



INVITATION FOR BID

WINSON WATER TREATMENT PLANT
REHABILITATION OF BISCAYNE
AQUIFER PRODUCTION WELLS
IFB No. 33-06-15

Attachment A

Specifications

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SECTION 01010
SUMMARY OF WORK

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Work to be done under this Contract and in accordance with the Contract Documents consists of furnishing all equipment, superintendence, labor, skill, material and all other items necessary for the rehabilitation of Biscayne Aquifer Production Wells for the City of North Miami.
- B. Wherever the Contract Documents address a third party, (i.e., subcontractor, manufacturer, etc.), it is to be considered as the Contractor through the third party.
- C. Wherever a reference to number of days is noted, it shall be defined as calendar days.
- D. The project area is located in Miami-Dade County, Florida, Township 52S, Range 41E, Section 26. The Contractor shall note that the project area is on property owned by the City of North Miami. The Contractor shall confine their construction activities to the locations shown in the Drawings.
- E. The Contractor is advised that the work is to be performed in a fully operational water supply wellfield, which is the principal source of potable water supply to Winson Water Treatment Plant. The Contractor shall be fully responsible for all precautionary measures together with all remediation, cleanup, disinfection, regulatory agency fines and all other labor, materials, and costs associated with any contamination of the water supply caused directly or indirectly by the activities of the Contractor in the performance of the work.
- F. Notwithstanding other indemnification requirements of the Contract Documents, the Contractor shall also indemnify, defend, and hold harmless the Owner, the Engineer and the Owner's agents from any and all legal action that may arise from contamination of the water supply caused directly or indirectly by the Contractor in the performance of the work.

1.02 CONTRACT DOCUMENTS

- A. The location and work to be done is shown on the Drawings. All Drawings shall be considered an integral part of the Contract Documents as defined herein.
- B. Certain Document Sections refer to Divisions of the Contract Specifications. Sections are each individually numbered portions of the Specifications (numerically) such as 08110, 13182, 15206, etc. The term Division is used as a convenience term meaning all Sections within a numerical grouping. For example, Division 16 would thus include Sections 16000 through 16999 and would mean all electrical specifications.

1.03 GENERAL ARRANGEMENT

- A. Drawings indicate the location and general arrangement of the work. If any departures from the Drawings are deemed necessary by the Contractor to accommodate the materials and equipment he proposes to furnish, details of such departures and reasons therefore shall be submitted as soon as practicable to the Engineer for review. No such departures shall be made without the prior written acceptance of the Engineer.
- B. The specific equipment proposed for use by the Contractor on the project may require changes in structures, auxiliary equipment, piping, electrical, mechanical, controls or other work to provide a complete satisfactory operating installation. The Contractor shall submit to the Engineer, for review, all necessary Drawings and details showing such changes to verify conformance with the overall project structural and architectural requirements and overall project operating performance. The Bid Price shall include all costs in connection with the preparation of new drawings and details and all changes to construction work to accommodate the proposed equipment, including increases in the costs of other Contracts.

1.04 WORK COVERED BY CONTRACT DOCUMENTS

- A. BISCAYNE AQUIFER WELL REHABILITATION: The principal features of the Work to be performed under this Contract and described in these Contract Documents are described in this Section. The following description of the work shall not be construed as a complete description of all work required.
 - 1. Mobilization and Cleanup: Mobilize on site, store supplies and equipment, setup drilling equipment, setup temporary facilities and piping for well water disposal, obtain all necessary permits, remove chain link fence and other obstacles in accordance with Section 01500, "Construction Facilities and Temporary Controls." Clean up site as necessary continuously, as directed by Engineer.
 - 2. Construction Fence Installation: A temporary construction fence shall be installed around each well site where if required by agencies having jurisdiction over the project and/or when required for public safety in accordance with Section 02832, "Temporary Construction Fence."
 - a. Rehabilitation of Biscayne Aquifer Wells Nos. 1, 2, 4, 7 and 8: The Contractor must keep in mind that the information provided on the table of Description of Water Supply Wells included in the drawings is approximate. Actual depths, dimensions and characteristics of the wells may vary and shall be verified on the field by the Contractor. Also, the Contractor should be aware that the sequence of well rehabilitation and well testing procedures described in this outline may be changed in order of occurrence, or deleted, and additional rehabilitation steps or testing may be added as directed by Engineer. The Contractor shall rehabilitate one well at a time. Once the rehabilitated well has been inspected, tested and placed in satisfactory operation after acceptance and approval of the Owner, the Contractor shall proceed to work on the next well. The Contractor shall perform the rehabilitation work on Well

No. 7 first, Well No. 8 second, Well No. 4 third, Well No. 2 fourth, and Well No. 1 fifth.

- b. Perform a short-duration capacity test on the well using the existing well pump to determine existing specific capacity and drawdown levels prior to performing the rehabilitation activities. This shall be in accordance with Section 02858, "Pumping Tests."
- c. Remove the wellhead and pump from the well to allow access to the well in accordance with Section 02840, "Wellhead and Pump Removal, Cleaning and Reinstallation."
- d. If the well does not contain an existing pump, install a test pump. Perform a short-duration capacity test on the well to determine existing specific capacity and drawdown levels prior to performing the rehabilitation activities. This shall be in accordance with Section 02858, "Pumping Tests."
- e. Perform a video survey of the entire well in accordance with Section 02853, "Television Surveys." Copies of the x-y caliper log shall be provided to the engineer for examination.
- f. Perform Television Surveys in accordance with Section 02853, "Television Surveys" If after video logging, Contractor is not able to determine depth of well casing and total depth. Copies of the x-y caliper log shall be provided to the engineer for examination.
- g. If deemed necessary by the Engineer, brush the casing from top to bottom after introduction of a chemical treatment. Develop well by air-lifting to remove dislodged corrosion particles and chemical treatment solution in accordance with Section 02852, "Casing Cleaning," if deemed necessary by the Engineer after the video survey evaluation. Re-run video survey if directed by Engineer. Copies of the x-y caliper log shall be provided to the engineer for examination.
- h. Fully develop the well in accordance with Section 02850, "Well Development."
- i. Perform a video survey of the entire well in accordance with Section 02853, "Television Surveys." Copies of the x-y caliper log shall be provided to the engineer for examination.
- j. If Engineer determines that additional well rehabilitation activities are needed, perform acidization of the well in accordance with Section 02855, "Acidization," if deemed necessary after the pumping tests.
- k. Conduct a post-rehabilitation video survey of the well in accordance with Section 02853, "Television Surveys." Copies of the x-y caliper log shall be provided to the engineer for examination.

- l. Conduct a specific capacity test in the rehabilitated well using a test pump to evaluate the effectiveness of the development process in accordance with Section 02858, "Pumping Tests."
 - m. Reinstall the permanent pump, new Certa-Lok column piping, wellhead and associated equipment in accordance with Section 02840, "Wellhead and Pump Removal, Cleaning and Reinstallation" and Section 15013, "Certa-Lok Colum Pipe." The production pump shall be installed to the same depth it was located prior to the rehabilitation of the well, or as directed by the Owner.
 - n. Remove testing and development equipment from the well and disinfect the well in accordance with Section 02860, "Well Disinfection."
 - o. Return the production well to service.
4. Demobilization, Site Restoration and Cleanup: Clean site, remove supplies and equipment, remove workover and drill rig, and temporary facilities and piping for well water disposal and remove temporary fencing. Reinstall permanent wellhead chain link fence, and restore the site to the original conditions prior to construction activities, including landscaping, in accordance with Section 01500, "Construction Facilities and Temporary Controls."

1.05 WORK BY OTHERS

- A. The Contractor's attention is directed to the fact that other contractors may conduct other work at the site(s) during the performance of the work under this Contract. The Contractor shall conduct its operations so as to cause a minimum of interference with the work of such other contractors, and shall cooperate fully with such contractors to provide continued safe access to their respective portions of the site, as required to perform their respective contracts.
- B. When two or more contracts are being executed at one time on the same or adjacent areas in such manner that work on one contract may interfere with that on another, the Owner shall determine the sequence and order of the work. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the Owner to the Contractor so desiring, to the extent, amount, in the manner, and at the times permitted. No such decision as to the method or time of conducting the work or the use or territory shall be made the basis of any claim of delay or damage.
- C. Interference with Work on Utilities: The Contractor shall cooperate fully with all utility forces of the Owner or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the work, and shall schedule the work so as to minimize interference with said relocation, altering, or other rearranging of facilities.

1.06 CONTRACTOR USE OF PROJECT SITE

- A. 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 the Contract Drawings.
- B. Disposal of Debris: All debris, materials, piping, and miscellaneous waste products from the work described in this section shall be removed from the project as soon as possible and not less than twice per week. 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 OWNER USE OF THE PROJECT SITE

- A. The Owner may utilize all or part of the facilities during the entire period of construction for the conduct of the Owner's normal operations. The Contractor shall cooperate with the Owner to minimize interference with the Contractor's operations and to facilitate the Owner's operations. Contractor shall not take any out of service without prior written permission from the Owner.

1.08 ADDITIONAL OWNER'S EXPENSES

- A. In the event the Work of this Contract is not completed within the time set forth in the Contract or within the time to which such completion may have been extended in accordance with the Contract Documents, the additional engineering or inspection charges incurred by the Owner may be charged to the Contractor and deducted from the monies due him. Extra work or supplemental Contract work added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by the Owner before assessing engineering and inspection charges against the Contractor.
- B. The normal time of work under this Contract is defined in the Owner's General Conditions. Work beyond these hours will result in additional expense to the Owner. Any expenses and/or damages, including the cost of the Engineer's on site personnel, arising from the Contractor's operations beyond the hours and days specified above shall be borne by the Contractor.
- C. Charges assessed to the Contractor for additional engineering and inspection costs will be determined based on actual hours charged to the job by the Engineer. Daily rates will depend on the number and classifications of employees involved, but in no case shall such charges exceed \$800 per day for field personnel and \$1,200 per day for engineering personnel, based on an eight hour workday.
- D. Charges for additional Owner's expenses shall be in addition to any liquidated damages assessed in accordance with the Contract.

1.09 TIME OF WORK

- A. If it shall become imperative to perform work at night, the Owner and Engineer shall be informed in writing a reasonable time in advance of the beginning of such work (minimum of 48 hours). Temporary lighting and all other necessary facilities for performing and inspecting the work shall be provided and maintained by the Contractor.

- B. Unless otherwise specifically permitted, all work that would be subject to damage shall be stopped during inclement, stormy weather. Only such work as will not suffer injury to workmanship or materials will be permitted. Contractor shall carefully protect his work against damage or injury from the weather.

1.10 PERMITS

- A. It shall be the Contractor's responsibility to secure all permits of every description required to initiate and complete the Work under this contract, except permits obtained by the Owner.
- B. Permits being obtained by the Owner or its authorized representative, will be provided as they become available.
- C. The Contractor and subcontractors must obtain all necessary permits for disposal of its test fluids, development fluids and any other fluids produced, as well as any other permit required by any other regulatory agency prior to commencement of any work. The Contractor or subcontractors shall also be responsible to call for inspections required in Section 305 of the Florida Building Code.
- D. The Engineer will furnish signed and sealed sets of Contract Documents to the Contractor for permit acquisition as required.
- E. The Contractor shall furnish to the Engineer hard and electronic copies of all permits prior to commencement of Work requiring permits. No payments will be made for work completed without first acquiring and furnishing two copies of each permit to the Engineer.

1.11 SITE CONDITIONS

- A. The Contractor acknowledges that he has investigated prior to bidding and satisfied himself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, tides, water tables or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to him prior to receipt of Bids. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available to the Owner. The Contractor acknowledges that there are no unforeseen conditions and shall not receive any additional compensation for any claims of unforeseen conditions.

1.12 DIMENSIONS OF EXISTING FACILITIES

- A. Where the dimensions and locations of existing improvements are of critical importance in the installation or connection of new work, the Contractor shall verify such dimensions and locations in the field prior to the fabrication and/or installation of materials or equipment, which are dependent on the correctness of such information.

1.13 SURVEYS AND LAYOUT

- A. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings or as directed by the Engineer. Elevation of existing ground and appurtenances are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown shall be referred immediately to the Engineer for interpretation or correction.
- B. All survey work for construction control purposes shall be made by the Contractor at his expense. The Contractor shall provide a Licensed Surveyor as Chief of Party, competently qualified men, all necessary instruments, stakes, and other material to perform the work.
- C. Contractor shall establish all baselines for the location of the principal component parts of the work together with a suitable number of bench marks and batter boards adjacent to the work. Based upon the information provided by the Contract Drawings, the Contractor shall develop and make all detail surveys necessary for construction, including slope stakes, batter boards, stakes for all working points, lines and elevations.
- D. Contractor shall have the responsibility to carefully preserve the bench marks, reference points and stakes, and in the case of destruction thereof by the Contractor or resulting from his negligence, the Contractor shall be charged with the expense and damage resulting there from and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.
- E. Existing or new control points, property markers and monuments that will be or are destroyed during the normal causes of construction shall be reestablished by the Contractor and all reference ties recorded therefore shall be furnished to the Engineer. All computations necessary to establish the exact position of the work shall be made and preserved by the Contractor.

The Contractor shall establish permanent benchmarks for elevation and coordinates at each well location.

- F. The Engineer may check all or any portion of the work and the Contractor shall afford all necessary assistance to the Engineer in carrying out such checks. Any necessary corrections to the work shall be immediately made by the Contractor. Such checking by the Engineer shall not relieve the Contractor of any responsibilities for the accuracy or completeness of his work.

- G. At completion of the work, the Contractor shall furnish Record Drawings indicating the Final layout of all structures, roads, existing bench marks, etc. The Record Drawings shall indicate all critical elevations of piping, structures, finish grades, etc. All elevations shall be referenced to the North American Vertical Datum (NAVD), and any and all necessary conversions for any pre-existing NGVD elevations will be provided.

1.14 FIRE PROTECTION

- A. Contractor shall take all necessary precautions to prevent fires at or adjacent to the work, buildings, etc., and shall provide adequate facilities for extinguishing fires which do occur.
- B. When fire or explosion hazards are created in the vicinity of the work as a result of the locations of fuel tanks, or similar hazardous utilities or devices, the Contractor shall immediately alert the local Fire Marshal, the Engineer, and the Owner of such tank or device. The Contractor shall exercise all safety precautions and shall comply with all instructions issued by the Fire Marshal and shall cooperate with the Owner of the tank or device to prevent the occurrence of fire or explosion.

1.15 CHEMICALS

- A. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, or reactant of other classification, must show approval of either the EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with all applicable rules and regulations.

1.16 FIRST AID FACILITIES AND ACCIDENTS

- A. First Aid Facilities: The Contractor shall provide at the site such equipment and facilities as are necessary to supply first aid to any of his personnel who may be injured in connection with the work.
- B. Accidents:
 - 1. The Contractor shall promptly report, in writing, to the Engineer and Owner all accidents whatsoever out of, or in connection with, the performance of the work, whether on or adjacent to the site, which cause death, personal injury or property damage, giving full details and statements of witnesses.
 - 2. If death, serious injuries, or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Owner and the Engineer.
 - 3. If any claim is made by anyone against the Contractor or a Subcontractor on account of any accidents, the Contractor shall promptly report the facts, in writing, to the Engineer and Owner, giving full details of the claim.

1.17 BLASTING AND EXPLOSIVES

- A. Blasting and/or use of explosives shall not be allowed.

1.18 LIMITS OF WORK AREA

- A. The Contractor shall confine his construction operations within the Contract limits shown on the Drawings and/or property lines and/or fence lines. Storage of equipment and materials, or erection and use of sheds outside of the Contract limits, if such areas are the property of the Owner, shall be used only with the Owner's approval. Such storage or temporary structures, even within the Contract's limits, shall be confined to the Owner's property and shall not be placed on properties designated as easements or rights-of-way unless specifically permitted elsewhere in the Contract Documents. The Contractor shall limit their work area around each wellhead to the maximum extent possible not to exceed an area of approximately 75' x 75' at each wellhead along with required ingress and egress routes. A storage area for contractor materials shall be provided by the Owner at the Winson Water Treatment Plant located at 12098 NW 11th Avenue, North Miami, FL 33168.

1.19 WEATHER CONDITIONS

- A. The Contractor shall take necessary precautions (in the event of impending storms) to protect all work, materials, or equipment from damage or deterioration due to floods, driving rain, or wind. The Owner reserves the right, through the opinion of the Engineer, to order that additional protection measures over and beyond those proposed by the Contractor, be taken to safeguard all components of the Project. The Contractor shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the Owner for damage to the work from weather elements.
- B. The mixing and placing of concrete or pavement courses, the laying of masonry, and installation of sewers and water mains shall be stopped during rainstorms, if ordered by the Engineer; and all freshly placed work shall be protected by canvas or other suitable covering in such manner as to prevent running water from coming in contact with it. Sufficient coverings shall be provided and kept ready at hand for this purpose. The limitations and requirements for mixing and placing concrete or laying of masonry, in cold weather shall be as described elsewhere in these Specifications.

1.20 PERIODIC CLEANUP: BASIC SITE RESTORATION

- A. During construction, the Contractor shall regularly remove from the site of the work all Accumulated debris and surplus materials of any kind which result from his operations. Unused equipment and tools shall be stored at the Contractor's yard or base of operations for the Project.
- B. When the work involves installation of sewers, drains, water mains, manholes, underground structures, or other disturbance of existing features in or across streets, rights-of-way, easements, or private property, the Contractor shall (as the work progresses) promptly backfill, compact, grade, and otherwise restore the disturbed area to the basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or functions consistent with the original use of the land. The requirements for temporary paving of streets, walks, and driveways are specified elsewhere. Unsightly mounds of earth, large stones, boulders, and debris shall be removed so that the site presents a neat appearance.

- C. The Contractor shall perform the cleanup work on a regular basis and as frequently as ordered by the Engineer. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the Engineer, if partially completed facilities must remain incomplete for some time period.
- D. Upon failure of the Contractor to perform periodic cleanup and basic restoration of the site to the Engineer's satisfaction, the Owner may, upon five days prior written notice to the Contractor, without prejudice to any other rights or remedies of the Owner, cause such work for which the Contractor is responsible to be accomplished to the extent deemed necessary by the Engineer, and all costs resulting there from shall be charged to the Contractor and deducted from the amounts of money that may be due him.

1.21 USE OF FACILITIES BEFORE COMPLETION

- A. The Owner reserves the right to enter and use any portion of the constructed facilities before final completion of the whole work to be done under this Contract. However, only those portions of the facilities which have been completed to the Engineer's satisfaction, as evidenced by his issuing a Certificate of Substantial Completion covering that part of the work, shall be placed in service.
- B. It shall be the Owner's responsibility to prevent premature connections to or use of any portion of the installed facilities by private or public parties, persons or groups of persons, before the Engineer issues his Certificate of Substantial Completion covering that portion of the work to be placed in service.
- C. Consistent with the approved progress schedule, the Contractor shall cooperate with the Owner, his agents, and the Engineer to accelerate completion of those facilities, or portions thereof, which have been designated for early use by the Owner.

PART 2 -- PRODUCTS (NOT

USED) PART 3 -- EXECUTION

(NOT USED)

- END OF SECTION -

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Payment for the various items in the Schedule of Payment items, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, taxes, materials, commissions, transportation and handling, bonds, permit fees, insurance, overhead and profit, and incidentals appurtenant to the items of Work being described, as necessary to complete the various items of the Work, all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). Such compensation shall also include payment for any loss or damages arising directly or indirectly from the Work.

- B. The Contractor's attention is called to the fact that the quotations for the various items of Work are intended to establish a total price for completing the Work in its entirety. Should the Contractor feel that the cost for any item of Work has not been established by the Schedule of Payment items or this Section, it shall include the cost for that Work in some other applicable bid item, so that its proposal for the project does reflect its total price for completing the Work in its entirety.

1.02 SUBMITTALS

- A. Informational:
 - 1. Schedule of Values: Submit schedule on Owner's form.
 - 2. Application for Payment.
 - 3. Final Application for Payment.

- B. Submittals shall be in accordance with Section 01300 entitled "Submittals" and with "Construction Standards and Specifications of the City of North Miami", latest edition.

1.03 SCHEDULE OF VALUES

- A. Prepare a schedule of values for the Work.

- B. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.

- C. Lump Sum Work:

1. Reflect schedule of values format included in conformed Bid Form.
 2. List Bonds and insurance premiums, mobilization, demobilization, facility startup, and contract closeout separately.
 3. Break down by Divisions 1 through 17 with appropriate subdivision of each Specification.
- D. An unbalanced or front-end loaded schedule will not be acceptable.
- E. Summation of the complete schedule of values representing all the Work shall equal the Contract Price.
- F. The Contractor shall submit a Schedule of Values for review with the return of the executed Agreement to the City. The schedule shall contain the installed value of the component parts of Work for the purpose of making progress payments during the construction period.
- G. The schedule shall be given in sufficient detail for proper identification of Work accomplished. The Schedule of Values shall directly correlate to each activity outlined in the construction progress schedule and the construction network analysis (specified in the section entitled "Submittals") to accurately relate construction progress to the requested payment. Each item shall include its proportional share of all costs including the Contractor's overhead, contingencies and profit. The sum of all scheduled items shall equal the total value of the Contract.
- H. If the Contractor anticipates the need for payment for materials stored on the project site or off-site in bonded warehouse, it shall also submit a separate list covering the cost of materials, delivered and unloaded with taxes paid. This list shall also include the installed value of the item with coded reference to the Work items in the Schedule of Values. Payment for stored materials shall comply with requirements of General Conditions.

1.04 APPLICATION FOR PAYMENT

- A. Transmittal Summary Form: Attach one Summary Form with each detailed Application for Payment and include Request for Payment of Materials and Equipment on Hand as applicable. Execute certification by authorized officer of Contractor.
- B. Use detailed Application for Payment Form provided.
- C. Include accepted schedule of values for each portion of Work and the unit price breakdown for the Work to be paid on unit price basis, and a listing of Owner-selected equipment, if applicable, and allowances, as appropriate.
- D. Preparation:
 1. Round values to nearest dollar.

2. List each Change Order and Written Amendment executed prior to date of submission as separate line item. Totals to equal those shown on the Transmittal Summary Form.
3. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form, a listing of materials on hand as applicable, and such supporting data as may be requested by the Engineer or Owner.

1.05 MEASUREMENT—GENERAL

- A. Weighing, measuring, and metering devices used to measure quantity of materials for Work shall be suitable for the purpose intended.
- B. Whenever pay quantities of material are determined by weight, material shall be weighed on scales furnished by Contractor and certified accurate by state agency responsible. Weight or load slip shall be obtained from weigher and delivered to the Engineer or Owner's representative at point of delivery of material.
- C. If material is shipped by rail, car weights will be accepted provided that actual weight of material only will be paid for and not minimum car weight used for assessing freight tariff, and provided further that car weights will not be acceptable for material to be passed through mixing plants.
- D. Vehicles used to haul material being paid for by weight shall be weighed empty daily and at such additional times as required by the Engineer. Each vehicle shall bear a plainly legible identification mark.
- E. Materials that are specified for measurement by the cubic yard measured in the vehicle shall be hauled in vehicles of such type and size that actual contents may be readily and accurately determined. Unless all vehicles are of uniform capacity, each vehicle must bear a plainly legible identification mark indicating its water level capacity. Vehicles shall be loaded to at least their water level capacity. Loads hauled in vehicles not meeting above requirements or loads of a quantity less than the capacity of the vehicle, measured after being leveled off as above provided, will be subject to rejection, and no compensation will be allowed for such material.
- F. Where measurement of quantities depends on elevation of existing ground, elevations obtained during construction will be compared with those shown on Drawings. Variations of 1 foot or less will be ignored, and profiles shown on Drawings will be used for determining quantities.
- G. Units of measure shown on Bid Form shall be as follows, unless specified otherwise. All methods of measurement shall be approved by the Engineer.

Item	Method of Measurement
AC	Acre - Field Measure
CY	Cubic Yard - Field Measure within limits specified or shown, or measured in vehicle by volume, as specified
EA	Each - Field Count

Item	Method of Measurement
GAL	Gallon - Field Measure
HR	Hour
LB	Pound(s) - Weight Measure by Scale
LF	Linear Foot - Field Measure
LS	Lump Sum - Unit is one; no measurement will be made
SF	Square Foot
SY	Square Yard
TON	Ton - Weight Measure by Scale (2,000 pounds)

1.07 PAYMENT

A. General:

1. Progress payments will be made monthly.
2. The date for Contractor's submission of monthly Application for Payment shall be established at the Preconstruction Conference.

B. Payment for Lump Sum Work covers all Work specified or shown for the following items:

SECTION	DESCRIPTION
1. General	Payment for general items such as mobilization, performance bond/insurance, move to the individual wells sites, fishing tool fabrication, installing fishing tool and fish for miscellaneous equipment, permits (at cost) allowance, and contingency allowance..
2. Section 2	Payment for replacing owner provided control panels for six (6) separate well sites (#3-8) and replacing existing unistrut supported racks with new racks on all but well #5. The Contractor shall produce documentation upon request verifying actual cost. Only additional work substantiated by the Contractor and approved by the Engineer will be paid as part of this bid item.
3. Section 3 – Well #1	Payment for pre-specific capacity test, removing existing pump and motor, pump & motor inspection, pre-video log well, set up for casing brushing and sodium hypochlorite injection, scrub well and inject 1,500 gallons of sodium hypochlorite, set up for air development, air develop well (4 hours per well), set up & breakdown acidization equipment, inject acid and close in well (150 gallons per well), install temporary pump, pump off acid/neutralize/dispose, pump develop well, remove temporary pump, post-video log well, install existing pump, disinfect well, and post specific capacity test.

SECTION	DESCRIPTION
4. Section 4 – Well #2	Payment for pre-specific capacity test, remove existing pump and motor, pump and motor inspection, pre-video log well, set up for casing brushing and sodium hypochlorite injection, scrub well and inject 1,500 gallons of sodium hypochlorite, set up for air development, air develop well (4 hours per well), set up and breakdown acidization equipment, inject acid and close in well (150 gallons per well), install temporary pump, pump off acid/neutralize/dispose, pump develop well, remove temporary pump, post-video log well, install existing pump, disinfect well, and post specific capacity test.
5. Section 5 – Well #4	Payment for installing test pump & conduct a pre-specific capacity test, set up for casing brushing and sodium hypochlorite injection, scrub well and inject 1,500 gallons of sodium hypochlorite, set up for air development, air develop well (4 hours per well), set up & breakdown acidization equipment, inject acid and close in well (150 gallons), install temporary pump, pump off acid/neutralize/dispose, pump develop well, remove temporary pump, post-video log well, install owner provided pump, disinfect well, post specific capacity test, and replace 8" well head assembly with stainless steel.
6. Section 6 – Well #7	Payment for pre-specific capacity test, removing existing pump, pump & motor inspection, pre-video log well, set up for casing brushing and sodium hypochlorite injection, set up for air development, air development well (4 hours per well), set up & breakdown acidization equipment, inject acid and close in well (150 gallons per well), install temporary pump, pump off acid/neutralize/dispose, pump develop well, remove temporary pump, post-video log well, install existing pump, disinfect well, and post specific capacity test.
7. Section 7 –Well #8	Payment for pre-specific capacity test, removing existing pump, pump & motor inspection, pre-video log well, set up casing brushing and sodium hypochlorite injection, scrub well and inject 1,500 gallons of sodium hypochlorite, set up for air development, air develop well (4 hours per well), set up & breakdown acidization equipment, inject acid and close in well (150 gallons per well), install temporary pump, pump off acid/neutralize/dispose, pump develop well, remove temporary pump, post-video log well, install existing pump, disinfect well, and post specific capacity test.

1.08 NON-PAYMENT FOR REJECTED OR UNUSED PRODUCTS

- A. Payment will not be made for following:
 - 1. Loading, hauling, and disposing of rejected material.
 - 2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
 - 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
 - 4. Material not unloaded from transporting vehicle.
 - 5. Defective Work not accepted by Owner.
 - 6. Material remaining on hand after completion of Work. 1.09

PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings or preliminary operation and maintenance manuals are acceptable to Engineer.
- B. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.10 ALLOWANCES

- A. The allowances shall be used only at the discretion of and as ordered by the Owner for such items as unit price items exceeding estimated quantities, and any associated work requested by the Owner including all labor, materials, and services for modifications or additional work to complete the Project that was unforeseen, but not specifically included in this Contract.
- B. Any portion of these allowances that remain after all authorized payments have been made will be withheld from contract payments and will remain with the Owner.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

- END OF SECTION -

SECTION 01040

COORDINATION

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall allow the Owner or their agents and contractors from other projects or their agents, to enter upon the work for the purpose of constructing, operating, maintaining, removing, repairing, altering, or replacing such pipes, sewers, conduits, manholes, wires, poles, or other structures and appurtenances which may be required to be installed at or in the work. The Contractor shall cooperate with all aforesaid parties and shall allow reasonable provisions for the prosecution of any other work by the Owner, or others, to be done in connection with his work, or in connection with normal use of the facilities.
- B. The Contractor shall cooperate fully with the Owner, the Engineer to effect proper coordination and progress to complete the project on schedule and in proper sequence. Insofar as possible, decisions of all kinds required from the Engineer shall be anticipated by the Contractor to provide ample time for inspection, or the preparation of instructions.
- C. Periodic coordinating conferences shall be held in accordance with Section 01200, Project Meetings, of these Contract Documents.

1.02 SUBMITTALS A. Informational:

- 1. Statement of Qualifications (SOQ) for professional videographer.
- 2. Photographs:
 - a. Digital Color Prints: Submit two copies. Provide digital files of photos on compact disk, within two (2) days of being taken.
 - b. Video Recordings: Submit one copy within 5 days of being taken.

1.03 UTILITY NOTIFICATION AND COORDINATION

- A. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work.
 - 1. Contact the City of North Miami Public Works Utilities at 305-895-9830 for water and sewer utility locations.
 - 2. Contact Sunshine State One Call at 1-800-432-4770 at least 48 hours prior to any excavation.

B. If damage occurs, or if conflicts or emergencies arise during Work, contact the appropriate utility.

1. Winson Water Treatment Plant
 - a. Contact Person: Water Plant Superintendent
 - b. Telephone: 305-953-2854
2. Electricity Company: Florida Power and Light.
 - a. Telephone: 305-442-0388
3. Telephone Company: BellSouth.
 - a. Telephone: 954-423-6235.
4. Water and Sewer Division: North Miami Public Works Utilities.
 - a. Telephone: 305-895-9838.
5. Gas Company: Peoples Gas.
 - a. Telephone: 305-957-3857, ext. 7490.
 - b. Alternative Telephone: 877-832-6747.
6. Cable TV: ATT/Broadband
 - a. Telephone: 954/538.9360
7. Cable TV: Comcast
 - a. Telephone: 888-266-2278

1.04 ADJACENT FACILITIES AND PROPERTIES

A. Examination:

1. After Effective Date of the Agreement and before Work at site is started, Contractor, Engineer, and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.
2. Periodic re-examination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.

B. Documentation:

1. Record and submit documentation of observations made on examination inspections in accordance with paragraphs Construction Photographs and Audio-Video Recordings.
2. Upon receipt, Engineer will review, sign, and return one record copy of documentation to Contractor to be kept on file in field office.

3. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of adjacent property owners, Contractor, and Owner.

1.05 CONSTRUCTION PHOTOGRAPHS

- A. Photographically document all unique portions of the construction including tie-ins to existing pipelines or facilities, crossings of existing utilities, buried valve and piping intersections, and other work items that will not otherwise be visible after completion of construction.
- B. Photo paper handling and development shall be done by a commercial laboratory.
- C. Owner and Engineer shall have the right to select the subject matter and vantage point from which photographs are to be taken.
- D. Construction Progress Photos:
 1. Photographically demonstrate progress of construction, showing every aspect of site and adjacent properties as well as interior and exterior of new or impacted structures.
 2. Provide at least 24 photos per month with pay request.
- E. Color Prints:
 1. Minimum Size: 4-inch by 6-inch.
 2. Finish: Glossy.
 3. Label Each Print:
 - a. Project Name.
 - b. Date and time photo was taken.
 - c. Photographer's name.
 - d. Caption (maximum 30 characters).
 - e. Location and area designation.
 - f. Schedule activity number, as appropriate.
 4. Assemble in bound albums in clear plastic sleeves that facilitate viewing both front and back of each photograph.
 5. Submit photographs electronically in JPEG format.

1.06 AUDIO-VIDEO RECORDINGS

- A. Prior to beginning Work on construction site or of a particular area of the Work, and again within 10 days following date of Substantial Completion, videograph construction site and property adjacent to construction site.

1. Pre-Construction Audio – Video Recording: Within 5 days following the date of Substantial Completion videograph the same areas shot during the Pre-Construction Audio -Video Recording.
 2. Post-Construction Audio – Video Recording: Within 5 days following the date of Substantial Completion videograph the same areas shot during the Pre-Construction Audio -Video Recording
- B. In the case of preconstruction recording, no Work shall begin in the area prior to Engineer's review and approval of content and quality of video for that area.
- C. Particular emphasis shall be directed to physical condition of existing vegetation, structures, and pavements within pipeline alignment and areas adjacent to and within the right-of-way or easement, and on Contractor storage and staging areas.
- D. Owner and Engineer shall have right to select subject matter and vantage point from which videos are to be taken.
- E. Video taping shall be by a professional commercial videographer, experienced in shooting construction videos.
- F. Video Format and Quality:
1. DVD format, with sound.
 2. Video:
 - a. Produce bright, sharp, and clear images with accurate colors, free of distortion and other forms of picture imperfections.
 - b. Electronically, and accurately display the month, day, year, and time of day of the recording.
 3. Audio:
 - a. Audio documentation shall be done clearly, precisely, and at a moderate pace.
 - b. Indicate date, Project name, and a brief description of the location of taping, including:
 - 1) Facility name;
 - 2) Street names or easements;
 - 3) Addresses of private property; and
 - 4) Direction of coverage, including engineering stationing, if applicable.
- G. Documentation:
1. Video Tape Label:
 - a. Tape number (numbered sequentially, beginning with 001).
 - b. Project Name.
 - c. Name of street(s) or easement(s) included.
 - d. Applicable location by engineering stationing.
 - e. Date and time of coverage.

2. Project Video Log: Maintain an ongoing log that incorporates above noted label information for videotapes on Project.

PART 2 - PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

- END OF SECTION -

SECTION 01070

ABBREVIATIONS

PART 1 -- GENERAL

1.01 THE REQUIREMENT

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

1.02 ABBREVIATIONS AND ACRONYMS

AAMA	Architectural Aluminum Manufacturer's Association
AASHTO	American Association of the State Highway and Transportation Officials
ACI	American Concrete Institute
ACOE	Army Corps of Engineers
ACPA	American Concrete Pipe Association
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGMA	American Gear Manufacturer's Association
AHGDA	American Hot Dip Galvanizers Association
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APHA	American Public Health Association
APWA	American Public Works Association
ASA	Acoustical Society of America
ASAE	American Society of Agriculture Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASLE	American Society of Lubricating Engineers

ASME	American Society of Mechanical Engineers
ASMM	Architectural Sheet Metal Manual
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
MDCHD	Miami-Dade County Health Department
BHMA	Builders Hardware Manufacturer's Association
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
DERM	Miami-Dade County Department of Environmental Resources Management
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
FBC	Florida Building Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FS	Federal Specifications
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Systems and Automation
ISO	International Organization for Standardization
MBMA	Metal Building Manufacturers Association
MMA	Monorail Manufacturers Association
MTI	Marine Testing Institute
NAAM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health

NIST National Institute of Standards and Testing
NRCA National Roofing Contractors Association
NSF National Science Foundation
OSHA Occupational Safety and Health Administration
PCA Portland Cement Association
SMACCNA Sheet Metal and Air Conditioning Contractors National Association
SSPC Society of Protective Coatings
SSPWC Standard Specifications for Public Works Construction
SFWMD South Florida Water Management District
UL Underwriters Laboratories, Inc.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

SECTION 01090REFERENCE STANDARDSPART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Titles of Sections and Paragraphs: Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.
- B. Applicable Publications: Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date of the opening of bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- C. Specialists, Assignments: In certain instances, Specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the Contractor.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of all applicable codes.
- B. References herein to "Building Code" shall mean the Florida Building Code (FBC). The latest edition of the code as approved and used by the local agency as of the date of the opening of bids, as adopted by the agency having jurisdiction, shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflict between codes, reference standards, Drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and directions prior to ordering or providing any materials or labor. The Contractor shall follow the most stringent requirements.
- D. Applicable Standard Specifications: The Contractor shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the

referenced portions of those referenced codes, standards, and Specifications listed herein.

- E. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- F. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not used)

-END OF SECTION-

SECTION 01200
PROJECT MEETINGS

PART 1 -- GENERAL

1.01 PRE-CONSTRUCTION MEETING

A. General: A pre-construction meeting will be held after Award of Contract, but prior to starting work at the site. The Engineer will schedule the meeting at a mutually agreed time.

B. Location:

1. Winson Water Treatment Plant
12098 NW 11th Avenue
North Miami, Florida
33168
Contact: Water Plant Superintendent
Phone: 305-953-2854

C. Attendance:

1. Owner (City of North Miami)
2. Contractor
3. Major subcontractors
4. Safety representative
5. Representatives of governmental or other regulatory agencies.
6. Resident Project Representative (RPR)
7. Engineer

D. Minimum Agenda: The purpose of the meeting is to designate responsible personnel and establish a working relationship. The agenda will include the following:

1. Tentative construction schedule
2. Critical work sequencing
3. Designation of responsible personnel
4. General Guidelines for Processing of Field Decisions and Change Orders
5. Adequacy of distribution of Contract Documents

6. Submittal of Shop Drawings and samples
7. Procedures for maintaining record documents
8. Use of site and Owner's (City of North Miami) requirements.
9. Major equipment deliveries and priorities
10. Safety and first aid procedures
11. Security procedures
12. Housekeeping procedures
13. Processing of Partial Payment Requests
14. General regard for community relations
15. Water disposal plan during well development, testing and disinfection.
16. Startup coordination and guidelines

E. Duties: The Engineer will preside at the meeting and will keep and distribute meeting minutes.

1.02 PROGRESS MEETING

A. Frequency: Progress meetings shall be held as determined by the Owner during the performance of the work of this Contract. Additional meetings may be called as progress of work dictates.

B. Location:

1. Location to be determined by Engineer and Owner

C. Attendance:

1. Owner (City of North Miami)
2. Contractor
3. Sub-contractors active on-site
4. Resident Project Representative (RPR)
5. The Contractor may at its discretion request attendance of its suppliers and manufacturers

D. Minimum Agenda: The purpose of the meetings will be to review progress of the work and maintain coordination efforts. The agenda will include the following:

1. Review and approve minutes of previous meetings
 2. Review progress of Work since last meeting
 3. Review proposed construction schedule
 4. Note and identify problems which impede planned progress
 5. Develop corrective measures and procedures to regain planned schedule
 6. Revise construction schedule as indicated and plan progress during next work period
 7. Maintaining of quality and work standards
 8. Complete other current business
 9. Schedule next progress meeting
- E. Duties: The Engineer will preside at the meeting and will keep and distribute meeting minutes.

PART 2 -- PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

(NOT USED)

- END OF SECTION -

SECTION 01300SUBMITTALSPART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. This section specifies the means of all submittals. All submittals, whether their final destination is to the Owner, Engineer, or other representatives of the Owner, shall be directed through the Engineer. A general summary of the types of submittals and the number of copies required is as follows:

Copies to Engineer	Type of Submittal
6	Construction schedule
6	Schedule of payment items
6	Progress estimates
8	Shop drawings
4	Certificates of compliance
4	Warranties
2*	Product samples
4	Hard Copy O & M Manuals
1	Digital O & M Manuals
2	Record drawings
*Unless otherwise required in the specific Section where requested.	

1.02 SUBMITTAL PROCEDURES

- A. Transmit each submittal with the form supplemented in Article 1.10 of these specifications.
- B. Revise and resubmit submittals as required, identify all changes made since previous submittals. Resubmittals shall be noted as such.
- C. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.03 CONSTRUCTION SCHEDULE

- A. The Contractor shall submit a construction schedule at the Pre-construction Meeting. The schedule will be based upon the precedence diagramming method of scheduling and shall be prepared in the form of a horizontal bar chart showing the required construction work for the project. Each schedule shall include the following:

1. All activities should be shown along with the required time to do the work in a proper and continuous sequence of operation and without delays.
 2. Show complete sequence of construction by activity, identifying work of separate stages, and other logically grouped activities. Indicate dates for early and late start, early and late finish, float, and duration.
 3. Any contingency within the schedule (i.e., a difference in time between the project's early completion and required Contract completion date) and the float in the overall project schedule will belong to the project and not to the Parties to the Contract. Contractor shall not sequester shared float through such strategies as extending duration estimates to consume available float time, extensive crew/resource sequencing, etc.
 4. Provide a workable plan for monitoring the progress of all elements of the work, establish the critical elements of work, and forecast potential problems in maintaining the specified completion dates.
- B. In addition, each construction progress schedule shall be prefaced with the following summary data:
1. Contract Name and Number
 2. Contractor's Name
 3. Contract Duration
 4. Contract Schedule
 5. The Effective or Starting Date of The Schedule (the date indicated in the Notice-to Proceed)
 6. Substantial Completion Date
 7. Final Completion Date
- C. The work day to calendar date correlation shall be based on an 8-hour day and 40-hour week with adequate allowance for holidays, adverse weather and all other special requirements of the work. Normal work hours are Monday thru Friday, 8:00 am to 5:00 pm. The Contractor cannot work outside of the normal work hours without written permission by the Owner.
- D. If the Contractor desires to make changes in his method of operating which affect the construction progress schedule and related items, he shall notify the Engineer in writing stating what changes are proposed and the reason for the change. If the Engineer accepts these changes, in writing, the Contractor shall revise and submit, without additional cost to the Owner, all of the affected portions of the construction progress schedule, and associated reports. The construction progress schedule and related items shall be adjusted by the Contractor only after prior acceptance, in writing by the Engineer. Adjustments

may consist of changing portions of the activity sequence, activity durations, division of activities, or other adjustments as may be required. The addition of extraneous, nonworking activities and activities which add restraints to the construction progress schedule shall not be accepted.

- E. Except where earlier completions are specified, schedule dates which show completion of all work prior to the contract completion date shall, in no event, be the basis for claim for delay against the Owner by the Contractor.
- F. Whenever it becomes apparent from the current construction progress schedule that delays to the critical path have resulted and the contract completion date will not be met, or when so directed by the Engineer, the Contractor shall take some or all of the following actions at no additional cost to the Owner. They shall submit to the Engineer for approval, a written statement of the steps they intend to take to remove or arrest the delay to the critical path in the current construction progress schedule.
 - 1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.
 - 2. Increase the number of working hours per shift, shifts per day, working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work.
 - 3. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with the revised schedule.
- G. If when so requested by the Engineer, the Contractor should fail to submit a written statement of the steps they intend to take or should fail to take such steps as reviewed and accepted in writing by the Engineer, the Engineer may direct the Contractor to increase the level of effort in manpower (trades), equipment and work schedule (overtime, weekend and holiday work, etc.) to be employed by the Contractor in order to remove or arrest the delay to the critical path in the current construction progress schedule, and the Contractor shall promptly provide such level of effort at no additional cost to the Owner.
- H. Shop drawings which are not approved on the first submittal or within the time scheduled, and equipment which does not pass the specified tests and certifications shall be immediately rescheduled.
- I. The contract time will be adjusted only in accordance with the General Requirements and other portions of the Contract Documents as may be applicable. If the Engineer finds that the Contractor is entitled to any extension of the contract completion date, the Engineer's determination as to the total number of days extension shall be based upon the current construction progress schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule and related items. Actual delays in activities which, according to the construction progress schedule, do not affect any contract completion date will not be the basis for a change therein.
- J. Review and acceptance of the construction progress schedule by the Engineer is advisory only and shall not relieve the Contractor of the responsibility for accomplishing the work within the contract completion date. Omissions and errors in the construction progress schedule, and related reports shall not excuse performance

less than that required by the Contract and in no way make the Engineer an insurer of the Contractor's success or liable for time or cost overruns flowing from any shortcomings in the construction progress schedule, and related reports.

- K. The progress schedule shall be plotted on 11-inch by 17-inch paper and shall be revised and updated monthly, depicting progress through the last day of the current month and scheduled progress through completion. Five up to date copies of the schedule shall be submitted along with the application for monthly progress payments for the same period.

1.04 SCHEDULE OF PAYMENT VALUES

- A. The Contractor shall submit a Schedule of Payment Values for the Bid Package in accordance with Section 01025 for all items in the proposal for review at the pre-construction meeting. The schedule shall contain the installed value of the component parts of work for the purpose of making progress payments during the construction period.
- B. The schedule shall be given in sufficient detail for the proper identification of Work accomplished. Each item shall include its proportional share of all costs including the Contractor's overhead, contingencies and profit. The sum of all scheduled items shall equal the total value of the Contract.
- C. If the Contractor anticipates the need for payment for materials stored on the project site, he shall also submit a list covering the cost of materials, delivered and unloaded with taxes paid.
- D. The Contractor shall expand or modify the above schedule and materials listing as required by the Engineer's initial or subsequent reviews.

1.05 SHOP DRAWINGS, PROJECT DATA AND SAMPLES

- A. A Shop Drawing Submittal Schedule shall be provided by the Contractor at the Pre-Construction meeting. A current Shop Drawing submittal log shall also be provided by the Contractor at each progress meeting.
- B. The Contractor shall submit a minimum of seven (8) copies of all shop drawings to the Engineer for review. Shop Drawings will be reviewed, stamped and distributed with the appropriate box checked either "FURNISH AS SUBMITTED", "FURNISH AS CORRECTED" or "REVISE AND RESUBMIT". The distribution of process shop drawings will be as follows:
1. Shop drawings marked "FURNISH AS SUBMITTED" or "FURNISH AS CORRECTED"
 - 3 copies returned to the Contractor
 - 2 copies transmitted to the Owner
 - 2 copies remain at the Engineer's office
 2. Shop drawings marked "REVISE AND RESUBMIT"
 - 2 copies returned to the Contractor

2 copies remain at the Engineer's office
1 copy remains with the shop drawing reviewer
2 copies will be discarded

- C. The review of the Contractor's submissions shall in no way relieve the Contractor of any of his responsibilities under the Contract. An acceptance of a submission shall be interpreted to mean that there are no specific objections to the submitted material, subject to conformance with the Contract Drawings and Specifications.
- D. All submissions shall be dated and properly referenced to the specifications section and Contract Drawing number.
- E. Shop Drawings and Project Data within practical limits shall be submitted as a single complete package for any operating system and shall include all items of equipment and mechanical units involved in the functioning of such system.
- F. All submissions shall bear the Contractor's stamp certifying that they have been checked for conformance and accuracy. Submissions without the Contractor's stamp of approval will not be reviewed by the Engineer and will be returned to the Contractor.
- G. For any submission containing any departure from the Contract Documents and the Contractor shall include proper explanation in his letter of submittal.
- H. Work on fabricated or special items shall not be commenced until the required submission information has been reviewed and accepted.
- I. Standard items shall not be assembled or shipped until the required submission information has been reviewed and accepted.
- J. Prior review actions shall not relieve the Contractor of the responsibility for correcting errors, deviations, and/or omissions discovered at a later date.
- K. Shop Drawings: Shop Drawings include, but are not limited to, layout drawings, installation drawings, construction drawings, certified and interconnecting wiring diagrams, etc. The Contractor shall be responsible for security of all the information, details, dimension, drawings, etc. necessary to prepare submission drawings required and necessary under this Contract and to fulfill all other requirements of his Contract. The Contractor shall secure such information, details, drawings, etc. from all possible sources including the Contract Drawings, drawings prepared by subcontractors, Engineer's, manufacturers, suppliers, etc.
- L. Submission drawings shall accurately and clearly present the following:
 - 1. All working and installation dimensions.
 - 2. Arrangement and sectional views.
 - 3. Units of equipment in the proposed position for installation, details of required attachments and connections and dimensioned locations between units and in relation to the structures.

4. Necessary details and information for making connections between the various trades including but not limited to, power supplies and interconnection wiring between units, accessories, appurtenances, etc.
- M. Product Data: Where manufacturer's publications in the form of catalogs, brochures, illustrations, or other data sheets are submitted in lieu of prepared shop drawings, such submission shall specifically indicate the particular item offered. Identification of such items and relative pertinent information shall be made with indelible ink. Submissions showing only general information will not be accepted.
- N. Product data shall include materials of construction, dimensions, performance characteristics, capacities, wiring diagrams, piping and controls, etc.
- O. Samples: Contractor shall furnish for review all samples as required by the Contract Documents or requested by the Engineer.
- P. Samples shall be of sufficient size or quantity to clearly illustrate the quality, type, range of color, finish or texture and shall be properly labeled to show the nature of the work where the material represented by the sample will be used.
- Q. Samples shall be checked by the Contractor for conformance to the Contract Documents before being submitted to the Engineer and shall bear the Contractor's stamp certifying that they have been so checked. Transportation charges on samples submitted to the Engineer shall be prepaid by the Contractor.
- R. Engineer's review will be for compliance with the Contract Documents, and his comments will be transmitted to the Contractor with reasonable promptness.
- S. Accepted samples will establish the standards by which the completed work will be judged.
- T. Substitutions: Whenever a particular brand or make of material, equipment, or other item is specified, or is indicated on the Drawings, it is for the purpose of establishing a standard of quality, design, and type desired and to supplement the detailed specifications. Any other brand or make which, in the opinion of the Engineer, is equivalent to that specified or indicated may be offered as a substitute subject to the following provisions:
1. Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature, and performance data together with samples of the materials, where feasible, to enable the Engineer to determine if the proposed substitution is equal.
 2. Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.
 3. A list of installations where the proposed substitution is equal.
 4. Where the acceptance of a substitution requires revision or redesign of any part of the Work, all such revision and redesign, and all new Drawings and

details required therefore, shall be provided by the Contractor at his own cost and expense, and shall be subject to review of the Engineer.

5. In all cases the Engineer shall be the sole judge as to whether a proposed substitution is to be accepted. The Contractor shall abide by the Engineer's decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item, or substitute, as specified. No substitute items shall be used in the Work without written acceptance of the Engineer.
 6. Acceptance of any proposed substitution shall in no way release the Contractor from any of the provisions of the Contract Documents.
- U. Complete Submittals: Each submittal shall be complete in all aspects incorporating all information and data required to evaluate the products' compliance with the Contract Documents. Partial or incomplete submissions shall be returned to the Contractor without review.
- V. If the Contractor requires additional copies of returned shop drawings, he shall include extra Drawings in his original submittal. The Engineer will process the Drawings and return them to the Contractor.

1.06 WARRANTIES

- A. Original warranties, called for in the Contract Documents, shall be submitted to the Owner through the Engineer. When warranties are required, they shall be submitted prior to request for payment.
- B. When advance copies of warranties are requested, they shall be submitted with, and considered as shop drawings.

1.07 QUALITY CONTROL SUBMITTALS

- A. Certificates:
 1. Manufacturer's Certificate of Compliance:
 - a. When specified in individual Specification sections or where products are specified to a recognized standard or code, submit prior to shipment of product or material to the site.
 - b. Engineer may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.
 - c. Signed by product manufacturer certifying that materials, manufacture, and product specified conforms to or exceeds specified requirements and intent for which product will be used. Submit supporting reference data, affidavits, and certifications as appropriate.

- d. May reflect recent or previous test results on material or product, but must be acceptable to Engineer.
- 2. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in the individual Specification sections.
- B. Field Samples: Provide as required by individual Specifications and as may be required by Engineer during progress of Work.
- C. Written Test Reports of Each Test and Inspection: As a minimum, include the following:
 - 1. Date of test and date issued, project title and number, testing laboratory name, address, and telephone number, and name and signature of laboratory inspection.
 - 2. Date and time of sampling or inspection and record of temperature and weather conditions.
 - 2. Identification of product and Specification section, location of Sample, test or inspection in the Project, type of inspection or test with referenced standard or code, certified results of test.
 - 4. Compliance with Contract Documents, and identifying corrective action necessary to bring materials and equipment into compliance.
 - 5. Provide an interpretation of test results, when requested by
Engineer.

1.09 OPERATION AND MAINTENANCE MANUALS (HARD COPY)

- A. General: The Contractor shall furnish and deliver to the Engineer, prior to final payment, four complete final Operation and Maintenance (O&M) Manuals including instructions, technical bulletins, and any other printed matter such as diagrams, prints or Drawings, containing full information required for the proper operations, maintenance, and repair of all Contractor furnished equipment. Included shall be a spare parts diagram and complete spare parts list. These requirements are a prerequisite to the operation and acceptance of equipment. Each O&M Manual shall be bound together in appropriate three-ring binders. A detailed table of contents shall be provided for each Manual.
- B. Written operation and maintenance instructions are required for all equipment items supplied for this project. The amount of detail shall be commensurate with the complexity of the equipment item. Extensive pictorial cuts of equipment are required for operator reference in servicing.
- C. Information not applicable to the specific piece of equipment installed on this

project shall be struck from the Manual by the Contractor. Information provided shall include a source of replacement parts and names of service representatives, including addresses and telephone numbers.

- D. When written instructions include shop drawings and other information previously reviewed by the Engineer. Only those editions which were accepted by the Engineer, and which accurately depict the equipment installed, shall be incorporated in the O&M Manual.
- E. Maintenance and Lubrication Schedules: The Contractor shall include complete maintenance schedules in the O&M Manual, for all Contractor furnished equipment. Separate forms shall be submitted for each piece of equipment.
- F. Operating Instructions and Parts List: The Contractor shall include with the O&M Manual complete sets of operating instructions and spare parts lists for all equipment and appurtenances giving the information listed below:
 - 1. Clear and concise instructions for the operation, adjustment and maintenance of the equipment.
 - 2. List of all parts for the equipment, with catalog numbers and other data necessary for ordering replacement parts.
- G. Such instructions and parts lists shall be annotated to indicate only the specific equipment furnished. References to other sizes and types or models of similar equipment shall be deleted or neatly lined out.

1.09 DIGITAL OPERATION AND MAINTENANCE MANUALS

- A. All Final O&M Manuals shall also be submitted in whole in electronic format on compact disk. Electronic O&M manuals shall contain information in standard formats (Adobe, PDF, Word, AutoCAD, HTML, etc.) and shall be easily accessible through the use of standard, "off-the-shelf" software such as an Internet browser. Hypertext links shall be embedded throughout the text for ease of navigation between references.

1.10 SUPPLEMENTS

- A. The supplements listed below, following "END OF SECTION" are part of this Specification.
 - 1. Forms: Transmittal of Contractor's submittal.

PART 2 -- PRODUCTS (NOT
USED) PART 3 -- EXECUTION
(NOT USED)

- END OF SECTION -

TRANSMITTAL OF CONTRACTOR'S SUBMITTAL
(Attach to Each Submittal)

DATE: _____

TO: _____ Submittal No. _____

New Submittal Resubmittal

Previous Submittal No.:

Project: No. _____

Project No.: _____

Specification Section No.: _____

FROM: _____ (Cover only one section with each transmittal)
Contractor Schedule Date of Submittal

SUBMITTAL TYPE: Shop Drawing Contract Closeout "Or-Equal"/Substitute
 Quality Control Sample

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes

Contractor hereby certifies that (i) Contractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: _____
Contractor (Authorized Signature)

SECTION 01400

QUALITY CONTROL

PART 1 -- GENERAL

1.01 THE REQUIREMENT

A. Testing Laboratory Services

1. Laboratory testing and checking required by the Specifications, including the cost of transporting all samples and test specimens, shall be provided and paid for by the Owner unless otherwise indicated in the Specifications.
2. Materials to be tested include, but are not necessarily limited to the following:
 - a. Raw water during construction of well
 - b. Raw water during well disinfection
3. Tests required by the Owner shall not relieve the Contractor from the responsibility of supplying test results and certificates from manufacturers or suppliers to demonstrate conformance with the Specifications.
4. Procedure
 - a. The Contractor shall plan and conduct his operations to permit taking of field samples and test specimens, as required, and to allow adequate time for laboratory tests.
 - b. The collection, field preparation and storage of field samples and test specimens shall be as directed by the Engineer with the cooperation of the Contractor.
5. Significance of Tests
 - a. Test results shall be binding on both the Contractor and the Owner, and shall be considered irrefutable evidence of compliance or noncompliance with the Specification requirements, unless supplementary testing shall prove, to the satisfaction of the Owner, that the initial samples were not representative of actual conditions.
6. Supplementary and Other Testing
 - a. Nothing shall restrict the Contractor from conducting tests he may require. Should the Contractor at any time request the Owner to consider such test results, the test reports shall be certified by an independent testing laboratory acceptable to the Owner. Testing of this nature shall be conducted at the Contractor's expense.

1.02 IMPERFECT WORK, EQUIPMENT, OR MATERIALS

- A. Any defective or imperfect work, equipment, or materials furnished by the Contractor which is discovered before the final acceptance of the work, as established by the Certificate of Substantial Completion, or during the subsequent guarantee period, shall be removed immediately even though it may have been overlooked by the Engineer and estimated for payment. Any equipment or materials condemned or rejected by the Engineer shall be tagged as such and shall be immediately removed from the site. Satisfactory work or materials shall be substituted for that rejected.
- B. The Engineer may order tests of imperfect or damaged work, equipment, or materials to determine the required functional capability for possible acceptance, if there is no other reason for rejection. The cost of such tests shall be borne by the Contractor; and the nature, tester, extent and supervision of the tests will be as determined by the Engineer. If the results of the tests indicate that the required functional capability of the work, equipment, or material was not impaired, consistent with the final general appearance of same, the work, equipment, or materials may be deemed acceptable. If the results of such tests reveal that the required functional capability of the questionable work, equipment, or materials has been impaired, then such work, equipment, or materials shall be deemed imperfect and shall be replaced. The Contractor may elect to replace the imperfect work, equipment, or material in lieu of performing the tests.

1.03 INSPECTION AND TESTS

- A. The Contractor shall allow the Engineer ample time and opportunity for testing materials and equipment to be used in the work. He shall advise the Engineer promptly upon placing orders for material and equipment so that arrangements may be made, if desired, for inspection before shipment from the place of manufacture. The Contractor shall at all times furnish the Engineer and his representatives, facilities including labor, and allow proper time for inspecting and testing materials, equipment, and workmanship. The Contractor must anticipate possible delays that may be caused in the execution of his work due to the necessity of materials and equipment being inspected and accepted for use. The Contractor shall furnish, at his own expense, all samples of materials required by the Engineer for testing, and shall make his own arrangements for providing water, electric power, or fuel for the various inspections and tests of structures and equipment.
- B. The Contractor shall furnish the services of representatives of the manufacturers of certain equipment, as prescribed in other Sections of the Specifications. The Contractor shall also place his orders for such equipment on the basis that, after the equipment has been tested prior to final acceptance of the work, the manufacturer will furnish the Owner with certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required of equipment shall be paid for by the Contractor, unless specified otherwise in the Section which covers a particular piece of equipment.
- C. Where other tests or analyses are specifically required in other Sections of these Specifications, the cost thereof shall be borne by the party (Owner or Contractor) so designated in such Sections. The Owner will bear the cost of all tests, inspections, or investigations undertaken by the order of the Engineer for the purpose of determining conformance with the Contract Documents if such tests, inspection, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the Engineer as a result of such tests,

inspections, or investigations, the Contractor shall bear the full cost thereof or shall reimburse the Owner for said cost. In this connection, the cost of any additional tests and investigations, which are ordered by the Engineer to ascertain subsequent conformance with the Contract Documents, shall be borne by the Contractor.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

- END OF SECTION -

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 -- GENERAL

1.1 SUBMITTALS

A. Informational Submittals:

1. Copies of permits and approvals for construction as required by laws and regulations and governing agencies.
2. Temporary Utility Submittals: Dewatering well locations
3. Temporary Construction Submittals:
 - a. Access Roads: Routes, cross-sections, and drainage facilities.
 - b. Parking area plans.
 - c. Fencing and protective barrier locations and details.
 - d. Staging area location plan.
 - e. Maintenance of Traffic (MOT) Plans: As specified herein, and proposed revisions thereto.

1.2 MOBILIZATION

A. Mobilization shall include, but not be limited to, these principal items:

1. Obtaining required permits.
2. Moving equipment required for first month operations onto site.
3. Installing temporary construction power, wiring, and lighting facilities.
4. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
5. Arranging for staging and storage area.
6. Posting OSHA required notices and establishing safety programs and procedures.

7. Having Contractor's superintendent at site full-time.

- B. Contractor is responsible for finding a suitable location for a project staging and material storage area, as required.

1.3 PERMITS

- A. Permits, Licenses, or Approvals: Obtain in accordance with the Owner's construction standards and Specifications and as otherwise required for completion of the Work.

1.4 PROTECTION OF WORK AND PROPERTY

- A. Comply with Owner's safety rules while on Owner's project.
- B. Keep Owner informed of serious onsite accidents and related claims.

1.5 VEHICULAR TRAFFIC

- A. Maintenance of Traffic Plans (MOTs) if required:

Adhere to MOTs reviewed by the Owner and/or his representative, and approved by the appropriate agency. Changes to this plan shall be made only by written approval of appropriate public authority and the Engineer. Secure approvals for necessary changes so as not to delay progress of the Work.

Traffic Routing:

In MOT, show sequences of construction affecting use of roadways, time required for each phase of the Work, provisions for decking over excavations and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles.

- B. Preparation of MOTs: Contractor shall be prepare and submit MOTs where required by federal, state, county, or local agencies having jurisdiction. Contractor shall obtain all required approvals and permits associated with the MOTs. Traffic control on all city, county, and state highway rights-of-way shall meet the requirements of the City of North Miami, where applicable, and the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, as well as FDOT standard details for maintenance of traffic, in accordance with the Manual for Uniform Traffic Control and Safe Practices. Traffic control on all county rights-of –way shall meet the additional requirements of the Miami-Dade County Engineering Department including but not limited to:

The use of solid barriers to separate construction from adjacent traffic lanes where the difference in grade is greater than 12 inches.

Plating or backfilling of all nonprotected excavations at the close of each working day.

Contractor shall submit copies of all MOT's to the Engineer concurrent with submittal to the approving authority.

Contractor shall submit three copies of the agency-approved MOT prior to initiation of construction or as required by specific permits contained herein.

PART 2 – PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

1.1 TEMPORARY UTILITIES

A. Power:

1. *Electric power is not available at the construction sites. Contractor shall provide the necessary electric power at each well location or as needed for completion of the project.*
2. *Cost of electric power used in performance and acceptance testing will be borne by Contractor.*

B. Lighting: Provide temporary lighting to meet all applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.

C. Water:

1. *Hydrant Water:*

- a. Is available from nearby hydrants. Secure written permission for connection, flow meter and backflow preventer installation, and use from water department. Meet all requirements for use. Notify fire department before obtaining water from fire hydrants.

- b. Use only special hydrant-operating wrenches to open hydrants. Make certain that hydrant valve is open full, since cracking the valve causes damage to the hydrant. Repair damaged hydrants and notify appropriate agency as quickly as possible. Hydrants shall be completely accessible to fire department at all times.
 - c. Include costs to connect and transport water to construction areas in Contract Price.
- D. Sanitary and Personnel Facilities: Provide and maintain facilities for Contractor's employees, Subcontractors, and all other onsite employer's employees. Service, clean, and maintain facilities and enclosures.
- E. Fire Protection: Furnish and maintain on site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241).

1.2 PROTECTION OF WORK AND PROPERTY

A. General:

1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
2. No residence or business shall be cut off from vehicular traffic for a period exceeding 2 hours, unless special arrangements have been made.
3. Maintain in continuous service all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered along line of the Work, unless other arrangements satisfactory to owners of said utilities have been made.
4. Where completion of the Work requires temporary or permanent removal and/or relocation of existing utility, coordinate all activities with owner of said utility and perform all work to their satisfaction.
5. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
6. Keep fire hydrants and water control valves free from obstruction and available for use at all times.

7. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Contractor.
 8. Notify property owners and utility offices that may be affected by construction operation at least 2 working days in advance.
 - a. Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
 9. Do not impair operation of existing utility systems. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, storm drains, pump stations, or other sewer structures.
 10. Maintain original site drainage wherever possible.
- B. Traffic Signal Communications Systems:
1. Maintain in continuous operation all existing traffic signal communication systems located within the Project limits for the duration of the Project. Maintenance of the traffic signal communication systems may entail the use of leased facilities, temporary splices, or the provision of alternate or replacement facilities as proposed by the Contractor and approved by the Miami-Dade County Traffic Engineering Division.
 2. In the event of a failure in the continuous operation of the traffic signal communication system, prepare a Remedial Action Plan that has been coordinated with the Miami-Dade County Traffic Engineering Division to determine the nature of the failure. The Remedial Action Plan shall be documented in a written report and submitted within one calendar day of the notification of the discontinuous operation of the traffic signal communication system.
 3. Complete the implementation of the Remedial Action Plan within two calendar days upon receipt of approval of the Plan by the Miami-Dade County Traffic Engineering Division. Reworking of the Plan shall be required if the minimum system communication requirements are not met, as determined by the Miami-Dade County Traffic Engineering Division, as a result of a given Remedial Action Plan.

4. In the event that the traffic signal communication systems are damaged, a temporary splice to a damaged copper communications cable shall be accomplished by using approved splice material for connecting the bare wires. For damaged fiber optic communication systems, mechanical splicing of the fiber to achieve a maximum loss of 0.20 dB is acceptable. A junction box shall be installed over the splice on a temporary basis for access, unless a new cable is installed as per specifications.
5. All traffic signal communication systems that were temporarily spliced shall be removed and replaced in kind with new cable, subject to approval by the Miami-Dade County Traffic Engineering Division, prior to final acceptance of the Project. Replacement shall be from junction box to junction box with no intermediate splices.

C. Barricades and Lights:

1. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure public safety and the safety of Contractor's employees, other employer's employees, and others who may be affected by the Work.
2. Provide to protect existing facilities and adjacent properties from potential damage.
3. Locate to enable access by facility operators and property owners.
4. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.
5. Locate barricades at the nearest intersecting public thoroughfare on each side of the blocked section.

D. Signs and Equipment:

1. Conform to requirements of manual published by the FDOT.
2. Barricades: Provide as required by the FDOT Vehicle Code and in sufficient quantity to safeguard public and Work.
3. Portable TOW-AWAY-NO STOPPING Signs: Place where approved by police department and Owner.
4. Traffic Cones: Provide to delineate traffic lanes to guide and separate traffic movements.
5. High-Level Warning Flag Units: Provide two in advance of traffic approaching the Work, each displaying three flags mounted at a height of 9 feet.

6. ROAD CONSTRUCTION AHEAD Signs: Provide four, size 48 inches by 48 inches. Place in conspicuous locations, approximately 200 feet in advance of the Work, and facing approaching traffic.
 7. DETOUR Signs: Provide two, right arrow or left arrow, placed as approved by the Engineer.
 8. RIGHT or LEFT LANE CLOSED AHEAD Signs: Provide two, place in advance of lane to be closed.
 9. Provide at obstructions, such as material piles and equipment.
 10. Illuminate barricades and obstructions with warning lights from sunset to sunrise.
 11. Use to alert general public of construction hazards, which would include surface irregularities, unramped walkways, grade changes, and trenches or excavations in roadways and in other public access areas.
 12. Submit proposed signage to the Engineer for prior approval.
- E. Existing Structures: Where Contractor contemplates removal of small structures such as mailboxes, signposts, and culverts that interfere with Contractor's operations, obtain approval of property owner and Engineer. Replace those removed in a condition equal to or better than original.
- F. Finished Construction: Protect finished floors and concrete floors exposed as well as those covered with composition tile or other applied surfacing.
- G. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.
- H. Dewatering: Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Maintain foundations and parts of the Work free from water.

1.3 TEMPORARY CONTROLS

- A. Air Pollution Control:
1. Minimize air pollution from construction operations.
 2. Burning: of waste materials, rubbish, or other debris will not be permitted on or adjacent to site.
 3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul

roads used in construction area a dust-preventive treatment or periodically water to prevent dust as needed up to daily, as directed by the Owner. Strictly adhere to applicable environmental regulations for dust prevention.

B. Noise Control:

1. Provide acoustical barriers so noise emanating from tools or equipment will not exceed legal noise levels.
2. Noise Control Plan: Propose plan to mitigate construction noise and to comply with noise control ordinances, including method of construction, equipment to be used, and acoustical treatments.

C. Water Pollution Control:

1. Divert sanitary sewage and non-storm waste flow interfering with construction and requiring diversion to sanitary sewers. Do not cause or permit action to occur which would cause an overflow to existing waterway.
2. Prior to commencing excavation and construction, obtain Engineer's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and stormwater flow, including dewatering pump discharges.
3. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning," and "Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity," and "Erosion and Sediment Control-Surface Mining in Eastern United States."
4. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

- D. Erosion, Sediment, and Flood Control: Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period. Meet all local, state, and Federal requirements and obtain necessary permits and approvals as required. Discharges to storm drains, including discharge from dewatering systems, will not be permitted without the installation of a sediment removal system approved by the Owner.

1.4 STORAGE YARDS AND BUILDINGS

- A. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.

B. Temporary Storage Buildings:

1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building meeting safety standards.

1.5 ACCESS ROADS AND DETOURS

- A. Construct access roads as shown and within easements, rights-of-way, or Project limits. Utilize existing roads where shown. Alignments for new routes must be approved by the Engineer or Owner.
- B. Maintain drainage ways. Install and maintain culverts to allow water to flow beneath access roads. Provide corrosion-resistant culvert pipe of adequate strength to resist construction loads.
- C. Provide gravel, crushed rock, or other stabilization material to permit access by all motor vehicles at all times.
- D. Maintain road grade and crown to eliminate potholes, rutting, and other irregularities that restrict access.
- E. Coordinate with Engineer detours and other operations affecting traffic and access. Provide at least 72 hours' notice to Engineer of operations that will alter access to the site and adjacent private properties.
- F. Where access road crosses existing fences, install and maintain gates.
- G. Upon completion of construction, restore ground surface disturbed by access road construction to original grade. Replace damaged or broken culverts with new culvert pipe of same diameter and material.

1.6 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.
- B. Provide parking facilities for personnel working on the Project. No employee or equipment parking will be permitted on Owner's existing paved areas, except as specifically designated for Contractor's use.

1.7 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.
 - 1. No two adjacent roadways can be under construction at the same time.
 - 2. At least 75 percent of all roadways shall have a maintained trench surface as described below at all times during the project.
 - 3. Construction in affected roadways shall be completed in sequence so that all improvements are completed, except for final pavement restoration during one continuous period. This includes water and sewer services to the edge of the right-of-way.
- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
- D. Road Closures: Maintain satisfactory means of exit for persons residing or having occasion to transact business along route of the Work. If it is necessary to close off roadway or alley providing sole vehicular access to property for periods greater than 2 hours, provide written notice to each owner so affected 3 days prior to such closure. In such cases, closings of up to 4 hours may be allowed. Closures of up to 10 hours may be allowed if a week's written notice is given and undue hardship does not result.
- E. Contractor will submit MOT forms and/or applications as required by the agency with jurisdiction. The Temporary Modification of Traffic Form provided as a supplement to this Section shall be submitted to the Engineer for all requested MOT's in accordance with the provisions of this Section. The form is required for MOT's in streets under City jurisdiction.
- F. Maintenance of traffic is not required if Contractor obtains written permission from Owner and tenant of private property, or from authority having jurisdiction over public property involved, to obstruct traffic at designated point.
- G. In making street crossings, do not block more than one-half the street at a time. Whenever possible, widen shoulder on opposite side to facilitate traffic flow. Provide temporary surfacing on shoulders as necessary.
- H. Maintain top of backfilled trenches, before they are paved, to allow normal vehicular traffic to pass over.

1. Trench maintenance will consist of compacted sub-base with asphalt prime, temporary asphalt, or flowable fill.
2. Provide temporary access driveways where required.
3. Cleanup operations shall follow immediately behind backfilling.
4. Watering of untreated backfill shall be utilized to control dust as directed by the Engineer until such time as adequate trench maintenance has been achieved.

1.8 CLEANUP PROCEDURES FOR HURRICANE WARNINGS AND WATCHES

- A. In the event that the National Oceanographic and Atmospheric Administration (NOAA) issues a hurricane watch for the Fort Lauderdale area, the Engineer will contact the Contractor informing him that the watch has been established. Once notified of a hurricane watch, the Contractor will remove all unnecessary items from the work area and tie down all remaining supplies, barricades, and movable (under 200 pounds) objects. The Engineer will determine "necessary" items. If a warning is issued, the Contractor shall complete the clean-up and evacuate the area the same day. The Owner shall not be liable for any costs or delays caused as a result of demobilization or remobilization due to the above.

1.9 CLEANING DURING CONSTRUCTION

- A. In accordance with General Conditions, as may be specified in Specification sections, and as required herein.
- B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep all floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up all debris and dispose.
- C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, dispose of such waste materials, debris, and rubbish offsite.
- D. Thoroughly clean all spilled dirt, gravel, or other foreign material caused by the construction operations from all streets and roads at the conclusion of each day's operation. Sidewalks, unless under construction, shall be kept clear of material, and available for pedestrian use at all times.

- END OF SECTION -

SECTION 01530

PROTECTION OF EXISTING FACILITIES

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Contractor shall be responsible for the preservation and protection of property adjacent to the work site against damage or injury as a result of his operations under this Contract. Any damage or injury occurring on account of any act, omission or neglect on the part of the Contractor shall be restored in a proper and satisfactory manner or replaced by and at the expense of the Contractor to an equal or superior condition than previously existed.
- B. Contractor shall comply promptly with such safety regulations as may be prescribed by the Owner or the local authorities having jurisdiction and shall, when so directed, properly correct any unsafe conditions created by, or unsafe practices on the part of, his employees. In the event of the Contractor's failure to comply, the Owner may take the necessary measures to correct the conditions or practices complained of, and all costs thereof will be deducted from any monies due the Contractor. Failure of the Engineer to direct the correction of unsafe conditions or practices shall not relieve the Contractor of his responsibility hereunder.
- C. In the event of any claims for damage or alleged damage to property as a result of work under this Contract, the Contractor shall be responsible for all costs in connection with the settlement of or defense against such claims. Prior to commencement of work in the vicinity of property adjacent to the work site, the Contractor, at his own expense, shall take such surveys as may be necessary to establish the existing condition of the property. Before final payment can be made, the Contractor shall furnish satisfactory evidence that all claims for damage have been legally settled or sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

1.02 PROTECTION OF WORK AND MATERIAL

- A. During the progress of the work and up to the date of final payment, the Contractor shall be solely responsible for the care and protection of all work and materials covered by the Contract.
- B. All work and materials shall be protected against damage, injury or loss from any cause whatsoever, and the Contractor shall make good any such damage or loss at his own expense. Protection measures shall be subject to the approval of the Engineer.

1.03 EXISTING UTILITIES AND STRUCTURES

- A. The term existing utilities shall be deemed to refer to both publicly-owned and privately-owned utilities such as electric power and lighting, telephone, water, gas, storm drains, process lines, sanitary sewers and all appurtenant structures.

- B. Where existing utilities and structures are indicated on the Drawings, it shall be understood that all of the existing utilities and structures affecting the work may not be shown and that

the locations of those shown are approximate only. It shall be the responsibility of the Contractor to ascertain the actual extent and exact location of existing utilities and structures. In every instance, the Contractor shall notify the proper authority having jurisdiction and obtain all necessary directions and approvals before performing any work in the vicinity of existing utilities.

- C. Prior to beginning any excavation work, the Contractor shall, through field investigations, determine any conflicts or interferences between existing utilities and new utilities to be constructed under this project. This determination shall be based on the actual locations, elevations, slopes, etc., of existing utilities as determined in the field investigations, and locations, elevation, slope, etc. of new utilities as shown on the Drawings. If an interference exists, the Contractor shall bring it to the attention of the Engineer as soon as possible. If the Engineer agrees that an interference exists, he shall modify the design as required. Additional costs to the Contractor for this change shall be processed through a Change Order as detailed elsewhere in these Contract Documents. In the event the Contractor fails to bring a potential conflict or interference to the attention of the Engineer prior to beginning excavation work, any actual conflict or interference which does arise during the Project shall be corrected by the Contractor, as directed by the Engineer, at no additional expense to the Owner.
- D. The work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to the existing utilities. Temporary connections shall be provided, as required, to insure uninterrupted of existing services. Any damage resulting from the work of this Contract shall be promptly repaired by the Contractor at his own expense in a manner approved by the Engineer and further subject to the requirements of any authority having jurisdiction. Where it is required by the authority having jurisdiction that they perform their own repairs or have them done by others, the Contractor shall be responsible for all costs thereof.
- E. Where excavations by the Contractor require any utility lines or appurtenant structures to be temporarily supported and otherwise protected during the construction work, such support and protection shall be provided by the Contractor. All such work shall be performed in a manner satisfactory to the Engineer and the respective authority having jurisdiction over such work. In the event the Contractor fails to provide proper support or protection to any existing utility, the Engineer may, at his discretion, have the respective authority to provide such support or protection as may be necessary to insure the safety of such utility, and the costs of such measures shall be paid by the Contractor.

1.04 TREES WITHIN PROJECT LIMITS

- A. General: The Contractor shall exercise all necessary precautions so as not to damage or destroy any trees on the project site, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or Owner. All existing trees which are damaged during construction shall be replaced by the Contractor or a certified tree company to the satisfaction of the Owner.

- B. Replacement: The Contractor shall immediately notify the Owner if any tree is damaged by the Contractor's operations. If, in the opinion of the Owner, the damage is such that replacement is necessary, the Contractor shall replace the tree at its own expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay to the Owner compensatory payment acceptable to the Owner.

1.05 NOTIFICATION BY THE CONTRACTOR

- A. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way the Contractor shall notify the respective authorities representing the Owners or agencies responsible for such facilities not less than three days nor more than seven days prior to excavation so that a representative

PART 2 -- PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

(NOT USED)

- END OF SECTION -

SECTION 01532

WELLFIELD PROTECTION

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor is advised that the work is to be performed in a fully operational wellfield, which is the principal source of raw water supply to the City of North Miami Winson Water Treatment Plant. The Contractor shall be fully responsible for all precautionary measures together with all remediation, cleanup, disinfection, regulatory agency fines and all other labor, materials, and costs associated with any contamination of the potable water supply caused directly or indirectly by the activities of the Contractor in the performance of the work.
- B. Notwithstanding other indemnification requirements of the Contract Documents, the Contractor shall also indemnify, defend, and hold harmless the City, the Engineer and the City's agents from any and all legal action which may arise from contamination of the water supply caused directly or indirectly by the Contractor in the performance of the work.
- C. Contractor is notified that their work will be within the Westside Wellfield protection area as defined by the Miami-Dade County. The Contractor is further notified of the following:
- D. The Contractor shall comply with all requirements of Chapter 24-43, Wellfield Protection Ordinance of the Miami-Dade County Code and Chapter 62-521, Wellhead Protection Rule of the Florida Administrative Code.
- E. The Contractor shall review the Chapter 24-43(5) of the Miami-Dade County Code of Ordinances regarding prohibition of hazardous materials within wellfield protection areas.
- F. The Contractor shall complete an affidavit on their letterhead, signed by an authorized officer of the firm which itemizes the regulated chemicals that the Contractor proposes to use at the City of North Miami wellfield during construction.
- G. Submit the affidavit in accordance with the Section entitled "Submittals".
- H. Notify the Miami-Dade County Department of Permitting, Environment and Regulatory Affairs to acquire permission to initiate construction within the wellfield.
- I. Contact Miami-Dade County Department of Permitting, Environment and Regulatory Affairs for additional assistance regarding compliance with the Wellfield Protection ordinance.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

- END OF SECTION -

SECTION 01700
PROJECT CLOSEOUT

PART 1 -- GENERAL

1.01 THE REQUIREMENT

A. Final Cleaning

1. At the completion of the work, the Contractor shall remove all rubbish from and about the site of the work, and all temporary structures, construction signs, tools, scaffolding, materials, supplies and equipment which he or any of his Subcontractors may have used in the performance of the work. Contractor shall broom clean paved surfaces and rake clean other surfaces of grounds.
2. Contractor shall thoroughly clean all materials, equipment and structures; all marred surfaces shall be touched up to match adjacent surfaces; dirty filters and burned out lights replaced as required so as to leave work in a clean and new appearing condition.
3. Contractor shall maintain cleaning until project, or portion thereof, is occupied by the Owner.

B. Final Cleanup; Site Rehabilitation

1. Before finally leaving the site, the Contractor shall wash and clean all exposed surfaces which have become soiled or marked, and shall remove from the site of work all accumulated debris and surplus materials of any kind which result from his operation, including construction equipment, tools, sheds, sanitary enclosures, etc. The Contractor shall leave all equipment, fixtures, and work, which he has installed, in a clean condition. The completed project shall be turned over to the Owner in a neat and orderly condition.
2. The site of the work shall be rehabilitated or developed in accordance with other sections of the Specifications and the Figures. In the absence of any portion of these requirements, the Contractor shall completely rehabilitate the site to a condition and appearance equal or superior to that which existed just prior to construction, except for those items whose permanent removal or relocation was required in the Contract Documents or ordered by the Owner.

C. Final Inspection

1. Final cleaning and repairing shall be so arranged as to be finished upon completion of the construction work. The Contractor will make his final cleaning and repairing, and any portion of the work finally inspected and accepted by the Engineer shall be kept clean by the Contractor, until the final acceptance of the entire work.

2. When the Contractor has finally cleaned and repaired the whole or any portion of the work, he shall notify the Engineer that he is ready for final inspection of the whole or a portion of the work, and the Engineer will thereupon inspect the work. If the work is not found satisfactory, the Engineer will order further cleaning, repairs, or replacement.
3. When such further cleaning or repairing is completed, the Engineer, upon further notice, will again inspect the work. The "Final Payment" will not be processed until the Contractor has complied with the requirements set forth, and the Engineer has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

D. Project Close Out

1. As construction of the project enters the final stages of completion, the Contractor shall, in concert with accomplishing the requirements set forth in the Contract Documents, attend to or have already completed the following items as they apply to his contract:
 - a. Required testing of project components.
 - b. Correcting or replacing defective work, including completion of items previously overlooked or work which remains incomplete, all as evidenced by the Engineer's "Punch" Lists.
 - c. Attend to any other items listed herein or brought to the Contractor's attention by the Engineer.
2. In addition, and before the Certificate of Substantial Completion is issued, the Contractor shall submit to the Engineer (or to the Owner if indicated) certain records, certifications, etc., which are specified elsewhere in the Contract Documents. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in the Contract Documents:
 - a. Test results of project components.
 - b. Performance Affidavits for equipment.
 - c. Certification of equipment or materials in compliance with Contract Documents.
 - d. One set of neatly marked-up record drawings showing as-built changes and additions to the work under his Contract.
 - e. Any special guarantees or bonds (Submit to Owner).
3. The Contractor's attention is directed to the fact that required certifications and information under Item 2 above, must actually be submitted earlier in accordance with other Sections of the Specifications.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

- END OF SECTION -

SECTION 02820
WATER DISPOSAL

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. This section covers the work necessary for the disposal of all fluids produced during development, testing, drilling and disinfection of the wells. The Contractor shall be solely responsible for ensuring that any and all water discharged is disposed of in an environmentally safe manner and in compliance with pertinent regulations.
- B. Potential disposal water locations have been identified on the drawings. The final determination of the disposal location for water is the Contractor's responsibility
- C. Discharge of water and sediment onto the ground surrounding the well will not be permitted.
- D. The Contractor is financially responsible for any consequences of water that is not properly disposed during the construction activities.
- E. The Contractor shall be responsible for all necessary permitting associated with water disposal.

1.02 NOTIFICATIONS

- A. At the pre-construction meeting and prior to beginning well rehabilitation, the Contractor shall submit to the Engineer for review a written plan for water disposal during the construction activities.

PART 2 -- PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

3.01 PROTECTION OF WORK AND PROPERTY

- A. The Contractor shall provide for the disposal of the water in such a manner as shall not cause injury to public health or private property, or to any portion of the work completed or in progress, or to the surface of the streets, existing sanitary or storm sewers, or the surface of private or public property.
- B. The Contractor shall ensure that his own and other work sites and associated access roads are maintained in a reasonably dry condition so that work activities are not

impaired and there is not impediment to the use of the site by the Owner or to impede the use of the streets by the public.

- C. The Contractor shall furnish and install necessary temporary piping as required to convey water to the disposal location. A discharge line of sufficient length shall be provided by the Contractor to convey the water to the approved location(s).

3.02 PROCEDURES

- A. Water shall be disposed to storm sewers after appropriate removal of mud, gravel, and debris developed during rehabilitation.
- B. The Contractor is required to properly dispose of mud, gravel, and debris developed during rehabilitation of the wells.
- C. Formation fluids from reverse-air drilling, well development and well testing shall be treated to remove suspended solids prior to discharge. Furnish positive treatment means to ensure that suspended solids are removed in accordance with State and local requirements prior to disposal.
- D. The Contractor shall provide the equipment necessary for turbidity control and shall verify that the equipment is working properly prior to the disposal of water.
- E. Chlorinated water from well disinfection shall be dechlorinated prior to disposal. Provide de-chlorination facilities in accordance with the requirements of State and local regulatory agencies for disposal of water to a surface water body.

- END OF SECTION -

SECTION 02832
TEMPORARY CONSTRUCTION FENCE

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Furnish and install temporary chain link fencing, posts, gates, etc. at the staging area where shown on the Drawings.

1.02 PERMITS

- A. Obtain permits as required by local jurisdiction.

PART 2 -- PRODUCTS

2.01 TEMPORARY CONSTRUCTION FENCE

- A. Type: Chain link, galvanized.
- B. Height: 8'-0".
- C. Posts: Pounded 2'-0" into ground.
- D. Gates: One (1) gate minimum with a 24'-0" wide opening.
- E. Lock and Chain: Provide locks and chains as required to secure gate(s).
- F. Windscreen: Provide fence with windscreen for privacy.
- G. Supplier or Equal: National Construction Rentals, Inc.

PART 3 -- EXECUTION

3.01 INSTALLATION

- A. Install per supplier's instructions.

- END OF SECTION -

SECTION 02840

WELLHEAD AND PUMP REMOVAL, CLEANING AND REINSTALLATION

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. This section covers the work necessary to remove the existing wellhead, submersible pump and motor and pump column pipe, inspect the pump motor for damage, clean and disinfect the submersible pump and replace the column pipe with a new pipe and reinstall in the well.

PART 2 – PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

3.01 MATERIAL AND EQUIPMENT

- A. Cement, locks, ports, flanges, caps, valves, gauges, reducers, and compartments will be maintained from existing wellheads or replaced by the Contractor, as necessary. Owner shall disassemble and re-assemble electrical and instrumentation from wellhead.
- B. All bolts and nuts removed from the wellhead shall be replaced with new nuts and bolts of equal material. Owner shall furnish replacement nuts and bolts where required.

3.02 REMOVAL AND REINSTALLATION

- A. Provide access to the wells by removing fencing on one or more sides, as needed for entry of Contractor's equipment. Install noise barriers, as necessary.
- B. Remove submersible pump and motor and column pipe from well. Remove raw water transmission piping connection as needed to provide access to the well. Store the pump and column on blocks to avoid contact with earth and drilling fluids.
- C. The pump and pump column shall be inspected by the Owner. Contractor will be notified of any additional work required as directed by the Owner, as a result of the pump and pump column inspection.
- D. The existing column pipe of each well shall be replaced by a new column pipe of the same diameter and equal length in accordance with section 15013, "Certa-Lok Colum Pipe."

- E. The pump shall be pressure cleaned and disinfected before reinstallation in the well following rehabilitation work.
- F. Following reinstallation, the wellhead shall be restored to the original condition without potential for leakage.
- G. The Contractor is responsible for retrieval of the pump and associated equipment from the well should they be dislodged and lost during work on the well. Cost associated with retrieval is the sole responsibility of the Contractor.

- END OF SECTION -

SECTION 02850

WELL DEVELOPMENT

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. This section covers the work, materials, and equipment necessary for the development of the well complete, following completion of well rehabilitation work.
- B. Fully develop the well until water is proven to be clear and contain less than 1 NTU turbidity and less than 1 part per million (ppm) sand using a Rossum Sand Tester (provided by the Contractor), or as determined by the Engineer.

1.02 REGULATORY COMPLIANCE

- A. The Contractor shall develop the wells in conformance with all laws, rules, regulations and standards related to the construction of wells in the United States, State of Florida, Miami-Dade County, South Florida Water Management District, and any other applicable regulations.
- B. The Contractor shall take all necessary precautions to prevent contaminated water, gasoline, or other deleterious substances from entering the well, either through the opening or by seepage through the ground surface. Maintain precautions during and after development of the well until accepted by the Owner.
- C. The Contractor shall control the flow from the well at all times during development activities. The Contractor shall be solely responsible for ensuring that water produced during well development is disposed in accordance with section 02820, "Water Disposal."

1.03 WELL DRILLER LOG

- A. The Contractor shall maintain a detailed daily log of his operations on each rig during the development and testing of the wells. The logs shall be on IADC Forms and shall give a complete description of equipment used, fluid and water-level changes and the depths at which they occurred, and other such pertinent data as may be required by the Engineer. One copy of each daily log shall be submitted to the Engineer on a daily basis.

PART 2 – PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

3.01 EQUIPMENT

- A. Provide all temporary pipeline and facilities for discharging water in accordance with Section 02820, "Water Disposal." The cost of such piping and work associated with setting up for development shall be included in the cost for well development.
- B. Provide an airline and compressor of adequate size and length to be able to surge the well with air. The air lift equipment shall be capable of pumping up to a maximum flow of 2,000 gpm. Alternatively, well-development techniques must be approved by the Owner/Engineer prior to use.
- C. Furnish and install all necessary compressors, piping, tools, pumps, and any other equipment to develop the wells to and obtain a maximum flow of 2,000 gpm as stated above and as approved by the Owner/Engineer.
- D. Provide a tee with lateral outlet horizontal and all necessary piping to properly contain and measure the flow of water and dispose of it in accordance with these specifications. Provide a seal on top outlet to prevent overflowing and a tee and pipe of the same diameter as the corresponding casing
- E. The Contractor shall furnish a submersible pump and discharge equipment and piping for development of the well by pumping in accordance with Section 02858, "Pumping Test."

3.02 INITIAL DEVELOPMENT BY AIR LIFTING

- A. The purpose of the development work is to remove effectively from the well, well walls and the formation immediately adjacent to the well, material like mud, clay, cuttings, rock fragments, and any other type of loose or potentially loose materials. The well(s) shall be developed by the air development method as follows:
- B. Development shall be done by the utilization of a single pipe air pumping system using the casing or the borehole itself as the educator line. The compressors, airlines, hoses, fittings, etc., shall be of adequate size to pump the well by the airlift principle up to a maximum flow of 2000 gpm with air. The Contractor shall initially pump the well with air until the well is developed to the point that it yields clear, sand-free water. The Contractor shall then shut off the air and allow water in the well to return to a static condition. The Contractor shall then reopen the valve and reintroduce air into the well until water is again brought to the surface by the airlift, at which time the air valve shall be closed to allow the water to return to static condition. Repeat this lifting and dropping of the column of water until the water in the well becomes turbid at which time he shall continuously pump the well with air until it again yields clear, sand-free water. The Contractor shall repeat the above operations until the well no longer produces fine material when it is surged

and backwashed as described above, or until the Owner/Engineer is satisfied that development is complete.

- C. The bottom of the airline shall be placed at different depths to facilitate development of all intake areas and multiple water producing zones, and the process repeated until all zones yield water free of turbidity when surged and backwashed, as directed by the Owner/Engineer.

3.03 WELL PUMPING

- A. After initial development of the well(s), the high capacity pump, flow measuring device(s), discharge piping, access pipe/air-line, and other necessary appurtenances shall be installed for development and testing as specified in Section 02858, "Pumping Test."
- B. The Contractor shall operate the pumping development equipment continuously at such rates of discharge and such time as determined by the Owner/Engineer. The well shall be pumped until the water is free from sand, silt and turbidity and/or until no further improvement in turbidity and specific capacity can be observed.
- C. The Owner/Engineer shall determine when development by high capacity pumping is complete.
- D. The static water level in the well shall be allowed to recover for a time equal to the pumping development time before start of the pumping tests.
- E. Do not remove the pump and appurtenant equipment until the work is complete as specified in Section 02858, "Pumping Test" and as approved by the Owner/Engineer.
- F. Disposition of well development water is the responsibility of the Contractor and shall be in accordance with Section 02820, "Water Disposal." All water produced shall be settled of excess solids and conveyed away from the well in an environmentally safe manner.
- G. Furnish the following items to the Engineer:
 - 1. One centrifugal sand tester (by Roscoe Moss Company), for quantifying sand content in the part per million range.
 - 2. One silt density index analysis apparatus (Model Number SDI-2000 by Applied Membranes, Inc.) along with 100 filters pads.
 - 3. One Model 2100Q Portable Turbidimeter by Hach (furnish with all necessary batteries).
 - 4. One pack of 6 portable turbidimeter sample cells by Hach.
- 5. The above equipment will be turned over to the Owner at the completion of the construction.

6. The Contractor (in the presences of the Owner/Engineer) shall periodically sample the pump discharge for turbidity, sand content, and silt density index. These results of these tests shall be recorded in the Contractor's daily log. The test results shall be reviewed by the Owner/Engineer to determine when adequate development has been achieved to the satisfaction of the Engineer.

- END OF SECTION -

SECTION 02852

CASING CLEANING

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. This section covers the work, materials, and equipment necessary to clean the well casing, complete.
- B. The Contractor shall control the flow from the well at all times during casing cleaning activities.

PART 2 – PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

3.01 CASING BRUSH TOOL

- A. The Contractor shall provide a mechanical casing brush tool with an outside diameter sufficient for the diameter of the casing and allow enough flexure and rigidity .The outside diameter of the stiff bristles shall be at least 1-inch greater than the inside diameter of the casing.
- B. The bristle assembly shall be at least 5-feet in length. Bristles shall be set on a 4-inch spacing, spiraling a full 360 degrees within the 5-foot section of tool. Alternate design of equal type shall be acceptable as approved by the Owner/Engineer.
- C. The casing brush tool shall be rotated and moved up and down in the casing in a manner approved by the Owner/Engineer prior to its use.

3.02 CASING BRUSH

- A. Perform brushing of the well casing as appropriate. The tool shall be constantly moved vertically within the casing to effectively remove scale material. The Contractor's method of brushing shall be approved by the Owner/Engineer.

- END OF SECTION -

SECTION 02855

TELEVISION SURVEY

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall provide all work, materials, and equipment necessary to prepare the borehole/well for video logging. The Contractor shall employ the services of a company acceptable to the Engineer to obtain television survey of the wells. The Contractor shall prepare and condition each hole to insure it is open and can be logged with a minimum of delay. The following logs shall be run in the well at the stages listed and their cost shall be included. No payment will be made for logs which are unusable or inaccurate due to poor performance of the logging equipment or poor borehole conditioning.
- B. A schedule of the proposed geophysical logs is provided in the Table "Schedule of Proposed Television Survey". Other geophysical logs may be required and/or selected by the Engineer.
- C. The Contractor shall assist the Engineer during video logging and data collection as needed.
- D. The Contractor shall be responsible for the preparation of the open hole for video logging.

1.02 SUBMITTALS

- A. The Contractor shall submit for approval by the Engineer the name of the proposed video logging service company.
- B. The Contractor shall furnish 15 field copies of the various logs to the Engineer and shall provide them within three hours of the time when logging was complete. A written field evaluation of their quality shall be submitted within two days of completion. Twenty copies of the finished logs shall be provided to the Engineer as soon as possible after the logging along with copies of the log in ASCII and pdf format on CD ROM.

PART 2 – PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

3.02 TELEVISION SURVEY

- A. General: Television surveys shall be conducted by a qualified service company using equipment capable of surveying and recording to the required depth. The Contractor may use his own equipment providing it is capable of surveying as required and the

Contractor shall furnish proof of the capability of the equipment. The television camera shall be centralized within the open hole. Six copies of the complete survey shall be provided by the Contractor for distribution in DVD format. The Contractor shall make all arrangements and scheduling for the television survey.

- B. The Contractor shall insure that the well and open hole fluid is of sufficient clarity (as determined by the Engineer) to allow a television survey to be conducted. The Contractor shall pump out of the well a quantity of clear water not less than three volumes of the entire well and open hole.
- C. Costs of pumping to achieve the desired level of clarity for the television surveys and DVDs (including time spent waiting for the television equipment) and for rig and crew labor for all activities associated with preparing for, performing and dismantling equipment related to the television survey shall be included with the testing costs.

3.03 LOGGING SCHEDULES

- A. A schedule of geophysical logs is presented below.

Biscayne Aquifer Wells Schedule of Proposed Television Surveys

Biscayne Aquifer Well No. 1		
Well Section	Approximate Depth bls	Logs
12-inch casing	0 – 45	Television survey
Open hole	45 – 60	Television survey

Biscayne Aquifer Well No. 4		
Well Section	Approximate Depth bls	Logs
12-inch casing	0 – 57	Television survey
Open hole	57 – 65	Television survey

Biscayne Aquifer Well No. 2		
Well Section	Approximate Depth bls	Logs
12-inch casing	0 – 99	Television survey
Open hole	99 – 107	Television survey

Biscayne Aquifer Well No. 7		
Well Section	Approximate Depth bls	Logs
12-inch casing	0 – 50	Television survey
Open hole	50 – 60	Television survey

Biscayne Aquifer Well No. 8		
Well Section	Approximate Depth bls	Logs
12-inch casing	0 – 52	Television survey
Open hole	52 – 62	Television survey

-END OF SECTION-

SECTION 02855

ACIDIZATION

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Provide the work, materials, and equipment necessary for acidizing the well.
- B. The length of acid reaction time after pumping is estimated to be 24 hours. After a minimum 24 hour reaction time well development can begin. After development the well must remain undisturbed for a minimum of 12 hours to fully recover to static level. The Engineer shall be the sole judge as to length of each process and therefore may increase or decrease the total time.
- C. Schedule work so that all pumping is conducted during daylight

hours. 1.02 NOTIFICATIONS

- A. Notify the Engineer in writing 72 hours in advance (exclusive of Saturdays, Sundays and holidays) prior to start of acidization.
- B. Notify the Engineer by phone 36 hours in advance (exclusive of Saturdays, Sundays and holidays) prior to start of acidization.

1.03 SUBMITTALS

- A. Acidization Plan: The Contractor shall be responsible for providing a detailed plan outlining all procedures and equipment to be utilized for approval by the Engineer prior to the commencement of acidization.
- B. Well Header: The Contractor shall be responsible for providing a well header capable of withstanding pressures incurred during testing. The header shall have ports for acid line, water line, pressure relief and pressure gauge. A shop drawing of the header shall be provided to the Engineer prior to the commencement of acidization.
- C. Backflow Preventer: The Contractor shall be responsible for providing a backflow preventer on the water line. A shop drawing of the backflow preventer shall be provided to the Engineer prior to the commencement of acidization.

PART 2 --PRODUCTS 2.01 ACID

- A. A 10% to 15% solution of Hydrochloric Acid (HCl), also known as Muriatic Acid, shall be used.

PART 3 - EXECUTION

3.01 EQUIPMENT

- A. The Contractor shall provide black steel pipe for tremie line capable of reaching the desired production zone depth.
- B. The Contractor shall provide a well header with ports for acid line, water line, pressure relief and 300 psi pressure gauges on wellhead capable of handling pressured incurred.
- C. The Contractor shall provide stainless steel check valves on the acid line.
- D. The Contractor shall provide stainless steel ball valves on the acid line and water line.
- E. The Contractor shall provide a backflow preventer on the water line.
- F. Contractor shall make his own arrangements for power for the acidization procedures.
- G. The Contractor shall be responsible for installation and maintenance of the pump, flow measuring device(s), discharge piping, access pipe and other necessary appurtenances shall be installed for the acidization procedures.

3.02 FLOW MEASURING DEVICE

- A. The Contractor shall provide a flow-meter with an indicator and a totalizer capable of measuring the pump discharge within plus or minus five percent of true flow for rates between 15 to 2,000 gpm.
- B. The Contractor shall provide access to permit installation of an electronic measuring device. The Contractor shall furnish an electronic water level indicator that can be used to accurately measure water levels.

3.03 PROCEDURES

- A. Acidization procedures shall be in accordance with the Contractors acidization plan submitted as required in Section 01300 of the Contract Documents and as approved by the Engineer.

3.04 DISPOSAL OF WATER

- A. The Contractor shall be responsible for disposal of all fluids produced during well acidization in accordance with section 02820, "Water Disposal."

- END OF SECTION -

SECTION 02858

PUMPING TESTS

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Provide the work, materials, and equipment necessary for the well pumping tests, complete. Pumping tests will be constant rate and variable rate (step drawdown) tests.
- B. The length of the pumping tests is estimated to be 4 hours for variable rate pumping tests. However, the duration of each step will be dependent on aquifer response and may range from 30 minutes to 120 minutes. The Engineer shall be the sole judge as to length of the test and therefore may increase or decrease the total pumping time.
- C. Schedule work so that all pumping is conducted during daylight

hours. 1.02 NOTIFICATIONS

- A. Notify the Engineer in writing 72 hours in advance (exclusive of Saturdays, Sundays and holidays) prior to start of pumping test.
- B. Notify the Engineer by phone 36 hours in advance (exclusive of Saturdays, Sundays and holidays) prior to start of pumping test.

1.03 SUBMITTALS

- A. Flow Meter Calibration Certificates: Discharge rates shall be measured using a metering device (calibrated flow meter or orifice plate) furnished by the Contractor. Calibration certificates shall be submitted to the Engineer at least 48 hours prior to the commencement of testing. Calibration Certificate shall be validated within 90 days of test date.
- B. Pressure Transducer Calibration Certificates: The Contractor shall be responsible for providing a pressure recording system capable of measuring pressure changes of 0.01 psi to measure the drawdown and recovery due to pumping. A copy of the pressure transducer calibration certificate shall be provided to the Engineer at least 48 hours prior to the commencement of testing. Calibration Certificate shall be validated within 90 days of test date.

PART 2 -- PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

3.01 EQUIPMENT

- A. The Contractor shall provide and install a submersible pump in the pumping well capable of pumping 700 to 2,000 gpm at a constant rate.
- B. The Contractor shall provide a gate valve, or equal, on the discharge side of the pump, downstream of the flowmeter for adjustment of flowrate down to the required flow range.
- C. The Contractor shall provide the pumping unit, controls, and appurtenances shall be capable of continuous operation for a period of 4 hours. If equipment fails to operate as specified, the Contractor shall pay for all costs associated with re-running of the test in progress, including Engineer's labor and expenses.
- D. Contractor shall make his own arrangements for power for the well pumping test.
- E. The Contractor shall be responsible for installation and maintenance of the submersible pump, flow measuring device(s), discharge piping, access pipe and other necessary appurtenances shall be installed for the well pumping test.
- F. The Contractor shall provide an operator during the entire time the pump is in operation, as required by the Owner/Engineer, to operate the prime mover and to regulate the discharge by the throttling device during the test pump period.

3.02 FLOW MEASURING DEVICE

- A. The Contractor shall provide a flow-meter with an indicator and a totalizer capable of measuring the pump discharge within plus or minus five percent of true flow for rates between 700 to 2,000 gpm.

3.03 WATER LEVEL MEASURING DEVICE

- A. The Contractor shall provide access to permit installation of an electronic measuring device. The Contractor shall furnish an electronic water level indicator that can be used to accurately measure water levels.

3.04 PRESSURE RECORDING DEVICE

- A. The Contractor shall provide adequate access into the well while pumping for data collection. The Contractor shall be responsible for providing a pressure recording system capable of measuring pressure changes of 0.01 psi to measure the drawdown and recovery due to pumping. A copy of the pressure transducer calibration certificate shall be provided to the Engineer prior to the commencement of testing.

3.05 VARIABLE RATE PUMPING TEST

- A. The Contractor shall conduct a variable rate (step drawdown) pumping test. The Contractor shall operate the pumping test equipment continuously at such rates of

discharge and for such period of time as determined by the Engineer. Duration of the variable rate pumping test shall be approximately four hours, for the purpose of estimating the production capacity of the well. If the same pump for the step drawdown test is also used for final well development the time between completing development and initiating the step drawdown test must be sufficient to allow the water level in the well (or shut in pressure) to return to static conditions as determined by the Engineer.

- B. The Contractor shall assist the Engineer in collecting a clear water sample from each well during each step of the step drawdown test to be analyzed for field specific conductance and for laboratory analysis of specific conductance and chlorides. The Contractor shall provide a calibrated instrument acceptable to the Engineer for conducting field measurements.
- C. At the completion of the test the pump shall not be removed from the well for a time equal to 100 percent of the total pumping time to allow accurate water level recovery measurements to be taken, or less as determined by the Owner/Engineer. No additional standby time or pumping time payment shall be awarded during this period.
- D. If the specific capacity test is interrupted for any reason, the test shall be stopped and the well shall be allowed to recover for a period of at least 2 hours prior to attempting to perform the test. The Contractor shall be solely responsible for all costs associated with stopped tests.

3.06 FURTHER DEVELOPMENT

- A. The Contractor shall discontinue the test and resume well development if considerable quantities of fines are pumped out of the well during the test. The Engineer shall be the sole judge as to whether such additional development is necessary.
- B. The Contractor shall sound the well and remove any sand or silt accumulated in the well as a result of the pumping test after completion of the pumping test.

3.07 DISPOSAL OF WATER

- A. The Contractor shall be responsible for disposal of all fluids produced during pumping tests in accordance with Section 02820, "Water Disposal."

- END OF SECTION -

SECTION 02860
WELL DISINFECTION

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall provide all work, materials, and equipment necessary for disinfecting each well, complete.
- B. The Contractor shall be responsible for obtaining passage of bacterial tests as required by regulations.
- C. The Contractor shall be responsible for complying with all the requirements specified in FAC 62-555.
- D. The Contractor shall be responsible for coordinating the collection and analysis of water samples for each production well with the Miami-Dade County Health Department. The Contractor is responsible for payment of any testing laboratory required. Analysis shall be for all primary and secondary drinking water parameters, and as determined by the Engineer.

1.02 SUBMITTALS

- A. The Contractor shall submit to the Engineer for review detailed procedures for disinfection and testing to achieve bacteriological clearance. The procedures shall include the testing laboratory which will perform services.
- B. The Contractor shall submit to the Engineer the documentation that the Laboratory used for water analysis is certified in the State of Florida.

PART 2 --

PRODUCTS 2.01

MATERIALS

- A. The Contractor shall provide all chemicals and equipment necessary to perform disinfection complete. Said equipment may include pumps, hoses, fittings, etc.
- B. The Contractor shall be responsible for transport and handling of all chlorine and/or disinfectants in accordance with appropriate regulations and manufacturers recommendations.
- C. The Contractor shall premix hypochlorite solutions and feed to tanks or piping. The Contractor shall not place dry mix.

PART 3 -- EXECUTION

3.01 GENERAL

- A. The Contractor shall comply with AWWA C651 standards and FAC 62-555.
- B. The Contractor shall dispose of any waters produced while disinfecting wells in accordance with applicable regulations.
- C. The Contractor shall disinfect the well with the premixed chlorine solution as specified herein. The chlorine solution shall be prepared and applied in accordance with the manufacturer's directions. The chlorine solution shall be poured into the well and agitated throughout the full depth of the well for 5 minutes.

3.02 DISINFECTING SOLUTION

- A. Following acceptance by the Engineer, the Contractor shall disinfect the wells in accordance with ANSI/AWWA A100, Standard for Water Wells and ANSI/AWWA C654, "Disinfection of Wells". The Contractor shall submit to the Engineer for review of his procedure for disinfection prior to its implementation. The Contractor shall notify the Engineer in writing at least 24 hours in advance of the implementation of the accepted disinfection procedures. The Contractor shall re-disinfect well at his own expense should the well fail to pass bacteriological clearance. The disinfected well will be tested for the presence of coliform by the Owner in accordance with ANSI/AWWA C654. If bacterial evaluation fails, disinfection shall be repeated until the bacteriological test results indicate a pass.
- B. The Contractor shall apply a disinfecting solution of such volume and strength that a concentration between 100 ppm and 200 ppm of free available chlorine shall be obtained throughout the well. Contractor shall be responsible for complying with all the requirements specified in F.A.C. 62-555.
- C. The Contractor shall use a surge block as necessary for surging the well and distribution of chlorine solution.
- D. The Contractor shall allow a contact period of at least 24 hours after addition of chlorine to well. The Contractor shall pump the well at the end of the 24-hour period until chlorine concentrations are less than 5 ppm.
- E. Where test pumping equipment is to be used, such equipment shall be thoroughly cleaned and disinfected in accordance with AWWA A100 prior to installation.

- END OF SECTION -

SECTION 15013
CERTA-LOK COLUMN PIPE

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Owner shall furnish and install PVC SS Certa-Lok column pipe for submersible pumps and all fittings, adapters and appurtenant work, complete in place, all in accordance with the requirements of the Contract Documents.
- B. The existing column pipe on the existing pumps shall be replaced to match the existing diameter and column length. The Contractor shall field determine the diameter and length of the existing pump columns prior to ordering the replacement column pipe specified herein.
- C. For the purposes of bidding assume furnishing and installing a maximum of 50 feet of column pipe per well and 8-inch nominal diameter column pipe.

1.02 SUBMITTALS

- A. Submit shop drawings in accordance with Section 01300 – Submittals.
- B. Show material of construction, with ASTM reference and grade. Submit manufacturer's certificates of compliance with referenced pipe standards, e.g., ASTM D1784, ASTM D1785, ASTM D2837, NSF 14, NSF 61. Show wall thickness of PVC pipe.
- C. Submit piping layout drawings showing location and dimensions of pipe and fittings larger than 3 inches. Include layout lengths of valves, meters, in-line pumps, and other equipment determining piping dimensions. Label or number each fitting or piece of pipe.

PART 2 -- PRODUCTS

2.01 PVC SS CERTA-LOK PIPE SCHEDULE 80, 250 PSI CWP

- A. Pipe: Schedule 80, polyvinyl chloride (PVC) plastic pipe, spline-lock mechanical joining system.
- B. Spline Lock Joint: High strength, acid-resistant, flexible thermo plastic splines (For wells 4, 7, and 8).
- C. Gaskets: Elastomeric, water tight seal.
- D. Adapters: Column pipe shall be joined to pumps, check valves, pitless adapters or other components using a PVC or stainless steel column pipe adapter with a spline joint system.

- E. Pipe and couplings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions, blisters and dents, interior roughness, and other injurious defects that may affect wall integrity.
- F. Pipe and couplings shall be made from unplasticized PVC compounds having a minimum cell classification of 12454, as defined in ASTM D1784.
- G. The compound shall qualify for a hydrostatic design basis (HDB) of 4000 psi for water at 73.4°F, in accordance with requirements of ASTM D2837.

PART 3 -- EXECUTION

3.01 INSTALLING CERTA-LOK PIPE

- A. Installation of column pipe shall be in strict accordance with manufacturer procedures and recommendations. Prior to installation, the pump column pipe shall be visually inspected to ensure that is no dirt or foreign matter in the pipe, and any such material which is found shall be removed before installation.

- END OF SECTION -

SECTION 16010

SubMonitor Panels (SMP)

PART 1 -- GENERAL

2.01 THE REQUIREMENT

- A. This section covers the materials necessary for the installation of an electronic pump and motor protection.

- B. The Contractor shall install the SubMonitoring Panels to wells #3-8 and unistrut for wells #3, 4, 6-8.

PART 2 – MATERIALS

2.02 SubMonitor Panel 3Ø, 200~460VAC, 2-150HP

- A. Electronic Motor and Pump Protection
 - a. Class 10 electronic overload
 - b. Underload (dry-run protection)
 - c. Over/under voltage
 - d. Current phase unbalance
 - e. Cycle Fault
 - f. Reverse phase
 - g. Motor overheat on Subtrol-equipped motors
- B. Data Logging
 - a. Records up to 502 faults
 - b. Records changes to parameter settings
 - c. Records total pump operating time
- C. Grade Construction
 - a. Door mounted HOA switch
 - b. UL/NEMA Type 3R outdoor rating
 - c. Multi-tap transformer accommodating common voltages
 - d. 120V control power for field devices
 - e. NEMA rated contactor, 2.5 Million electrical cycles at full rated current
- D. Circuit Breaker Disconnect
 - a. UL 489 circuit breaker providing branch and short circuit protection
 - b. Lockable handle for safety

UL/NEMA Type 3R Outdoor Enclosure
SubMonitor Panel- 3-Phase, 200~460VAC
Includes Service Entrance Circuit Breaker Disconnect

Max. 3-PHASE HP (UL) / Max. SFA						Max SFA	Contactor NEMA Size	SMP Part Number
200V		230V		460V				
HP	SFA	HP	SFA	HP	SFA			
2	8	2	8	5	8	8	1	SMP3R-S1/J-G15
3	11	3	11	7.5	11	11		SMP3R-S1/J-G20
-	-	5	17	10	17	17		SMP3R-S1/J-G30
-	-	7.5	22	15	22	22		SMP3R-S1/J-G40
7.5	25.3	10	28	20	27	Differs per voltage		SMP3R-S1/J-G50
-	-	7.5	22	15	22	22	2	SMP3R-S2/J-G40
7.5	28	10	28	20	28	28		SMP3R-S2/J-G50
10	34	10	34	25	34	34		SMP3R-S2/J-G60
-	-	15	45	30	45	45		SMP3R-S2/J-G80
-	-	15	45	30	45	45	3	SMP3R-S3/J-G80
15	57	20	57	40	57	57		SMP3R-S3/J-G100
20	68	25	68	50	68	68		SMP3R-S3/J-G125
25	85	30	85	60	77	Differs per voltage		SMP3R-S3/J-G150
25	85	30	85	60	85	85	4	SMP3R-S4/J-G150
30	114	40	114	75	114	114		SMP3R-S4/J-G200
40	120	50	130	100	124	Differs per voltage		SMP3R-S4/J-G250
50	171	60	171	125	171	171	5	SMP3R-S5/J-G300
75	228	75	228	150	228	228		SMP3R-S5/J-G400

*Use Max. SFA when sizing for submersible applications.

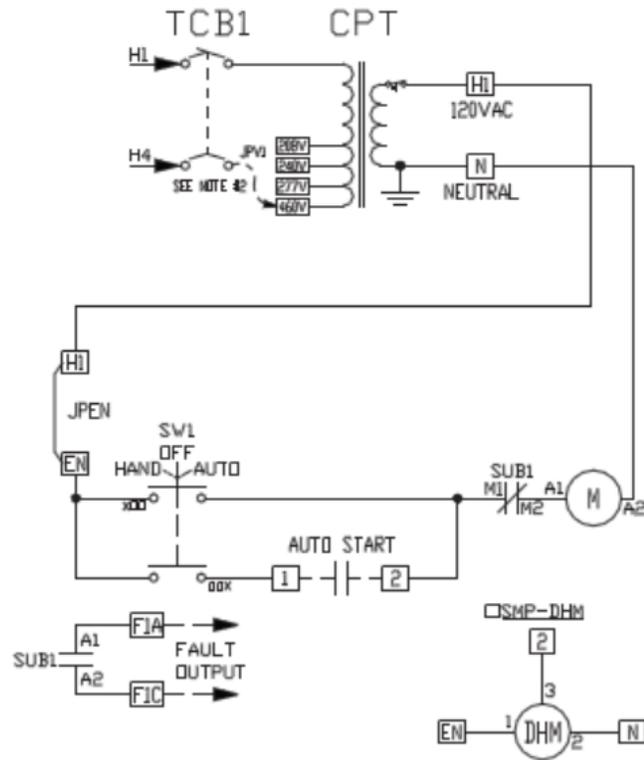
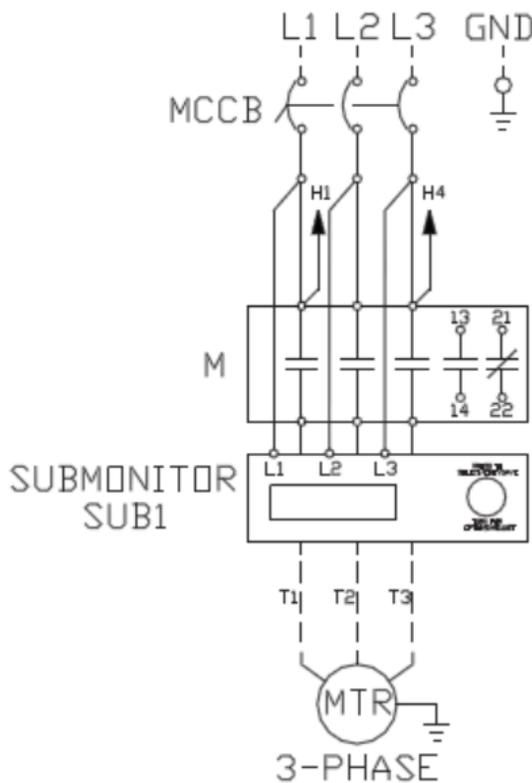
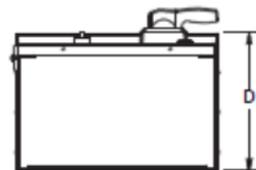
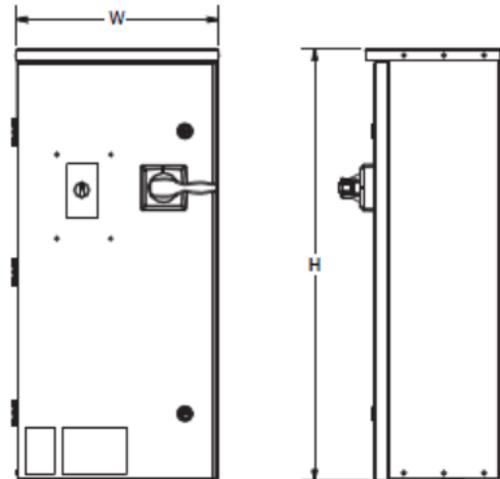
SMP Options

Options	
SMP-BCN	Top Mounted Alarm Beacon Light
SMP-BZR	Door Mounted Buzzer
SMP-DHM	Digital Hour Meter
SMP-DR-DISPLAY	Door Mounted SubMonitor Display
SMP-LTA240	Surge Suppressor, 208/230V
SMP-LTA480	Surge Suppressor, 460V
SMP-RPL	Run Pilot Light

Dimensions

*All measurements in inches

Starter Size	H	W	D
1, 2, 3	32	15	10
4	36	24	8
5	42	30	12



NOTE 1. DASHED LINES INDICATE FIELD WIRING
 2. SET JPV1 TO PROPER VOLTAGE