PB PULL BOX PC PHOTOCELL PH PHASE	VOLTAGE DISTANCE 480V 2 FT 120V 1 FT	
	1	CONTACT – NORMALLY OPEN WITH NEMA SIZE INDICATED OR COIL IDENTIFICATION AS APPLICABLE	G GREEN, GROUND GALV GALVANIZED GEN GENERATOR GFI GROUND FAULT INTERRUPTEF	PM PHASE MONITOR PNL PANEL PP POWER PANEL (480VAC) PS PRESSURE SWITCH	15. INSTRUMENTATION IS LOW VOLTAGE COMMUNICATION. POWER CONDUIT S SEPARATION.	SIGNALS SUCH AS 4-20MA, TI SHALL ONLY CROSS INSTRUMEN
		CONTACT - NORMALLY CLOSED WITH NEMA SIZE INDICATED OR COIL IDENTIFICATION AS APPLICABLE	GFR GROUND FAULT RELAY GND GROUND GRS GALVANIZED RIGID STEEL HH HANDHOL F	PVC POLYVINYL CHLORIDE CONDUI RTU REMOTE TELEMETRY UNIT SA SURGE ARRESTOR SF SUPPLY FAN	T 16. ALL LOCATIONS OF EQUIPMENT, PAI EXACT LOCATION AND SIZE AND INS	NELS ETC. ARE SHOWN FOR IL STALL AS SUCH WITH CORRESP
6		MAGNETIC STARTER WITH NEMA SIZE INDICATED	HOA HAND/OFF/AUTO HOR HAND/OFF/REMOTE HVAC HEATING VENTILATING & AIR	SH SPACE HEATER SSRVS SOLID STATE REDUCED VOLTAGE STARTER	17. THE CONTRACTOR SHALL BE RESPO EQUIPMENT (PACKAGE SYSTEMS) IN FACILITIES, THE CONTRACTOR SHALL	DNSIBLE FOR ALL CONDUIT AND CLUDING OWNER SUPPLIED. IF . REDESIGN AND SUBMIT THE F
	M 	INDICATED OTHERWISE.	IC INTERRUPTING CAPACITY I & C INSTRUMENTATION AND CONTROL	SV SOLENOID VALVE SV SWITCH T THERMOSTAT	18. DURING SUBMITTAL THE CONTRACTO	OST TO THE OWNER.
	400 400	S POLE UNLESS INDICATED OTHERWISE. CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE UNLESS	IP INSTRUMENT PANEL (PANELBOARD) J, J–BOX JUNCTION BOX	TB TERMINAL BOARD TDR TIME DELAY RELAY TJB TERMINAL JUNCTION BOX TS THERMAL SWITCH	ACCORDINGLY WITHOUT ANY ADDITIC	UNAL COST TO THE OWNER.
$\left \right $	100	INDICATED OTHERWISE. SWITCH – CURRENT RATING INDICATED, 3 POLE	LC LIGHTING CONTACTOR LP LIGHTING PANEL (PANELBOAP LR LOCAL/REMOTE	TSP TWISTED SHIELDED PAIR TVSS TRANSIENT VOLTAGE SURGE PROTECTION TYP TYPICAL	FLOORS SHALL BE INSTALLED WITH PENETRATED.	U.L. APPROVED DEVICES TO M
		UNDERGROUND CONDUIT AND CONDUCTORS, SEE RISER FOR SIZES	LS LIMIT SWITCH LTG LIGHTING M MAGNETIC CONTACTOR COIL OR MOTORIZED	V VOLTMETER, VOLT VD VOLTAGE DROP VFD VARIABLE FREQUENCY DRIVE	20. INSTALLATION SHALL BE IN ACCORD 30A.	ANCE WITH APPROPRIATE PORT
	F	FPL HAND HOLE SUPPLIED BY FPL AND INSTALL BY CONTRACTOR PULL BOX		WP WEATHERPROOF – NEMA 4X XFMR TRANSFORMER	21. CONTRACTOR SHALL REMOVE AND T FROM EXISTING PUMP STATION. REI TO BE SALVAGED BY THE OWNER.	IURN OVER THE OWNER; AT TH MOVE AND PROPERLY DISPOSE
					22. GAS SEAL ALL EXISTING AND NEW	CONDUITS FROM WET WELL.
		DEMOLITION TO BE REMOVED OR DELETED			23. ALL UNDERGROUND CONDUIT SHALL STEEL (RGS). PAINT ALL RGS COND CONCRETE.	BE PVC SCHEDULE 40. ALL DUITS AND SUPPORTS WITH 2
					24. CONTRACTOR SHALL PAY ALL ASSO	CIATED FPL FEES FOR DISCON
	L	1 2	3	4	5	6
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PROPOSED ELECTRICAL PLAN SCALE: 1" = 40'

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INSTALLATION NOTES:

- CONTRACTOR SHALL COORDINATE WITH PUMP SUPPLIER FOR THE ACTUAL FULL LOAD AMPS AND ADJUST THE STARTER, OVERLOAD, CONDUIT, CABLE, ETC. ACCORDINGLY.
- (2) CONTRACTOR SHALL COORDINATE WITH FPL FOR CONNECTION OF NEW ELECTRICAL SERVICE. CONTRACTOR SHALL PAY ALL ASSOCIATED FPL FEES.
- (3) CONTRACTOR SHALL PROVIDE MINIMUM WORKING CLEARANCE PER NEC IN FRONT OF ALL ELECTRICAL EQUIPMENT.
- PROVIDE TVSS PROTECTION FOR ALL 4-20mg ANALOG SIGNALS IN THE PANEL AND AT THE INSTRUMENTS. SEE SPECIFICATION FOR ADDITIONAL INFORMATION.
- 5 COORDINATE WITH THE OWNER FOR GENERATOR RECEPTACLE STYLE TO MATE WITH EXISTING PORTABLE GENERATOR CONNECTOR USED BY THE TOWN OF MEDLEY.

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Signa

KEY SYMBOLS:

SEE MATERIALS LIST ON SHEE
 'X' DENOTES NUMBER

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	AND A TOP A CONTRACT OF A CONT	
SCALE: 1" = 40' Note: This lung is 1" long when Printed at full size	PUMP STATION	
	UPGRADE	
	100-A	
TOVED		
APPROVEDLEY	OWNER:	
ER AND SEWER DEPT.		
ture:	7777 N.W. 72 nd AVENUE MEDLEY, FLORIDA 33166 PHONE: (305) 887-9541	
EI E-004	# DATE ISSUED FOR	
	DATE 4/15/2014	
	JOB NO. MED10711	
	DESIGN BY P.F.H.	
	CHECKED BY E.S.	
	SHEET:	
	PROPOSED	
	ELECTRICAL	
	PLAN	
	E 002	
	E-003	
	11 OF 13	







Department of Regulatory and Economic Resources

Division of Environmental Resources Management Pollution Regulation Division 701 NW 1st Court, 7th Floor Miami, FL 33136-3912 T 305-372-6600 F 305-372-6410

Domestic Wastewater Collection/Transmission System Construction Permit

DERM Permit Number:2014-SEW-EXT-00087Township Range Section:534011Project:PUMP STATION UPGRADE 100-A

Permittee

F.D.E.P

TOWN OF MEDLEY Jorge Soto 10776 NW South River Dr. Medley, FL 33178
 FDEP Permit #:
 253651-428-DWC

 Date of Issuance:
 08/19/2014

 Expiration Date:
 08/18/2019

This permit is issued under the provisions of Chapter(s) 403.087, Florida Statutes and Florida Administrative Code Rule(s) 62-4 and 62-604. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

TO CONSTRUCT:

A wastewater collection/transmission system connecting the proposed project to the MIAMI-DADE WATER AND SEWER DEPARTMENT NORTH DISTRICT W. W. T. P. The new Total Average Daily Flow (ADF) is estimated to be 41305 GPD. The system will consist of Pump Station 100-A Upgrade.

# of	Pump	Operating	TDH
Pumps	Type	Capacity(GPM)	(ft)
2	Submersible	300	18

IN ACCORDANCE WITH:

Permit application on FDEP Form 62-604.300(7) (a) with \$ 500 application fee on 06/20/2014.

LOCATED AT:

NW 77th Avenue and NW 78th Terrace, Medley FL

TO SERVE:

Pump Station Service Area

SUBJECT TO:

General Conditions 1-15 and Specific Conditions 1-6.

General Permit Conditions

- 1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions. [62-4.160(1)]
- 2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department. [62-4.160(2)]
- 3. As provided in subsections 403.987(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit. [62-4.160(3)]
- 4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title. [62-4.160(4)]
- 5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department. [62-4.160(5)]
- 6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules. [62-4.160(6)]

- 7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:
 - a. Have access to and copy any records that must be kept under conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated. [62-4.160(7)]

- 8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of noncompliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit. [62-4.160(8)]

- 9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules. [62-4.160(9)]
- 10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard. [62-4.160(10)]
- 11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department. [62-4.160(11)]
- 12. This permit or a copy thereof shall be kept at the work site of the permitted activity. [62-4.160(12)]
- 13. This permit also constitutes:
 - a. Determination of Best Available Control Technology (BACT).
 - b. Determination of Prevention of Significant Deterioration (PSD).
 - c. Certification of compliance with State Water Quality Standards (Section 401, PL 92-500).
 - d. Compliance with New Source Performance Standards. [62-4.160(13)]

DEP FORM 62-1.201(5) Effective November 30, 1992

14. The permittee shall comply with the following:

- a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
- b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
- c. Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurements;
 - ii. The person responsible for performing the sampling or measurements;
 - iii. The dates analyses were performed;
 - iv. The person responsible for performing the analyses;
 - v. The analytical techniques or methods used;
 - vi. The results of such analyses. [62-4.160(14)]
- 15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly. [62-4.160(15)]

Specific Permit Conditions

- 1. Start of construction prior to fourteen (14) days following to the issuance of this permit is undertaken at owner's risk due to the public's right to object pursuant to Section 120.57 Florida Statutes.
- 2. This approval is only for the construction of a wastewater collection system and does not relate to the wastewater transmission and treatment aspects. Moreover, this approval does not grant the applicant the right to connect any facilities to be served by this wastewater collection system. In order to connect the applicant shall obtain approval from the receiving utility and a Sewer Capacity Certification Letter (allocation) from DERM, in conformance with the provisions of paragraph 16C of the First Partial Consent Decree (Case No. 93-1109 CIV-MORENO), between the United States of America and Miami-Dade County and Section 42.3 of the Miami-Dade County Code. This project will also be contingent upon the placing into service of all the necessary encumbrances by each sanitary sewer utility participating in the transmission of the flows from the point of origin up to the wastewater treatment plant.
- 3. Provisions must be made to assure uninterrupted service in the area during the time of construction.

- 4. Pump station operating levels shall be field adjusted in order to avoid odors, nuisance, surcharged conditions and excessive pump cycle time.
- 5. Before the Certification of Completion of Construction for the new pumping station is issued, Pumping Station Number # must be obtained from City of Medley for the proposed pump station. In addition, the upstream and downstream pumping station information shall also be provided, if different from the stations identified at the time of the project's approval and/or certification by the utility. All this information must be submitted in the corresponding Certification of Completion of Construction form and be signed and dated by a Medley official.
- 6. Upon completion of construction of this project, the wastewater collection system shall not be placed into service until the Department has received, reviewed, and approved a completely executed *Request for Approval to Place a Domestic Wastewater Collection/Transmission System into Operation*, DEP FORM 62-604.300(8)(b); pages 1, 2, and 3 and the following attachments:
 - a) A completely executed Miami-Dade County, Division of Environmental Resources Management (DERM) form: *Domestic Wastewater Collection/Transmission Systems Certification of Completion of Construction*, page 1 of 1.
 - b) A set of as-built drawings.

DERM shall be notified three (3) days prior to performing infiltration/exfiltration test and pressure test. Notification can be done by calling Wastewater Permitting Section at 305-372-6600 or email at <u>PSO@miamidade.gov.</u>

Placing this system into operation without the proper approval from the Department shall constitute a violation of state and county regulations and enforcement actions may be taken accordingly.

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Miami-Dade County Environmental Resources Management

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DEP FORM 62-1.201(5) Effective November 30, 1992


Department of Regulatory and Economic Resources

Division of Environmental Resources Management Pollution Regulation Division 701 NW 1st Court, 7th Floor Miami, FL 33136-3912 T 305-372-6600 F 305-372-6410

August 19, 2014

Jorge Soto TOWN OF MEDLEY 10776 NW South River Dr. Medley, FL 33178 CERTIFIED MAIL No. 70042510000174978076 RETURN RECEIPT REQUESTED

Dear Jorge Soto:

The Wastewater Permitting Section (WPS) of the Department of Regulatory and Economic Resources, Division of Environmental Resources Management (DERM), under delegation by the Florida Department of Environmental Protection (hereby jointly referred to as the Department) hereby gives Notice of Permit Issuance to construct a domestic wastewater collection/transmission system (FDEP Permit Number 253651-428-DWC, DERM Permit Number 2014-SEW-EXT-00087) to the applicant, Jorge Soto, TOWN OF MEDLEY. The project is located at NW 77th Avenue and NW 78th Terrace, Medley FL.

UPON COMPLETION OF CONSTRUCTION OF THIS PROJECT, THE WASTEWATER COLLECTION SYSTEM SHALL NOT BE PLACED INTO SERVICE UNTIL THE DEPARTMENT HAS RECEIVED, REVIEWED, AND APPROVED A COMPLETELY EXECUTED REQUEST FOR APPROVAL TO PLACE A DOMESTIC WASTEWATER COLLECTION/TRANSMISSION SYSTEM INTO OPERATION. PLACING THIS SYSTEM INTO OPERATION WITHOUT THE PROPER APPROVAL FROM THE DEPARTMENT SHALL CONSTITUTE A VIOLATION OF STATE AND COUNTY REGULATIONS AND ENFORCEMENT ACTIONS MAY BE TAKEN ACCORDINGLY.

DERM SHALL BE NOTIFIED THREE (3) DAYS PRIOR TO PERFORMING INFILTRATION/EXFILTRATION TEST AND PRESSURE TEST. NOTIFICATION CAN BE DONE BY CALLING WASTEWATER PERMITTING SECTION AT 305-372-6600 OR EMAIL AT <u>PSO@miamidade.gov.</u>

The applicant's mailing address is Attn: Jorge Soto, TOWN OF MEDLEY, 10776 NW South River Dr. , Medley, FL 33178. The Department's Permit File (FDEP Permit No. 253651-428-DWC, DERM Permit No. 2014-SEW-EXT-00087) on this matter is available for public inspection by contacting the Pollution Regulation Division at 305-372-6600 and making an appointment to view the files during normal business hours, 8:00 a.m. to 4:00 p.m., Monday through Friday, except legal holidays, 701 NW 1st Court, 7th Floor, Miami, FL 33136-3912.

A person whose substantial interests are affected by the above proposed agency action may petition for an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes (F.S). The petition must contain the information set forth below and must be filed (received) in the Office of the Miami-Dade County Attorney, 111 N.W. 1st Street, Suite 2810, Miami, Florida 33128. Petitions filed by any persons other than those entitled to written notice under section 120.60(3), F.S. must be filed within fourteen (14) days of publication of this notice or receipt of the written notice, whichever occurs first. The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code (FAC).

A petition that disputes the material facts on which the Department's action is based must contain the following information:

- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of all material facts disputed by petitioner or a statement that there are no disputed facts;
- (e) A statement of facts which the petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes the petitioner contends require reversal or modification of the Department's action or proposed action; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, FAC.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. In accordance with Section 120.573, F.S., the Department advises that mediation is not available in this case as an alternative to filing a petition for an administrative determination.

Any party to this permit has the right to seek judicial review under Section 120.68, F.S., by the filing of a notice of appeal under Rules 9.110 and 9.190, Florida Rules of Appellate Procedure with the clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when this permit is filed with the clerk of the Department.

If you have any questions please contact Ms. Rosa Areas, Engineer 2, or the undersigned, at 305-372-6600.

Executed in Miami, Miami-Dade County, Florida

Rashid Z. Istambouli, P.E., Chief

Division of Environmental Resources Management

Jorge Soto (FDEP No. 253651-428-DWC / DERM No. 2014-SEW-EXT-00087) Notice of Permit Issuance 08/19/2014

CERTIFICATE OF SERVICE

8/22/14 to the This is to certify that this Notice of Permit and all copies were mailed before close of business on _____ listed persons.

FILING AND ACKNOWLEDGEMENT: FILED, on this date, pursuant to § 120.52 Florida Statues, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk



Carlos A. Gimenez, Mayor

Department of Regulatory and Economic Resources

Environmental Resources Management 701 NW 1st Court, 7th Floor Miami, Florida 33136-3912 T 305-372-6600 F 305-372-6893

miamidade.gov

UTILITIES COLLECTION AND TRANSMISSION CAPACITY CERTIFICATION FORM

GPD

Proposed Project Flow: 41,305

Proposed Project Name: Pump Station 100-A Upgrade

Proposed Project Location: <u>NW 77th Avenue and NW 78th Terrace, Medley, FL</u>

Description of the "Point of Connection": Medley Sewer Manhole 100-12

First Lift/Pump Station receiving this project flows: <u>Medley PS-22-100 then Miami-Dade PS #300</u>

STATEMENT BY THE MUNICIPAL UTILITY:

The following improvements of the sewer system must be completed to meet the Section 24-42.2 MDCC transmission capacity requirements:

Removal of an existing pump station and replacement by a pre-packed pump station consisting of two (2) 3 HP pumps. The flow will travel via an existing 8" forcemain to the Town of Medley Manhole 100-12 from there it goes to the Town of Medley Pump Station 100, located at NW 74th Avenue and NW 77th Terrace. Subsequently the flow is transmitted via force main to Miami-Dade County Pump Station 300.

The undersigned hereby certifies that the existing collection and transmission system will have adequate capacity to convey the wastewater from this project when the above improvements of the sewer system are completed.

E. e	NA M. Salla t
() el == == == == == == == == == == == == ==	Signature of Engineer
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St. Jours	S/K
Sol marte	MECERVEIN
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v	ENVIRONMENTAL REBOURCES MANAGEMENT

Diana M. Santander65854Name (Please Type)FL Reg. #

Town of Medley, FL Utility Name

10776 NW South River Drive Utility Address

Medley, FL 33178 City Zip

305-889-1915 Telephone

Page Totzring Excellence Every Day

M-DWASD CERTIFICATION:

The following improvements of the sewer system must be completed to meet the Section 24-13.1 MDCC transmission capacity requirements:

The project will connect to a sewer system owned by <u>TOWN OF MEDLEY</u>, being the flow directed to Pump Station No. <u>30-0300</u>, and to the <u>NORTH</u> District Wastewater Treatment Plant.

The current and projected NAPOT of the above pump stations are:

PUMP NO.	CURRENT NAPOT (HRS)	PROJECTED NAPOT (HRS)
<u>30-0300</u>	<u>2.81</u>	2.84

All stations comply with DEP/USEPA requirements.

This utility follows a NAPOT of more than or equal to eight (8) hours per day as a trigger mechanism to initiate pump station improvements.

The undersigned hereby certifies that the existing collection and transmission system will have adequate capacity to convey the wastewate visit to preject when the above improvements to the sewer system are completed.

2627 Signature of dineer TATE OF DATE (affix s

Luis Figueredo, P.E. 52627 Name (Please Type) FL Reg. #

Miami-Dade Water & Sewer Department 3575 So. Le Jeune Road Room 100 Utility Address

Miami	33146	
City Zip		MALA MALA
(786) 268-5321		
Telephone		

06/06/14

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Warranty Information