

**COLLIER COUNTY**  
**GROWTH MANAGEMENT DEPARTMENT**



**PROJECT MANUAL**  
**(SPECIFICATIONS)**

**PROJECT NAME: EAGLE CREEK WEIR**  
**REFURBISHMENT**

**VOLUME II**

**PROJECT ADDRESS: 500 Tower Road, Naples, Florida 34113**

**CONTRACT NO. \_\_\_\_\_**

**May 18, 2016**

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# PROJECT MANUAL

## GROWTH MANAGEMENT DEPARTMENT



## BOARD OF COUNTY COMMISSIONERS

District 1 – Donna Fiala  
District 3 – Tom Henning  
District 5 – Tim Nance

District 2 – Georgia Hiller  
District 4 – Fred Coyle

## EAGLE CREEK WEIR REFURBISHMENT



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**COLLIER COUNTY  
GROWTH MANAGEMENT DEPARTMENT  
CONTRACT SPECIFICATIONS**

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## SECTION 01010 - SUMMARY OF WORK

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

- A. The WORK to be performed under this Contract consists of furnishing all materials, labor, and equipment necessary to construct the Project as described and as shown in the Contract Documents. This includes, but is not limited to, all tools, supplies, manufactured articles, transportation, and services like fuel, power, water, and communications, etc. and performing all WORK, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The WORK shall be complete, and all WORK, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete and proper construction of the WORK in good faith shall be provided by the CONTRACTOR as though originally so indicated, at no increase in cost to the COUNTY.

The completed Work will provide other incidental work in connection therewith all as indicated on drawings as though originally so indicated, at no increase in cost to the COUNTY. The CONTRACTOR shall complete construction of the WORK in its entirety in good faith and properly as indicated and to the prevalent industry standards.

- B. Wherever the term CONSULTANT is used in these documents, it shall be construed to mean the CONSULTANT retained by the COUNTY for design of this project. The PROGRAM, MANAGER on this project will act as the COUNTY's Representative.
- C. Whenever a reference to number of days is noted, it shall be construed to mean calendar days.

#### 1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. The WORK of this Contract comprises the Eagle Creek Weir gates replacement and the overall site improvements as shown in the approved construction documents.

The WORK may include but is not be limited to site preparation, earthwork, demolition, existing weir gates removal, new weir gates installation, new gate frames installation, new gate operating mechanism installation, existing perimeter fences repair, new fences and gates installation, rip rap installation, mangrove trimming, exotic plants removal, and new maintenance vehicle area construction.



### 1.03 STANDARD SPECIFICATION

- A. Except as noted, all materials and workmanship shall meet the requirements of the latest editions of the following publications, as adopted by the authorities having jurisdiction over the project(s):

1. COLLIER COUNTY WATER-SEWER DISTRICT UTILITIES STANDARDS MANUAL

2. The Florida Department of Transportation "Standard Specifications for Road and Bridge Construction, and its supplements;
3. The Florida Department of Transportation "Roadway and Traffic Design Standards";
4. The Florida Department of Transportation "Structures Standards"
5. Florida Building Code
6. National Electric Code and; any other
7. Local, State or Federal agency or publication setting standards for the work contracted.

### 1.04 SITE INVESTIGATION

- A. The CONTRACTOR, by virtue of signing the Agreement, acknowledges that it has satisfied itself to the nature and location of the WORK, the general and local conditions including, but not restricted to: those bearing upon transportation; disposal, handling and storage of materials; access roads to the site; the conformation and conditions of the WORK area; and the character of equipment and facilities needed preliminary to and during the performance of the WORK. Failure on the part of the CONTRACTOR to completely or properly evaluate the site conditions shall not be grounds for additional compensation or time.

### 1.05 WORK BY OTHERS

- A. Concurrent work by Other CONTRACTORS. The CONTRACTOR'S attention is directed to the fact that WORK may be conducted at the site by other CONTRACTORS during the performance of the WORK under this Contract. The CONTRACTOR shall conduct its operations so as to cause little or no delay to 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 work under their respective contracts.
- B. Interference with Work on Utilities. The CONTRACTOR shall cooperate fully with all utility forces of the COUNTY 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 WORK SEQUENCE

- A. The CONTRACTOR shall schedule and perform the WORK in such a manner as to result in the least possible disruption to the public's use of roadways, driveways, and utilities. Utilities shall include but not be limited to water, sewerage, drainage piping, structures, ditches and canals, gas, electric, television and telephone. Prior to commencing with the WORK, CONTRACTOR shall perform a location investigation of existing underground utilities and facilities in accordance with the Section entitled "Protection of Existing Facilities" and shall have obtained all required permits and permissions. CONTRACTOR shall also deliver written notice (via certified mail and door hanging notification) to the COUNTY, PROGRAM MANAGER, CONSULTANT, and property occupants (private and public) of all planned disruption to roadway, driveways, and utilities 72 hours in advance of disruption. For multi-family apartments or condominium complexes, written notices of planned disruptions may be directed to Condominium Association's Management Companies, Condominium Association's Board of Directors, Apartment Property Managers or other property managing companies or individuals via certified mail; for single family residents written notices shall be directed via door hangers. In addition, all notifications for planned disruptions shall be coordinated with the COUNTY, PROGRAM MANAGER, and CONSULTANT.
- B. CONTRACTOR shall sequence the WORK so as to minimize impact on residents of properties affected by the project.
- C. In addition, the following restrictions shall be maintained:
1. The CONTRACTOR shall provide a detailed phasing and Maintenance of Traffic plan(s), for review and approval by the COUNTY prior to the commencement of any construction activity(s).
  2. All work and landscaping must also be complete before the project is considered substantially complete.
  3. Construction within the right of way of affected roads shall be scheduled so that all improvements are completed at once, and the residents are only disrupted for one time period. This excludes water service plumbing work on private property which shall be scheduled after mains are tested and accepted for connection by individual services.
  4. All affected residents and property owners shall be notified in writing a minimum of two (2) weeks prior to any disruption to or construction in road right-of-ways adjacent to their homes. The notification shall also indicate any special

parking or traffic conditions that will affect residents. Notification shall be in the form of certified letters.

5. When a planned water service shutdown must be implemented during the routine course of the Work, the CONTRACTOR shall submit a written request to the Public Works Department a minimum of 72 hours prior to the shutdown. Note that only the Public Utilities Department is authorized to shut-off water service and the CONTRACTOR must receive affirmative verification (in writing) from the Public Utilities Department before proceeding with any work that requires a planned water service shutdown. Once the approval is procured, the CONTRACTOR shall coordinate its efforts to ensure that the shutdown is implemented at the time and place that the CONTRACTOR requires. In addition, the CONTRACTOR shall notify each affected Owner / Occupant of the impacted area in the form of a door hanger at each affected property, no more than 48 hours prior to commencement of the planned water shut-down.

6. Access for emergency vehicles shall be maintained at all times to all homes or businesses. Excavations must be back-filled or barricaded at the end of each work day to prevent hazardous conditions. If a trench, excavation, or structure is to be left open, it must be covered with a steel plate and barricaded at the end of each workday or when work will be suspended for more than eight (8) hours.

7. Transportation provisions for handicapped or disabled residents shall be made by the CONTRACTOR if construction prevents access to their homes.

8. The CONTRACTOR shall also make provisions with local bus, school bus, garbage collection, mail delivery, and other agencies for continuation of service. A traffic maintenance plan, indicating proposed street closings, schedules, and alternate routes which have been approved by the authority having jurisdiction, must be submitted to all affected agencies for coordination of rerouting if and as necessary.

9. Materials and equipment shall be stored in a fenced or otherwise enclosed area during non-working hours, as defined in other sections of the specifications. Materials shall not protrude out along installation routes.

D. Substantial Completion: Project Substantial Completion, as defined in the General Conditions, shall be achieved within 75 Calendar days of the Notice-to-Proceed.

F. Final Completion: Project Final Completion, as defined in the General Conditions, shall be achieved within 90 Calendar days of the Notice-to-Proceed.

#### 1.07 TRAFFIC CONTROL

A. The CONTRACTOR shall maintain traffic in accordance with the latest adopted editions of the Florida Department of Transportation Standard Specification for

Road and Bridge Construction and the Collier County Utilities Standards Manual for Design and Construction. The Maintenance of Traffic plan shall address pedestrian traffic as well as vehicular traffic. As a minimum, the plan shall address the following pedestrian requirements:

1. A safe walk route for all schools within the vicinity of the construction zone shall be maintained during the arrival and dismissal of school. CONTRACTOR shall not block bus and/or automobile access to schools during school hours.
  2. In the case that a designated crossing of any portion of the designated walk route cannot be maintained, then the CONTRACTOR shall notify the applicable "School Safety Coordinator" a minimum of ten (10) working days prior to ceasing that route so that an alternate route can be established with the School and the Enforcing agency.
  3. It shall be the responsibility of the CONTRACTOR for any necessary Construction, Pavement Marking and Signage or any Pedestrian Signalization and/or Signal Modification to accommodate an alternate safe walk route.
- C. The CONTRACTOR, at all times, shall conduct the work in such a manner as to insure the least obstruction to traffic as is practical. Convenience of the general public and of the residents adjacent to the WORK shall be provided for in a satisfactory manner, as determined by the COUNTY.
- D. Sidewalks, gutters, drains, fire hydrants and private drives shall, insofar as practical, be kept in condition for their intended uses. Fire hydrants on or adjacent to the WORK shall be kept operational and accessible to fire apparatus at all times, and no material or obstruction shall be placed within twenty (20) feet of any such hydrant.
- E. Construction materials stored upon the public street shall be placed so as to cause as little obstruction to the general public as is reasonably possible. The permitted amount of storage of materials in the Right-of-Way is restricted to a maximum of a two week supply of materials and the materials shall be located no further than one block away from its place of installation.
- F. Streets shall not be closed; the WORK must be conducted with the provision for a safe passageway for traffic at all times. The CONTRACTOR shall make all necessary arrangements with the jurisdictional authority concerning maintenance of traffic and selection of detours required.
- G. All existing stop signs shall be maintained.
- H. When permission has been granted by the COUNTY, to close an existing roadway, the CONTRACTOR shall furnish and erect signs, barricades, lights, flags and other protective devices, which shall conform to the requirements, and

be subject to the approval of the jurisdictional agency. The CONTRACTOR shall furnish and maintain proper protective devices at such location for the entire time of closure as the jurisdictional authority may direct. Signage shall be affected one week before closure.

- I. The CONTRACTOR shall furnish a sufficient number of protective devices to protect and divert the vehicular and pedestrian traffic from working areas closed to traffic, or to protect any new work. Failure to comply with this requirement will result in the shutdown of the WORK until the CONTRACTOR provides the necessary protection. Any time traffic is diverted for a period of time that will exceed one work day; temporary pavement markings will be required. Existing pavement markings that conflict with the new work zone traffic pattern must be obliterated. Painting over existing pavement markings (black out) shall not be permitted.
- J. The CONTRACTOR may be required to reposition existing traffic heads in order to maintain traffic flows at diverted intersections. If this should be necessary, the CONTRACTOR must submit a plan for approval showing the course of work and the planned repositioning. The jurisdictional authority must approve the plan prior to implementation. No separate payment for repositioning the existing traffic signal heads will be made. The cost of this work shall be included in the base bid price.

#### 1.08 WORK SCHEDULE

- A. Time is of the essence in completing this project. Because time is of the essence, the CONTRACTOR shall commit the necessary resources to this project to complete it in a timely manner. Note that a typical workday will be based on hours between 7:30 am and 5:30 pm. If the CONTRACTOR wishes to work longer hours than those specified herein, it shall request so, in writing, by Friday of each week. Work completed other than during regular working hours should be easily observable by the COUNTY and/or the CONSULTANT on the subsequent day. If the CONTRACTOR proposes to complete work that will be "covered up" after normal working hours, it shall reimburse the COUNTY for costs associated with the observation of such work. The Construction progress will be measured with the construction schedule submitted by the CONTRACTOR. If the CONSULTANT and/or PROGRAM MANAGER determine that the CONTRACTOR does not meet the CPM and/or time schedule as specified in the Section entitled "Schedules and Reports", the CONTRACTOR will be required to commit those resources necessary to ensure the completion of the project in a timely manner. All costs incurred to implement measures to complete the WORK in a timely manner will be borne by the CONTRACTOR.

## B. SCHEDULE

1. CONTRACTOR shall submit scheduling information for the WORK as required in the Section entitled "Schedules and Reports".
2. No separate payment shall be made for preparation and/or revision(s) of the schedule.

### 1.11 COMPUTATION OF CONTRACT TIME

- A. It is the CONTRACTOR'S responsibility to provide clear and convincing documentation to the PROGRAM MANAGER as to the effect additional WORK will have with respect to additional contract time extension requirements. If additional quantities of WORK can be carried out concurrent with other existing construction activities without disrupting the critical path of the project then no contract time extension will be granted. The CONTRACTOR is obligated to provide documentation to the CONSULTANT if additional elements of WORK affect the critical path of the project. If WORK set forth in the original scope of the project is deleted, the contract time may be reduced. This contract is a calendar day contract. While the CONTRACTOR may be granted time to suspend WORK operations for vacations or holidays, the contract time will not be suspended. During suspensions, the CONTRACTOR shall be responsible for all maintenance of traffic and liability without additional compensation from the COUNTY. In addition, the CONTRACTOR shall comply with timely notice requirements as specified in the Contract Manual.

### 1.12 CONTRACTOR USE OF PREMISES

- A. The CONTRACTOR's use of the project site shall be limited to its construction operations. Storage of materials will be arranged for by the CONTRACTOR and a copy of an agreement for use of other property shall be furnished to the PROGRAM MANAGER. Note that staging areas on the project site are limited to the COUNTY'S right-of-way. Other areas required for both material storage and a Field Office must be arranged and paid for by the CONTRACTOR, as part of its Base Bid cost.

### 1.13 PRE-CONSTRUCTION CONFERENCE

- A. After the award of Contract and Notice to Proceed, a Pre-construction Conference will be held between the CONTRACTOR, the PROGRAM MANAGER, the CONSULTANT, the COUNTY, other interested Agencies, representatives of Utility Companies and others affected by the WORK. The time and place of this conference will be set by the PROGRAM MANAGER. The CONTRACTOR shall bring to the conference a copy of its preliminary WORK schedule for review and comment by the PROGRAM MANAGER, the COUNTY, and the CONSULTANT. The schedule shall include sequences of operation and time schedule. The final schedule will be due as noted in the Section entitled

"Schedules and Reports". The WORK shall be performed in accordance with such schedule or approved amendments thereto.

#### 1.14 UTILITY LOCATIONS

- A. To the extent possible, all existing utility lines in the project area have been shown on the plans. However, the COUNTY, the PROGRAM MANAGER and/or the CONSULTANT do not guarantee that all lines are shown, or that said lines are in their true location. It shall be the CONTRACTOR's responsibility to identify and locate all underground or overhead utility lines or equipment affected by the project. No additional payment will be made to the CONTRACTOR because of discrepancies in actual and plan location(s) of utilities or damages suffered as a result thereof of lines shown on the plans.
- B. The CONTRACTOR shall notify each utility companies involved at least thirty (30) days prior to the start of construction to arrange for positive underground location(s), relocation or support of its utility where that utility may be in conflict with or endangered by the proposed construction. Relocation of water mains or other utilities for the convenience of the CONTRACTOR shall be paid for by the CONTRACTOR. All charges by utility companies for temporary support of their utilities and permanent utility relocations to avoid conflict shall be the responsibility of the CONTRACTOR and the utility company involved.
- C. The CONTRACTOR shall schedule and coordinate its WORK in such a manner that it is not delayed by the utility companies relocating or supporting their utilities. No compensation will be paid to the CONTRACTOR for any loss of time or delay.
- D. All overhead, surface, or underground structures and/or utilities encountered are to be carefully protected from damage or displacement. All damage to said structures and/or utilities is to be completely repaired within a reasonable time; needless delay will not be tolerated. The COUNTY reserves the right to remedy any damage by ordering outside parties to make repairs at the expense of the CONTRACTOR. All repairs made by the CONTRACTOR are to be made to the satisfaction of the Utility Owner and shall be inspected by a representative of the Utility Owner and the COUNTY.
- D. Prior to excavation activities, The CONTRACTOR shall reasonably notify all utility owners, including in the CITY of Naples, Collier County, Florida Power and Light, Embark (telephone), Comcast (cable), gas, etc as well as the required agencies such as (Florida One Call).

#### 1.15 LINE AND GRADE

- A. The CONSULTANT has provided vertical and horizontal control for layout of the WORK in the form of bench marks and reference points located adjacent to the

WORK. From these controls provided, the CONTRACTOR shall develop and make all detailed surveys needed for construction and shall establish all working points, lines, and elevations necessary to perform the WORK. This surveying WORK shall be supervised by a Professional Land Surveyor registered in the State of Florida.

- B. All horizontal data must be referenced to North American Datum (NAD) 83, and all elevations shall be referenced to North American Vertical Datum (NAVD) 88 Datum in U.S. Survey Feet with a list of control points used;
- C. As-Built/Record Drawings are to be prepared, signed and sealed by a Florida Registered Professional Surveyor and Mapper (P.S.M.). In addition, all measurements for the As-Built/Record Drawings need to be performed under the supervision of a Florida Registered P.S.M. in accordance with Florida Statute Chapters 177 and 472 and Chapter 61 G-17 of the Florida Administrative Code. The As-Built/Record Drawings shall include and not be limited to the following:
  - (1) All constructed improvements;
  - (2) Enough information to easily compare constructed features to designed features;
  - (3) Electronic CAD (2013 or newer) file in State Plane Fl. East;
  - (4) Shall be based on design drawing format (sheets, profiles, x-sections).

#### 1.16 PROTECTION AND RESTORATION OF SURVEY MONUMENTS

- A. The CONTRACTOR shall carefully protect from disturbance all survey monuments, stakes and bench marks, whether or not established by it, and shall not remove or destroy any surveying point until it has been properly witnessed by a representative of the COUNTY. All major survey monuments that have been damaged by the CONTRACTOR such as section corners, 1/4 section corners; property corners or block control points shall be replaced at the CONTRACTOR'S expense with markers of a size and type approved by the CONSULTANT. Their replacement shall be under the supervision of a Florida Registered Land Surveyor. The CONTRACTOR shall document survey monuments prior to construction and submit the location and type of all markers to the COUNTY.

#### 1.17 EQUIPMENT

- A. All equipment necessary and required for the proper construction of all facilities shall be on the construction site, in first-class working condition.

#### 1.18 STORAGE SITES

- A. The CONTRACTOR shall furnish, at its expense, properly zoned areas suitable for field office, material storage and equipment service and storage as defined in



other sections of the specifications including but not limited to Section 01026 – Measurement and Payment. No material may be stored in the public right of way without prior authorization by the Authority Having Jurisdiction. The CONTRACTOR shall keep these areas in a clean and orderly condition so as not to cause a nuisance or sight obstruction to motorists or pedestrians.

#### 1.19 OWNERSHIP OF EXISTING MATERIALS

- A. All materials removed or excavated from the job site, **whether specified in the documents or not**, shall remain the property of the COUNTY until released by the PROGRAM MANAGER, at which time it shall become the property of the CONTRACTOR, who shall dispose of it at no additional cost to the County in a manner, compliant with all applicable jurisdictional requirements.

#### 1.20 EXCESS MATERIAL

- A. All vegetation, debris, concrete, or other unsuitable materials, **whether specified in the documents or not**, shall be disposed of off-site by the CONTRACTOR at no additional costs to the COUNTY. Storage of unsuitable materials on site shall not be allowed. All unsuitable materials are to be removed from work site as they are generated. Any excess material desired to be retained by the COUNTY shall be delivered by the CONTRACTOR to a designated area within a 15 mile radius of the project, at no extra cost to the COUNTY.

#### 1.21 AUDIO-VISUAL PRE-CONSTRUCTION RECORD

A. General:

1. Prior to beginning the WORK, the CONTRACTOR shall record video of existing site along the entire length of the project to serve as a record of preconstruction conditions. No construction shall begin prior to review and approval of the recordings covering the construction area by the CONSULTANT. The CONSULTANT shall have the authority to reject all or any portion of the recording not conforming to the specifications and order that it be redone at no additional charge. The CONTRACTOR shall reschedule unacceptable coverage within five days after being notified. The CONSULTANT shall designate those areas, if any, to be omitted from or added to the audio-video coverage.

B. DVD Media/ or cell phone video:

1. DVD media shall be new and high durability format. Cell phone video is acceptable as long as the image is stable and complies with this section requirements.

### C. Recorded Information - Video

1. All recording shall be done during times of good visibility. No recording shall be done during precipitation, mist, or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects. 3. The rate of speed of the vehicle used during taping shall not exceed 10 miles per hour. Panning, zoom-in, and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object.
2. Recording coverage shall include all surface features located within the zone influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing driveways, sidewalks, curbs, pavements, ditches, mailboxes, landscaping, culverts, fences, signs, and headwalls within the area covered. Particular attention should be paid to those items outside or adjacent to the work limits that may become damaged during construction.

### D. Payment:

Compensation for the audio-video preconstruction record shall be included in the Base Bid price for Mobilization.

### 1.22 EXISTING VALVES, METERS, CATCH BASINS, AND MAINTENANCE ACCESS STRUCTURES (i.e. MANHOLES)

- A. All valves and maintenance access structures shall be accessible during all phases of the WORK for emergency access.

### 1.23 CONFLICTING STRUCTURES

- A. The CONTRACTOR shall abide by the following criteria concerning conflicts between new drainage, water, or sewer construction and existing utilities.
  1. The CONTRACTOR shall verify the location of all utilities suspected of being potential conflicts prior to ordering drainage or sewer structures for these locations and inform the CONSULTANT as to its findings.
  2. The CONSULTANT shall have full authority to direct the placement of conflicting structures, the relocation of structures shown in the plans, and the addition, deletion, or relocation of any pipe shown in the plans to facilitate construction, expedite completion and avoid conflicts with existing utilities.
  3. Where an existing utility is to pass through a conflicting structure, the CONTRACTOR shall protect the utility from damage by whatever means the utility owner and the CONSULTANT deem necessary.
  4. In no case shall there be less than 6 inches between any two (2) pipe lines within the structure or between pipe lines and the structure.

#### 1.24 ENVIRONMENTAL PROTECTION

- A. The CONTRACTOR shall furnish all labor and equipment and perform all WORK required for the prevention of environmental pollution during and as a result of the WORK under this contract. For the purpose of this contract, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life, affect other species of importance to man, or degrade the utility of the environment for aesthetic and recreational purposes. The control of environmental pollution requires consideration of air, water, land and involves dust, noise, solid waste management, and management of radiant energy and radioactive materials, as well as other pollutants.
- B. The CONTRACTOR shall take all steps necessary to protect water quality in the waters around the project and shall utilize such additional measures as directed by the CONSULTANT. Silt screens shall not be removed until the turbidity of the affected waters is equal to or lowers than the ambient turbidity of undisturbed segments of adjacent surface waters.
- C. All protection requirements covered by this subsection shall be in compliance with all applicable jurisdictional agency requirements.

#### 1.25 BASIS OF PAYMENT

- A. The CONTRACTOR's Professional Land Surveyor will measure all "As-built" quantities for payment and shall submit it to the PROGRAM MANAGER for review and approval in accordance with and in the manner set forth in Exhibit H, General Terms and Conditions, Article 4, PROGRESS PAYMENTS. In the event of disputes as to quantity, the PROGRAM MANAGER shall make the final determination; no additional compensation will be made for surveying services. This WORK shall be supervised by a Florida Licensed Registered Professional Land Surveyor.
- B. The CONTRACTOR shall not be permitted to invoice for quantities of WORK beyond those contained in the contract and all previously approved change orders. Invoice for partial payment shall not be accepted by PROGRAM MANAGER as complete without the following:
  - 1. Certificate of payment to subcontractors.
  - 2. Updated Construction Schedule.
  - 3. Progress Photographs and or Aerial Photos

#### 1.26 APPLICATION FOR PAYMENT FOR STORED MATERIAL

- A. The CONTRACTOR is hereby advised that the COUNTY will not pay for stored materials unless agreed to in writing prior to submittal of the request for payment and accompanied by the documentation set forth in Exhibit H, General Terms and Conditions, Article 4, PROGRESS PAYMENTS.

#### 1.27 VIBRATORY COMPACTION

- A. The use of vibratory compaction equipment shall be limited to a total gross weight of three (3) tons. The use of vibratory equipment shall be limited to compacting backfill of utility trenches and subgrade of roadways only. If approved in writing by the CONSULTANT, larger vibratory compaction equipment may be allowed if operated in a static mode only. The CONTRACTOR shall be responsible for all damages/claims resulting from its compaction activities on the surrounding neighborhood and its residents.

#### 1.28 REPORTING OF DAMAGE CLAIMS

- A. The CONTRACTOR shall keep the CONSULTANT and the PROGRAM MANAGER informed of any damage claims made against the CONTRACTOR during the construction period. All claims for automobile damage, property damage, and/or bodily injury shall be reported to the PROGRAM MANAGER within 24 hours of receipt of notice. The CONTRACTOR will conduct a timely investigation of the claim and determine if they will honor claim and/or report to their insurance carrier and provide periodic updates, each quarter, until final disposition of claims. CONTRACTOR will advise the PROGRAM MANAGER in writing of its decision/referral to carrier.

#### 1.29 PERMITS

- A. It shall be the CONTRACTOR's responsibility, in accordance with Exhibit H, General Terms and Conditions, Article 17, PERMITS, LICENCES, AND TAXES, to secure all permits of every description required to initiate and complete the work under this Contract, except for permits that may have already been obtained by the COUNTY.
- B. Permits may include but not be limited to the following:
  - 1. SFWMD Dewatering Permit
  - 2. Collier County Building Permit(s)
  - 3. Collier County Right-of-Way Permit
  - 4. Vegetative Removal Permit
- C. The CONSULTANT will furnish signed and sealed sets of Contract Documents for permit use as required.

D. The CONTRACTOR shall furnish to the PROGRAM MANAGER and the CONSULTANT copies of all permits prior to commencement of work requiring permits.

### 1.30 SITE CONDITIONS

A. The CONTRACTOR acknowledges that it has investigated prior to bidding and satisfied itself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides, water tables or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The CONTRACTOR further acknowledges that it has satisfied itself 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 it prior to receipt of Bids. Any failure by the CONTRACTOR to acquaint itself with the available information will not relieve it from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The COUNTY assumes no responsibility for any conclusions or interpretations made by the CONTRACTOR on the basis of the information made available by the COUNTY.

### 1.31 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.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable) -

END OF SECTION -

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## SECTION 01026 - MEASUREMENT AND PAYMENT

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

- A. In accordance with the Section 0600, CONTRACT, Article 4, PROGRESS PAYMENTS, payment for various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, taxes, commissions, transportation and handling, bonds, insurance, overhead and profit and for all labor operations and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the WORK all in accordance with requirements of the Contract Documents including all appurtenances thereto, and including all costs of permits and cost 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). No separate payment will be made for any item that is not specifically set forth in the Schedule of Prices Bid. Hence, all costs therefore shall be included in the prices named in the Schedule of Prices Bid for the various appurtenance items of the WORK.
- B. Payment for the various items of the Schedule of Prices Bid shall constitute full compensation for all professional and construction services to be provided by the CONTRACTOR as noted in the specifications, conceptual drawings, and any other components of this Design Criteria Package.
- C. No separate payment for WORK OR MATERIALS will be made unless specifically stated on the plans or directed by the COUNTY. All bid items include, but are not limited to the following tasks:
- Mobilization
  - General Conditions
  - Maintenance of Traffic
  - Furnishing and Installation of all Proposed / Requisite Stormwater System Components
  - Furnishing and Installation of all Proposed / Requisite Hardscape Improvement
  - Furnishing and Installation of all Proposed / Requisite Landscape Improvements
- D. The CONTRACTOR's attention is called to the fact that the quotations provided for the various items on the Schedule of Prices Bid are intended to establish a GRAND TOTAL BASE BID AMOUNT 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 Prices Bid in 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.

#### 2.0 End of Section

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## SECTION 01031 - GENERAL PROJECT PROCEDURES

### PART 1 – GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall coordinate work of all trades and schedule elements of alterations and renovation work by procedure and methods to expedite completion of the WORK.

B. In addition to demolition work specified in the section entitled "Demolition", the CONTRACTOR shall move and/or remove items necessary to provide access or to allow alterations and new work to proceed. Included in such items are:

1. Repair or removal of hazardous or unsanitary conditions.
2. Removal of abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring, to the extent they interfere with new installations.
3. Removal of unsuitable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, large rocks or boulders, rusted metals and deteriorated concrete, to the extent they interfere with new installations.
4. Cleaning of surfaces and removal of surface finished as needed to install new work and finishes.
5. Protection as required of existing trees to remain.
6. All existing underground utilities, to the extent they interfere with new installations.

C. The CONTRACTOR shall patch, repair and refinish existing items to remain, to the specified condition for each material, with a workmanlike transition to adjacent new items of construction.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. All applicable sections of these Specifications.

B. General Conditions.

#### 1.03 ALTERATIONS, CUTTING AND PROTECTION

A. The CONTRACTOR shall assign the work of moving, removal, cutting, patching and protection to trades qualified to perform the work in a manner to use least damage to each type of work, and provide means of returning surfaces to appearance of new work.

B. The CONTRACTOR shall perform cutting and removal work to remove the minimum necessary, and in a manner as required, to avoid damage to adjacent work, including the cutting of finish surfaces such as paving, masonry, tile, plaster and/or metals, by methods to terminate surfaces in a straight line at a natural point of transition.

C. Perform cutting and patching as specified in the section entitled "Cutting and Patching".

D. Protect existing finishes, equipment, and adjacent work which are scheduled to remain, from damage.

E. If, in the opinion of the COUNTY, patch and/or repair will not result in a like and kind pre-existing condition, full replacement by the CONTRACTOR will be required at no additional cost to the COUNTY.

## PART 2 – PRODUCTS

### 2.01 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

A. The CONTRACTOR shall comply with the following general requirements so that the work may be completed:

1. Provide the same products or types of construction as that in existing structure, as needed to patch, extend or match existing work. Generally the Contract Documents will not define products or standards of workmanship present in existing construction. Hence, the CONTRACTOR shall determine products and construction types in its inspection and any necessary testing, and workmanship by use of the existing as a sample of comparison.

2. Note that the presence of a product, finish, or type of construction, requires that the CONTRACTOR patch, extend and/or match as necessary to make the work complete and consistent with existing standards of quality.

## PART 3 – EXECUTION

### 3.01 PERFORMANCE

A. The CONTRACTOR shall patch and extend existing work using skilled workers capable of matching existing quality of workmanship. Quality of patched or extended work shall be not less than that specified for new work.

### 3.02 DAMAGED SURFACES

A. The CONTRACTOR shall patch and replace any portion of an existing finished surface which is found to be damaged, lifted, discolored, and/or shows other imperfections, with matching material.

1. Provide adequate support of substrate prior to patching the finish.
2. Refinish patched portions of painted or coated surfaces in a manner to produce uniform color and texture over entire surface.
3. When existing surface finish cannot be matched, refinish entire surface to the nearest intersections or the transition point/line as approved by the COUNTY.

### 3.03 TRANSITION FROM EXISTING TO NEW WORK

A. When new work abuts or is finished flush with existing work, make a smooth and workmanlike transition. Patched work shall match existing adjacent work in texture and appearance so that the patch at transition is invisible at a distance of five feet.

B. When finished surfaces are cut in such a way that a smooth transition with new work is not possible, terminate existing surface in a neat manner along a straight line at a natural line of division, and provide trim to or trim finished surfaces appropriately.

### 3.04 CLEANING

A. Perform periodic and final cleaning as specified in the Section entitled "Cleaning".

B. At completion of the work of each trade, clean area and make surfaces ready for work of successive trades.

C. At completion of alterations work in each area, provide final cleaning and return space to a condition suitable for use.

- END OF SECTION -

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## SECTION 01050 - FIELD ENGINEERING

### PART 1 – GENERAL

#### 1.01 THE REQUIREMENT

- A. The CONTRACTOR shall provide and pay for field engineering and Survey services required for the project except as otherwise noted.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. All applicable sections of the Specifications
- B. General Conditions.

#### 1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Qualified engineer or registered Professional Land Surveyor, acceptable to the County.

#### 1.04 SURVEY REFERENCE POINTS

- A. The CONSULTANT has provided reference points with horizontal and vertical control, located as shown on the plans.
- B. The CONTRACTOR shall locate and protect control points prior to starting site construction work, and preserve all permanent reference points during construction.
  - 1. Make no changes or relocations without prior written notice to CONSULTANT.
  - 2. Report to CONSULTANT and/or PROGRAM MANAGER when any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.
  - 3. The CONTRACTOR's surveyor shall replace project control points which may be lost or destroyed, based on the original survey control.

#### 1.05 PROJECT SURVEY REQUIREMENTS

- A. CONTRACTOR's surveyor shall establish a minimum of two permanent bench marks on site, referenced to data established by survey control points.
- B. The CONTRACTOR shall establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
  - 1. Stakes for grading and fill placement.
  - 2. Controlling lines and levels as required.
- C. From time to time, verify layouts by same methods.

D. All data must be referenced to North American Datum (NAD) 83 and North American Vertical Datum (NAVD) 88 Datum in U.S. Survey Feet with a list of control points used;

E. As-Built/Record Drawings are to be prepared, signed and sealed by a Florida Registered Professional Surveyor and Mapper (P.S.M.). In addition, all measurements for the As-Built/Record Drawings need to be performed under the supervision of a Florida Registered P.S.M. in accordance with Florida Statute Chapters 177 and 472 and Chapter 61 G-17 of the Florida Administrative Code. The As-Built/Record Drawings shall include and not be limited to the following:

1. All constructed improvements;
2. Enough information to easily compare constructed features to designed features;
3. Electronic CAD (2013 or newer) file in State Plane Fl. East;
4. Shall be based on design drawing format (sheets, profiles, x-sections).

F. Perform periodic surveying of the Contractor's work as necessary to check for conformance with the plans and specifications and prepare As-built survey of the finished work in accordance with Collier County standards. Note the Contractor is responsible for all construction stake outs.

#### 1.06 RECORDS

A. The CONTRACTOR shall maintain a complete, accurate log of all control and survey work as it progresses.

B. On completion of construction work, prepare a certified survey showing all dimensions, locations, and elevations of project.

#### 1.07 SUBMITTALS

A. Submit names and addresses of Professional Land Surveyor and Professional engineer retained for the project to the CONSULTANT.

B. On request of CONSULTANT, submit documentation to verify accuracy of field engineering work.

C. Submit certificate signed by Registered Engineer or Professional Land Surveyor certifying that elevation and locations of work are in conformance with Contract Documents.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 01060 - REGULATORY REQUIREMENTS & PERMITS

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall comply with all Federal, State, and local {Collier County Standards} building codes, laws and/or ordinances as appropriate to the project, including but not limited to the following:

1. National Electric Code.
2. Florida Building Code.
3. Chapter 556, Florida Statutes, Underground Facility Damage Prevention and Safety Act.
4. Others as noted in the Section entitled "Summary of Work".
5. The Americans with Disabilities Act.

B. The CONTRACTOR shall comply with regulations, rules, and directives of all agencies, boards, districts, and governmental authorities having jurisdiction.

C. The CONTRACTOR shall obtain required permits and pay fees as well as associated costs for those permits for the project.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. All applicable sections of the Specifications.

B. General Conditions.

#### 1.03 MEASUREMENT AND PAYMENT

A. The CONTRACTOR shall be reimbursed for permit fees in accordance with EXHIBIT H, General Terms & Conditions, Article 17, PERMITS, LICENCES AND TAXES

B. There shall be no special measurement or payment for the work under this section; it shall be included as part of Base Bid Item No. 1, under mobilization

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -



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## SECTION 01090 - REFERENCE STANDARDS

### PART 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 that the work is advertised for 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 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 applicable codes and the applicable requirements of the following documents.

B. References herein to "Building Code" shall mean "Florida Building Code". Reference to "Uniform Building Code" shall mean Uniform Building Code of the International Conference of Building Officials (ICBO). Similarly, references to "Mechanical Code" or "Uniform Mechanical Code," "Plumbing Code" or "Uniform Plumbing Code," "Fire Code" or "Uniform Fire Code," shall mean Uniform Mechanical Code, Uniform Plumbing Code and Uniform Fire Code of the International Conference of the Building Officials (ICBO). "Electric Code" or "National Electric Code (NEC)" shall mean the National Electric Code of the National Fire Protection Association (NFPA). The latest edition of the codes as approved by the Municipal Code and used by the local agency as of the date that the WORK is advertised for 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 CONSULTANT for clarification and directions prior to ordering or providing any materials or furnishing labor. The CONTRACTOR shall bid to the most stringent requirements.

D. 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. Applicable Standard Specifications: References in the Contract Documents to "Standard Specifications" or SSPWC shall mean the Standard Specifications for Public Works Construction, 1991 Edition.

F. 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.

G. 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.

H. Reference the section entitled "Summary of Work" for additional requirements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 01380 - CONSTRUCTION PHOTOGRAPHY

### PART 1 – GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall employ a competent photographer, as approved by the County, to take construction record aerial photographs on a monthly basis during the course of the work.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Summary of Work.

B. Project Record Documents.

#### 1.03 PHOTOGRAPHY REQUIRED

A. Provide photographs taken on cutoff date for each scheduled application for Payment and digital photography as delineated hereinafter.

B. Provide two prints of each view/ or provide digital files on CD.

#### 1.04 COSTS OF PHOTOGRAPHY

A. The CONTRACTOR shall pay costs for specified photography and prints, the cost of which shall be included in the bid items of the Schedule of Price Bid. No separate payment will be made to the CONTRACTOR for construction photography. Parties requiring additional photography or prints will pay photographer directly.

### PART 2 - PRODUCTS

#### 2.01 PRINTS

A. Color:

1. Paper: Single weight, color print paper.
2. Finish: Smooth surface, glossy.
3. Size: 8-inch x 10-inch.

B. Identify each print on back, listing:

1. Name of Project.
2. Specific Location.
3. Date and time of exposure.

## PART 3 - EXECUTION

### 3.01 TECHNIQUE

A. Factual presentation.

B. Correct exposure and focus.

1. High resolution and sharpness, minimum of 300 pixels-per-inch (ppi).
2. Maximum depth-of-field.
3. Minimum distortion.

### 3.02 VIEWS REQUIRED

A. Monthly digital photograph from locations that adequately illustrate condition of construction and state of progress.

B. Photographs shall include aerial photograph showing the entire construction area.

### 3.03 DELIVERY OF PRINTS

A. Delivery of prints to the PROGRAM MANAGER to accompany each Application for Payment.

B. Distribution of prints/ digital files, is anticipated to be as follows:

1. PROGRAM MANAGER (one set)
2. CONSULTANT (one set).

### 3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section; it shall be included in the base bid price as part of MOBILIZATION.

- END OF SECTION -

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## SECTION 01400 - QUALITY CONTROL

### PART 1 – GENERAL

#### 1.01 THE REQUIREMENT

A. Specific quality control requirements for the WORK are indicated throughout the Contract Documents. The requirements of this Section are primarily related to performance of the WORK beyond furnishing of manufactured products. The term "Quality Control" includes inspection, sampling and testing, and associated requirements.

#### 1.02 INSPECTION AT PLACE OF MANUFACTURE

A. Unless otherwise indicated, all products, materials, and equipment shall be subject to inspection by a COUNTY Representative at the place of manufacture.

B. The presence of the COUNTY Representative at the place of manufacturer, however, shall not relieve the CONTRACTOR of the responsibility for furnishing products, materials, and equipment which comply with all requirements of the Contract Documents. Compliance is a duty of the CONTRACTOR, and said duty shall not be avoided by any act or omission on the part of the CONSULTANT.

#### 1.03 SAMPLING AND TESTING

A. Unless otherwise indicated, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM, as applicable to the class and nature of the article or materials considered; however, the COUNTY reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the CONSULTANT will insure the COUNTY that the quality of the workmanship is in full accord with the Contract Documents.

B. Any waiver by the COUNTY of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial WORK, shall not be construed as a waiver of any requirements of the Contract Documents.

C. Notwithstanding the existence of such waiver, the CONSULTANT reserves the right to make independent investigations and tests, and failure of any portion of the WORK to meet any of the requirements of the Contract Documents, shall be reasonable cause for the CONSULTANT to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

#### 1.04 SITE INVESTIGATION AND CONTROL

A. The CONTRACTOR shall verify all dimensions in the field and shall check field conditions continuously during construction. The CONTRACTOR shall be solely responsible for any inaccuracies built into the Work due to its failure to comply with this



requirement.

B. The CONTRACTOR shall inspect related and appurtenant Work and shall report in writing to the CONSULTANT and/or PROGRAM MANAGER any conditions which will prevent proper completion of the Work. Failure to report any such conditions shall constitute acceptance of all site conditions, and any required removal, repair, or replacement caused by unsuitable conditions shall be performed by the CONTRACTOR, at its expense, within the scope of the Project.

#### 1.05 OBSERVATION AND TESTING

A. The COUNTY will employ and pay for the services of an independent testing laboratory for specified testing as specified by the CONSULTANT as noted in the Section entitled "Testing Laboratory Services".

B. The work or actions of the testing laboratory shall in no way relieve the CONTRACTOR of its obligations under the Contract. The laboratory testing work will include such observations and testing required by the Contract Documents, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of the Contract Documents, nor perform, accept or approve any of the CONTRACTOR's Work.

C. The CONTRACTOR shall allow the CONSULTANT and/or PROGRAM MANAGER and CONSULTANT ample time and opportunity for field observation and testing materials and equipment to be used in the Work. The CONTRACTOR shall advise the CONSULTANT and/or PROGRAM MANAGER promptly upon placing orders for materials and equipment so that arrangements may be made, if desired, for observation before shipment from the place of manufacture. The CONTRACTOR shall at all times furnish the COUNTY and its representatives, proper time for inspecting and testing materials, equipment, and workmanship. The CONTRACTOR must anticipate that possible delays may occur in the execution of its work due to the necessity of materials and equipment being inspected and accepted for use. The CONTRACTOR shall furnish, at its own expense, all samples of materials required by the CONSULTANT for testing, and shall make its own arrangements for providing water, electric power, or fuel for the various observations and tests of structures, equipment, and appurtenances.

D. The COUNTY will bear the cost of all tests, observations, or investigations undertaken by order of the CONSULTANT for the purpose of determining conformance with the Contract Documents if such tests, observations, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the COUNTY as a result of such tests, observations, or investigations, the CONTRACTOR shall bear the full cost of any additional tests and investigations, which are ordered by the COUNTY to ascertain subsequent conformance with the Contract Documents.

#### 1.06 RIGHT OF REJECTION

A. The CONSULTANT and/or PROGRAM MANAGER, acting for the COUNTY, shall have the right, at all times and places, to reject any articles or materials to be furnished hereunder which, in any respect, fail to meet the requirements of the Contract Documents, regardless of whether the defects in such articles or materials are detected

at the point of manufacture or after completion of the Work at the site. If the COUNTY or its representative, through an oversight or otherwise, has accepted materials or Work which is defective or which is contrary to the Contract Documents, such materials, no matter in what stage or condition of manufacture, delivery, or erection, may be subsequently rejected by the COUNTY.

B. The CONTRACTOR shall promptly remove rejected articles or materials from the site of the Work after notification of rejection. All costs of removal and replacement of rejected articles or materials as specified herein shall be borne by the CONTRACTOR.

## 1.07 OTHER CONSTRUCTION CONSIDERATIONS

A. Cutting and Patching: The CONTRACTOR shall perform all cutting and patching of the Work that may be required to make its several parts come together properly and fit it to receive or be received by such other work as specified in the Section entitled "Cutting and Patching".

B. Weather Conditions: Work that may be affected by inclement weather shall be suspended until proper conditions prevail. In the event of impending storms, the CONTRACTOR shall take necessary precautions to protect all work, materials and equipment from exposure. If requested by the CONSULTANT and/or PROGRAM MANAGER, the CONTRACTOR shall submit a preparedness plan for review and approval by the CONSULTANT and/or PROGRAM MANAGER. The CONTRACTOR shall include one day per month for weather conditions.

1. Contractor shall submit during the Pre-Construction Meeting a "Storm Preparedness Plan" to the COUNTY, CONSULTANT and/or PROGRAM MANAGER.

C. Fire Protection: The CONTRACTOR shall take all necessary precautions to prevent fires at or adjacent to the Work, including its own buildings and trailers. Adequate fire extinguishers and hose line stations shall be provided throughout the work area.

## PART 2 - PRODUCTS (Not Applicable)

## PART 3 - EXECUTION

### 3.01 INSTALLATION

A. Inspection: The CONTRACTOR shall inspect materials or equipment upon the arrival on the job site and immediately prior to installation, and reject damaged and defective items.

B. Measurements: The CONTRACTOR shall verify measurements and dimensions of the WORK, as an integral step of starting each installation.

C. Manufacturer's Instructions: Where installations include manufactured products, the CONTRACTOR shall comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in the Contract Documents.

- END OF SECTION -

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## SECTION 01410 - TESTING LABORATORY SERVICES

### PART 1 – GENERAL

#### 1.01 THE REQUIREMENTS

A. The COUNTY will employ and pay for the services of an Independent Testing laboratory to perform certain specified testing. All other required testing services under the Contract Documents shall be provided and paid for by the CONTRACTOR.

B. The CONTRACTOR shall cooperate with the COUNTY hired laboratory to facilitate the execution of its required services.

C. Employment of the laboratory by the COUNTY for specific testing shall in no way relieve the CONTRACTOR from its obligations to perform the work of the Contract as specified.

D. The COUNTY shall pay only for initial testing. The cost of any retesting necessitated by failure of materials or methods shall be deducted from the CONTRACTOR's monthly payment request.

E. The following tests may be directed by the COUNTY, as it deems necessary. In no way shall the County's independent testing relieve the CONTRACTOR of its responsibility to provide and pay for any testing required by Contract.

1. Density.
2. Proctor.
3. LBR.
4. Carbonate Content.
5. Gradation.
6. Plastic Index and Liquid Limit.
7. Organic Content.
8. Concrete Compressive Strength and Slump.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. All applicable sections of the Specifications.

B. General Conditions.

#### 1.03 QUALIFICATION OF LABORATORY

A. Meet "Recommended Requirements for Independent Laboratory Qualification", published by American Council of Independent Laboratories.

B. Meet basic requirements of ASTM E-329.

C. Authorized to operate in the State of Florida.

D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.

E. Testing Equipment:

1. Calibrated at reasonable intervals by devices of accuracy traceable to either:
  - a. National Bureau of Standards.
  - b. Accepted values of natural physical constants.

1.04 LABORATORY DUTIES

A. Cooperate with the CONSULTANT and/or PROGRAM MANAGER and the CONTRACTOR; provide qualified personnel after due notice.

B. Perform specified inspections, sampling and testing of materials and methods of construction:

1. Comply with specified standards.
2. Ascertain compliance of materials with requirements of the Contract Documents.

C. Promptly notify the CONSULTANT and/or PROGRAM MANAGER and the CONTRACTOR of observed irregularities and/or deficiencies of work and/or products.

D. Promptly submit written report of each test and inspection; two copies to the CONSULTANT and/or PROGRAM MANAGER, COUNTY and one copy to the CONTRACTOR. Each report shall include:

1. Date issued.
2. Project title, number and Parcel number.
3. Testing laboratory name, address and telephone number.
4. Name and signature of laboratory inspector.
5. Date and time of sampling or inspection.
6. Record of temperature and weather conditions.
7. Date of test.
8. Identification of fill product and specification section.
9. Location of sample or test in the project.
10. Type of inspection or test.
11. Results of tests and compliance with the Contract Documents.
12. Interpretation of test results, when requested by the PROGRAM MANAGER.

E. Perform additional tests as required by the PROGRAM MANAGER.

1.05 LIMITATION OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of the Contract documents.
2. Approve or accept any portion of the work.
3. Perform any duties of the CONTRACTOR.

## 1.06 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to work.
- B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other material mixes which require control by the Testing Laboratory.
- D. Furnish copies of Products test reports as required.
- E. Furnish incidental labor and facilities:
  - 1. To provide access to work to be tested.
  - 2. To obtain and handle samples at the project site or at the source of the product to be tested.
  - 3. To facilitate inspections and tests.
  - 4. For storage of test samples.
- F. Notify laboratory sufficiently, as agreed between the CONSULTANT and/or PROGRAM MANAGER and the CONTRACTOR, in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
  - 1. When tests or inspections cannot be performed after such notice, reimburse the COUNTY for laboratory personnel and travel expenses incurred due to CONTRACTOR's negligence.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 01505 - MOBILIZATION, SITE PREPARATION AND DEMOBILIZATION

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The Work specified in this Section consists of all Work necessary to move in personnel and equipment and prepare the site for construction, complete and to remove the same personnel and equipment from the site when construction is complete.

B. Mobilization shall include the obtaining of all permits needed for construction; moving onto the site of all equipment; temporary buildings, and other construction facilities; and implementing security requirements; all as required for the proper performance and completion of the WORK. Mobilization shall include the following principal items as may be required for prosecution of the work:

1. Moving on to the site of all CONTRACTOR's equipment required for first month operations.
2. Installing temporary construction power, wiring, and lighting facilities.
3. Developing construction water supply.
4. Providing field office trailer or other arrangements for the CONTRACTOR.
5. Providing all on-site communication capabilities.
6. Providing on-site sanitary facilities and potable water facilities.
7. Arranging for and erection of CONTRACTOR's work and storage yard.
8. Obtaining all required permits.
9. Having all OSHA required notices and establishment of safety programs.
10. Having the CONTRACTOR's superintendent at the job site full time.
11. Submitting initial submittals as indicated in the section entitled "Schedules and Reports".
12. Audio-Visual preconstruction record as described in the section entitled "Summary of Work".

#### 1.02 PAYMENT FOR MOBILIZATION

A. The CONTRACTOR's attention is directed to the condition that no payment for mobilization or any part thereof will be approved for payment under the Contract until all mobilization items listed above have been completed as specified.

### PART 2 - PRODUCTS

#### 2.01 TEMPORARY UTILITIES

A. The CONTRACTOR shall provide all temporary facilities required for performing the Work as specified in Section entitled "Temporary Utilities".



## PART 3 - EXECUTION

### 3.01 LAYOUT

A. The CONTRACTOR shall set up construction facilities in a neat and orderly manner. It shall accomplish all required Work in accordance with applicable portions of these specifications and shall confine its operations to Work areas within the right-of-way, unless it makes provisions for otherwise, at its own expense.

### 3.02 DEMOBILIZATION

A. At the completion of Work the CONTRACTOR shall remove its personnel, equipment, and temporary facilities from the site in a timely manner. The CONTRACTOR shall also be responsible for transporting all unused materials belonging to the COUNTY to a place of storage on site designated by the CONSULTANT and/or PROGRAM MANAGER and for removing from the site and disposing of all other materials and debris resulting from the construction. It shall then return all areas used for its activities to, its pre-existing condition, or as otherwise agreed to in writing with the PROGRAM MANAGER.

- END OF SECTION -

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## SECTION 01510 - TEMPORARY UTILITIES

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. It shall be the CONTRACTOR's responsibility to provide equipment that is adequate for the performance of the Work under this Contract within the time specified. All equipment shall be kept in satisfactory operating condition, shall be capable of safely and efficiently performing the required Work, and shall be subject to review by the COUNTY's representative at any time within the duration of the Contract. All Work hereunder shall conform to the applicable requirements of the OSHA Standards for Construction.

B. The CONTRACTOR shall provide for utilities and services for its own operations. The CONTRACTOR shall furnish, install, and maintain all temporary utilities during the contract period, including removal upon completion of the Work.

#### 1.02 POWER AND LIGHTING

A. Power: The CONTRACTOR shall provide all necessary power required for its operations under the Contract, and shall provide and maintain all temporary power lines required to perform the Work in a safe and satisfactory manner.

B. Lighting: All Work conducted under conditions of deficient daylight shall be suitably lighted to insure proper Work and to afford adequate facilities for inspection and safe working conditions. Temporary lighting shall be maintained during nonworking periods if the area is subject to access by the public or COUNTY personnel. Such temporary lighting shall provide suitable illumination to match pre-construction conditions.

C. Electrical Connections: All temporary connections for electricity shall be subject to review by the PROGRAM MANAGER and the power company representative, and shall be removed in like manner at the CONTRACTOR's expense prior to final acceptance of the Work.

D. Separation of Circuits: Unless otherwise permitted by the PROGRAM MANAGER, circuits separate from lighting circuits shall be used for all power purposes.

E. Construction Wiring: All wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place. All electrical facilities shall conform to the requirements of Subpart K of the OSHA Safety and Health Standards for Construction.

#### 1.03 WATER SUPPLY

A. General: Except as noted otherwise, the CONTRACTOR shall make arrangements for and pay for all costs for all water used for construction, and testing. The CONTRACTOR shall provide and maintain all meters, piping, fittings, adapters, and valving required.

B. Potable Water: All drinking water on the site during construction shall be furnished by the CONTRACTOR and shall be bottled water or water furnished in suitable dispensers.

C. Water Connections: The CONTRACTOR shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning the affected water system. For each such connection made, the COUNTY shall first furnish and install to the fire hydrant or pipeline a valve and a meter, if required by the said authority, of a size and type acceptable to said authority and agency. All costs to provide noted installation shall be the responsibility of the CONTRACTOR.

D. Removal of Water Connections: Before final acceptance of the Work on the project, all temporary connections and piping installed by the CONTRACTOR shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the COUNTY and to the agency owning the affected utility.

E. Fire Protection: The construction, and all other parts of the Work shall be connected with the CONTRACTOR's water supply system and shall be adequately protected against damage by fire. Hose connections and hose, water casks, chemical equipment, or other sufficient means shall be provided for fighting fires in the temporary structures and other portions of the Work, and responsible persons shall be designated and instructed in the operation of such fire apparatus so as to prevent or minimize the hazard of fire. The CONTRACTOR's fire protection program shall conform to the requirements of Subpart F of the OSHA Standards for Construction and all local Fire Department Requirements.

#### 1.04 TEMPORARY SANITARY FACILITIES

A. The CONTRACTOR shall provide and maintain adequate and clean sanitary facilities for the construction work force and visitors. Temporary holding tank with disposal service facilities and system maintenance shall be provided for the field offices furnished under this Contract in accordance with all local regulatory requirements. The CONTRACTOR shall have unit responsibility for the complete design, installation and operation of its temporary sanitary facilities and shall secure all necessary permits for same. At the completion of the project, the subject facilities shall be removed by the CONTRACTOR, subject to review and acceptance by the COUNTY.

#### 1.05 CONFINED SPACES

A. The CONTRACTOR shall provide and maintain a safe working environment in confined spaces. The CONTRACTOR shall follow the applicable requirements of the OSHA Standards for Construction and NIOSH Publications for working in confined spaces.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

- END OF SECTION -

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## SECTION 01520 - CONSTRUCTION AIDS

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall furnish, install and maintain required construction aids and remove them upon completion of the WORK.

#### 1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. General Conditions.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS, GENERAL

A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

#### 2.02 CONSTRUCTION AIDS

A. The CONTRACTOR shall provide construction aids and equipment required by personnel and to facilitate execution of the WORK; shorings, scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes and other such facilities and equipment.

1. Refer to respective sections for particular requirements for each trade.
2. Provide protective coverings for finished surfaces.

B. Maintain facilities and equipment in first-class condition.

### PART 3 - EXECUTION

#### 3.01 PREPARATION

A. The CONTRACTOR shall review site conditions and factors which affect construction procedures and construction aids including adjacent properties and public facilities which may be affected by execution of the WORK.

#### 3.02 GENERAL

A. Comply with applicable requirements at all divisions of these specifications as required.

#### 3.03 REMOVAL

A. Completely remove temporary materials, equipment and services:

1. When construction needs can be met by use of permanent construction.

2. At completion of project.

B. Repair damage caused by installation or by use of temporary facilities.

1. Remove foundations and underground installations for construction aids.
2. Grade areas of site affected by temporary installations to required elevations and slopes, and clean the area.

C. Restore permanent facilities used for temporary purposes to specified condition.

- END OF SECTION -

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## SECTION 01530 - PROTECTION OF EXISTING FACILITIES

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall protect all existing utilities and improvements not designated for removal including, but not limited to, compliance with the requirements of Chapter 556, Florida Statutes (the Underground Facility Damage Prevention and Safety Act), as same may be amended from time to time, and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.

B. The CONTRACTOR shall verify the exact locations and depths of all utilities shown and the CONTRACTOR shall make exploratory excavations of all utilities that may interfere with the WORK. All such exploratory excavations shall be performed as soon as practicable after award of the contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the CONTRACTOR's WORK. When such exploratory excavations show the utility location as shown to be in error, the CONTRACTOR shall so notify the CONSULTANT.

C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

#### 1.02 RIGHTS-OF-WAY

A. The CONTRACTOR shall not do any WORK that would affect any oil, gas, sewer, or water pipeline; any telephone, communications, or electric transmission line; any fence; or any other structure, nor shall the CONTRACTOR enter upon the rights-of-way involved until having secured authority therefore from the proper party. After authority has been obtained, the CONTRACTOR shall give said party due notice of its intention to begin WORK, if required by said party, and shall remove, shore, support or otherwise protect such pipeline, transmission line, ditch, fence, and/or structure and/or replace the same. When two or more contracts are being executed at one time on the same or adjacent land in such manner that WORK of one contract may interfere with that of another, the COUNTY shall determine the sequence and order of WORK to be performed by different contractors. 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 COUNTY 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 of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the WORK in the General Conditions.

#### 1.03 PROTECTION OF STREET OR ROADWAY MARKERS

A. The CONTRACTOR shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced.

All survey markers or points disturbed by the CONTRACTOR shall be accurately restored after all street or roadway resurfacing has been completed.

#### 1.04 RESTORATION OF PAVEMENT

A. General: All paved areas including asphaltic concrete beams cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement owner. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.

B. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.

C. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw, cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement is installed. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement as follows:

1. Pavement shall be restored at a minimum straight and parallel to the existing trench line along the length of the trench, at a minimum of two feet beyond the widest part of disturbed asphalt.
2. If final restored pavement falls within two feet of existing or proposed cuts, the CONTRACTOR shall pave to the curb.
3. If disturbance is deemed by the CONSULTANT to be more than 75%, at CONSULTANT's opinion, the CONTRACTOR shall resurface the entire lane, including striping, as necessary.

D. Restoration of Sidewalks or Private Driveways: Wherever sidewalks and/or private roads have been removed for purposes of construction, the CONTRACTOR shall place suitable temporary sidewalks and/or roadways promptly after backfilling. CONTRACTOR shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions before proceeding with the final restoration. If no such period of times is so fixed, the CONTRACTOR shall maintain said temporary sidewalks and/or roadways until the final restoration thereof has been made.

#### 1.05 EXISTING UTILITIES AND IMPROVEMENTS

A. General: The CONTRACTOR shall protect all Underground Utilities and other improvements which may be impaired during construction operations. It shall be the CONTRACTOR's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations. The CONTRACTOR shall take all possible precautions for the protection of

unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.

B. Where the proper completion of the WORK requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is indicated, the CONTRACTOR shall remove and, without unnecessary delay, temporarily replace or relocate such utility and/or improvement in a manner satisfactory to the CONSULTANT and the OWNER of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utilities and/or improvements as nearly as possible to its former locations and to as good or better condition than found prior to removal.

C. COUNTY's Right of Access: The right is reserved to the COUNTY and to the owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, and/or easement for the purpose of making changes in their property made necessary by the WORK of this Contract.

D. Underground Utilities Indicated: Existing utility lines that are indicated or the locations of which are made known to the CONTRACTOR prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the CONTRACTOR, at no additional cost to the COUNTY.

E. Underground Utilities Not Indicated: In the event that the CONTRACTOR damages any existing utility lines that are not indicated or the locations of which are not made known to the CONTRACTOR prior to excavation, a written report thereof shall be made immediately to the CONSULTANT. If directed by the COUNTY, repairs shall be made by the CONTRACTOR under the provisions for changes and extra work contained in **Exhibit H, General Terms & Conditions, Article 10, Changes in The Work.**

F. All costs of locating, repairing damage not due to failure of the CONTRACTOR to exercise reasonable care, and removing or relocating such utility facilities not shown in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the work which was interrupted or idled by removal or relocation of such utility facilities, and which was necessarily idled during such work will be paid for as extra work in accordance with the provisions of the General Conditions.

G. Approval of Repairs: All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility and/or the COUNTY and the CONSULTANT before being concealed by backfill or other work.

H. Maintaining in Service: All oil and gasoline pipelines, power, and telephone or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the WORK shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the COUNTY are made with the OWNER of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The CONTRACTOR shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the

backfilling.

I. Existing Water Services: CONTRACTOR shall protect and provide temporary support for existing water services. Any water service damaged by the CONTRACTOR, shall be replaced at the CONTRACTOR's expense, with a new water service complete with new water main tap.

#### 1.06 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

A. General: The CONTRACTOR shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or the COUNTY. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the CONTRACTOR or a certified tree company under permit from the jurisdictional agency and/or the COUNTY. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.

B. Trimming: Symmetry of the tree shall be preserved; no stubs or splits or torn branches left; clean cuts shall be made close to the trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over 1-1/2 inches in diameter shall be coated with an asphaltic emulsion material.

C. Replacement: The CONTRACTOR shall immediately notify the jurisdictional agency and/or the CITY if any tree is damaged by the CONTRACTOR's operations. If, in the opinion of said agency or the COUNTY, 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 of said tree a compensatory payment acceptable to the tree OWNER, subject to the approval of the jurisdictional agency or the COUNTY.

#### 1.07 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 Florida One Call System or equivalent, COLLIER COUNTY and any other agency having jurisdiction, and shall provide notice in accordance with Chapter 556, Florida Statutes.

### PART 2 - PRODUCTS (NOT USED)

### PART 3 - EXECUTION

#### 3.01 GENERAL

A Install facilities in a neat and reasonable uniform appearance, structurally adequate for required purposes.

B. Maintain sufficient barriers to secure the work during entire construction period.

C. Relocate barriers as required by progress of construction.

### 3.02 TREE AND PLANT PROTECTION

A. Preserve and protect existing trees and plants adjacent to the WORK areas.

B. Consult with COUNTY's Representative and remove agreed-on roots and branches which interfere with the WORK.

1. Employ qualified tree surgeon to remove branches, and to treat cuts.

C. Protect root zones of trees and plants.

1. Do not allow vehicular traffic and parking.

2. Do not store materials or products.

3. Do not dump refuse or chemically injurious materials or liquids.

4. Do not allow puddling or continuous running water.

D. Carefully supervise all WORK to prevent damage.

E. Replace trees and plants which are damaged or destroyed due to WORK operations under this contract.

### 3.03 REMOVAL

A. Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed, and when approved by COUNTY's Representative.

B. Clean and repair damage caused by installation, fill and grade areas of the site to required elevations and slopes, and clean the area.

- END OF SECTION -

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## SECTION 01560 - TEMPORARY CONTROLS

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall provide and maintain methods, equipment, and temporary construction, as necessary, to provide controls over environmental conditions at the construction site and related area under CONTRACTOR's control. In addition, the CONTRACTOR shall remove physical evidence of temporary facilities at the completion of WORK.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. All applicable sections of the Specifications.
- B. General conditions.

#### 1.03 NOISE CONTROL

A. The CONTRACTOR shall provide all necessary requirements for noise control during the construction period.

1. Noise procedures shall conform to all applicable OSHA requirements and local codes having jurisdiction on the work
2. Noise levels during night time hours shall not exceed 55 db measured at the property line of a residence.

#### 1.04 DUST CONTROL

A. The CONTRACTOR shall provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent air-borne dust from dispersing into the atmosphere. The CONTRACTOR shall be responsible for any damage resulting from any dust originating from its operations. The dust abatement shall be continued until the CONTRACTOR is relieved of further responsibilities by the CONSULTANT and/or PROGRAM MANAGER. No separate payment will be allowed for dust abatement measures and all costs thereof shall be included in the CONTRACTOR's Bid Price(s).

#### 1.05 WATER CONTROL

A. The CONTRACTOR shall provide methods to control surface water to prevent damage to the project, the site, or adjoining properties. These may include: control fill, grading and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper runoff.

B. Provide, operate and maintain hydraulic equipment of adequate capacity to protect surface and control water.

C. Dispose of drainage water in conformance with environmental regulations and in a manner to prevent flooding, erosion, or other damage to any portion of the site or to

adjoining areas.

D. The CONTRACTOR shall be responsible for any and all permits associated with its Dewatering activities. The CONTRACTOR shall procure such permits and pay for those, and submit copies of receipts/permits to the CONSULTANT and/or PROGRAM MANAGER prior to commencing work in the affected area.

#### 1.06 PEST CONTROL

A. The CONTRACTOR shall provide pest control as necessary to prevent infestation of construction or storage areas.

1. Employ methods and use materials which will not adversely affect conditions at the site and/or on adjoining properties.
2. Should the use of pesticides be considered necessary, submit an informational copy of the proposed program to the COUNTY with copies to the CONSULTANT and/or PROGRAM MANAGER. Clearly indicate:
  - a. The area or areas to be treated.
  - b. The pesticide to be used, with a copy of the manufacturer's printed instructions.
  - c. The pollution preventative measures to be employed.

B. The use of any pesticide shall be in full accordance with the manufacturer's printed instructions and recommendations.

#### 1.07 RODENT CONTROL

A. The CONTRACTOR shall provide rodent control as necessary to prevent infestation of construction or storage areas.

1. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.
2. Should the use of rodenticide be considered necessary, submit an informational copy of the proposed program to the COUNTY with copies to the CONSULTANT and/or PROGRAM MANAGER. Clearly indicate:
  - a. The area or areas to be treated.
  - b. The rodenticide to be used, with a copy of the manufacturer's printed instructions.
  - c. The pollution preventative measures to be employed.

B. The use of any rodenticide shall be in full accordance with the manufacturer's printed instructions and recommendations.

#### 1.08 DEBRIS CONTROL

A. The CONTRACTOR shall maintain all areas under CONTRACTOR's control free of extraneous debris.

B. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking area, and along access roads and haul routes.



1. Provide containers for deposit of debris as specified in Section 01710 entitled "Cleaning."
2. Prohibit overloading of trucks to prevent spillage on access and haul routes.
  - a. Provide periodic inspection of traffic areas to enforce requirements.
  - b. Provide cleaning at areas as required by the COUNTY.

C. Schedule periodic collections and disposal of debris as specified in Section 01710 - Cleaning.

1. Provide additional collections and disposal of debris whenever the periodic schedule is inadequate to prevent accumulation.

#### 1.09 POLLUTION CONTROL

A. The CONTRACTOR shall provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations. The CONTRACTOR shall conform to all applicable Federal, State, and local laws, including to those promulgated by the Florida Department of Environmental Protection.

B. Provide equipment and personnel, perform emergency measures required to contain any spillage, and to remove contaminated soils and/or liquids.

1. Excavate and dispose of any contaminated earth off-site and replace with suitable compacted fill and topsoil.

C. Take special measures to prevent harmful substances from entering public waters.

1. Prevent disposal of wastes, effluents, chemicals, and/or other such substances adjacent to streams or in sanitary or storm sewers.

D. Provide systems for control of atmospheric pollutants.

1. Prevent toxic concentrations of chemicals.
2. Prevent harmful dispersal of pollutants into the atmosphere.

#### 1.10 EROSION CONTROL

A. The CONTRACTOR shall plan and execute construction and earthwork, by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas to prevent erosion and sedimentation.

1. Hold the areas of bare soil exposed at one time to a minimum.
2. Provide temporary control measures such as beams, dikes and drains.
3. Provide silt screens as required to prevent surface water contamination.

B. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.

C. Periodically inspect earthwork to detect any evidence of the start of erosion, apply corrective measures as required to control erosion.

### 1.11 PRECAUTIONS DURING ADVERSE WEATHER

A. During adverse weather, and against the possibility thereof, the CONTRACTOR shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building paper shelters, or other acceptable means. The CONTRACTOR shall be responsible for all changes caused by adverse weather and to rectify them.

B. The COUNTY may suspend construction operations at any time when, in its judgment, the conditions are unsuitable or the proper precautions are not being taken, whatever the weather conditions may be, in any season.

### 1.12 HURRICANE AND STORM WARNINGS

A. The CONTRACTOR shall take all precautions necessary to protect the job site during hurricane and storm watches and warnings. As required by the CONSULTANT and/or PROGRAM MANAGER; the CONTRACTOR shall submit a hurricane preparedness plan for review.

### 1.13 PERIODIC CLEANUP AND BASIC SITE RESTORATION

A. During construction, the CONTRACTOR shall regularly remove from the site all accumulated debris and surplus materials of any kind which result from its operations. Unused equipment and tools shall be stored at the CONTRACTOR's yard or base of operations for the project.

B. The CONTRACTOR shall perform the cleanup work on a regular basis and as frequently as required by the CONSULTANT and/or PROGRAM MANAGER per preconstruction meeting proceedings or otherwise instructed. 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 required by the CONSULTANT and/or PROGRAM MANAGER, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.

C. Upon failure of the CONTRACTOR to perform periodic clean-up and basic restoration of the site to the CONSULTANT's and/or PROGRAM MANAGER's satisfaction, the CONSULTANT and/or PROGRAM MANAGER, may, upon five days prior written notice to the CONTRACTOR, employ such labor and equipment as it deems necessary for the purpose, and all costs resulting there from shall be charged to the CONTRACTOR and deducted from amounts of money that may be due for payment.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 01570 - TRAFFIC REGULATIONS

### PART 1 – GENERAL

#### 1.01 THE REQUIREMENTS

A. The CONTRACTOR shall provide, operate and maintain equipment, services and personnel for traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at site entrances, on-site access roads, and parking areas.

B. The CONTRACTOR shall remove temporary equipment and facilities when no longer required and restore grounds to their original or specified condition.

C. There shall be no separate payment for work under this heading. All costs associated with such work shall be included in the CONTRACTOR's Bid Price(s).

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. All applicable sections of the Specifications.

B. General Conditions of the Contract.

C. Summary of Work.

D. Temporary Environmental Controls.

#### 1.03 TRAFFIC SIGNALS BARRIERS AND SIGNS

A. The CONTRACTOR shall provide and operate traffic control and directional signals, furnish all barriers and/or signs as required to direct and maintain an orderly flow of traffic in all areas under the CONTRACTOR's control, and/or affected by CONTRACTOR's operations, as required by jurisdictional agencies.

#### 1.04 FLAG PERSON / OFF-DUTY POLICE OFFICER OVERSIGHT

A. The CONTRACTOR shall provide a "trained" flag person in accordance with FDOT Standard Specifications for Road and Bridges, Section 102-3.2.4 or an off-duty police officer when construction operations encroach on traffic lanes unless otherwise specifically authorized by the COUNTY's Transportation Department. As a minimum, the CONTRACTOR shall assume that oversight will be required.

#### 1.05 FLARES AND LIGHTS

A. The CONTRACTOR shall provide flares and lights during periods of low visibility (as required):

1. To clearly delineate traffic lanes and to guide traffic.
2. For use of flag-person in directing traffic.

B. The CONTRACTOR shall provide illumination of critical traffic and parking areas (as required).

1. Maintain free vehicular access to and through parking areas.
2. Prohibit parking on or adjacent to access roads, or in non-designated areas.
3. During periods when the operations have impacted the existing lighting systems.

#### 1.06 MAINTENANCE AND PROTECTION OF TRAFFIC

A. The CONTRACTOR shall provide all necessary traffic control devices to redirect, protect, warn or maintain existing vehicular and pedestrian traffic during the course of construction.

#### 1.07 HAUL ROUTES

A. Consult with jurisdictional authorities, establish public thoroughfares which will be used as haul routes and site access.

B. Confine construction traffic to designated haul routes.

C. Provide traffic control at critical areas of haul routes to expedite traffic flow, to minimize interference with normal public traffic.

#### 1.08 MEASUREMENT AND PAYMENT

A. There shall be no special measurement and payment for work under the section, it shall be included in the CONTRACTOR's Bid Price(s).

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 01580 - PROJECT IDENTIFICATION SIGNS

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

- A. The CONTRACTOR shall furnish, install and maintain two (2) 4' x 8' project identification signs.
- B. The CONTRACTOR shall remove sign on completion of construction.
- C. The CONTRACTOR shall allow no other signs to be displayed, except as may otherwise be required by jurisdictional agencies.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. All applicable sections of the Specifications.
- B. General conditions.

#### 1.03 PROJECT IDENTIFICATION SIGN

- A. Two painted signs, with painted graphic content to include:
  - 1. Title of project.
  - 2. Name of the COUNTY.
  - 3. Names and titles of:
    - a. The CONSULTANT.
    - b. Authorities and Titles.
  - 4. General CONTRACTOR.
  - 5. Funding sources (as may be appropriate)
  - 6. Project logo sample as provided by the COUNTY on disk, to be added on sign by the CONTRACTOR.
- B. Graphic design, style of lettering, and colors: As per sample in EXHIBIT 1580-1.
- C. Erect on the site at a location, as approved by the PROGRAM MANAGER.

#### 1.04 QUALITY ASSURANCE

- A. Sign Painter: Professional experience in type of work required.
- B. Finishes, Painting: Adequate to resist weathering and fading for scheduled construction period.

### PART 2 - PRODUCTS

#### 2.01 SIGN MATERIALS

- A. Structure and Framing: May be new or used, of wood or metal, structurally in sound condition and adequate and suitable for work and specified finish.

B. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints.

C. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves and/or buckles.

D. Rough Hardware: Galvanized

E. Paint: Exterior quality.

1. Colors for structure, framing, sign surfaces and graphics: As per sample in EXHIBIT

### PART 3 - EXECUTION

#### 3.01 PROJECT IDENTIFICATION SIGN

A. Paint exposed surfaces of supports, framing and surface material; one coat of primer and one coat of exterior paint.

B. Paint graphics in styles, sizes and colors selected.

#### 3.02 MAINTENANCE

A. Maintain signs and supports in a neat, clean condition; repair damages to structure, framing or sign immediately.

#### 3.03 REMOVAL

A. Remove signs, framing, supports and foundations at completion of project.

#### 3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the base bid price.

- END OF SECTION -



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## SECTION 01590 -CONTRACTOR'S FIELD OFFICE

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall furnish, install and maintain temporary field offices during the entire construction period at a site secured by the CONTRACTOR. All field offices shall be located within 0.5 miles of the work boundaries or the Project, unless otherwise occupied by the PROGRAM MANAGER.

B. The CONTRACTOR shall furnish, install and maintain storage and work sheds needed for construction.

C. At completion of WORK, remove field offices, sheds and contents.

#### 1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. General conditions.

#### 1.03 OTHER REQUIREMENTS

A. Prior to installation of offices and sheds, contact jurisdictional agencies for permitting and installation requirements.

#### 1.04 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with requirements of applicable Federal, State, and Local codes and regulations.

#### 1.05 REQUIREMENTS FOR FACILITIES

A. Construction:

1. Structurally sound, weathertight, with floors raised above ground as required to avoid flooding.
2. Temperature transmission resistance: Compatible with occupancy and storage requirements.
3. At CONTRACTOR's option, portable or mobile buildings may be used.

A. Mobile homes, when used, shall be modified for office use.

B. CONTRACTOR's Office and RPR Facilities:

1. Size: As required for general use and to provide space for project meetings.
2. Lighting and temperature control.
3. Telephone, Fax and Internet Services: Separate lines, as required.

4. Furnishings in meeting area.

a. Conference table and chairs for at least eight persons.

b. Racks and files for project Record Documents in or adjacent to the meeting area.

5. Other furnishings: CONTRACTOR's option.

6. One ten inch outdoor-type thermometer.

#### 1.06 USE OF EXISTING FACILITIES

A. Existing facilities at the site shall not be used for field offices or for storage.

#### 1.07 USE OF PERMANENT FACILITIES

A. Permanent facilities shall not be used for field offices or for storage.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS, EQUIPMENT, FURNISHINGS

A. May be new or used, but must be serviceable, adequate for required purpose, and must comply with applicable codes or regulations.

### PART 3 - EXECUTION

#### 3.01 PREPARATION

A. Fill and grade sites for temporary structures to provide surface drainage.

#### 3.02 INSTALLATION

A. Construct temporary field office on proper foundations, provide connections for utility services.

1. Secure portable or mobile buildings in accordance with applicable State of Florida, City and/or County Building Department requirements.

2. Provide steps and landings at entrance doors.

3. Provide at least one entrance and other facilities handicapped accessible.

B. Mount thermometer at convenient outside location, not in direct sunlight.

#### 3.03 MAINTENANCE AND CLEANING

A. Provide periodic maintenance and cleaning for temporary structures, furnishings, equipment and services.

### 3.04 REMOVAL

A. Remove temporary field offices, contents and services at a time no longer needed; in any case prior to FINAL INSPECTION of the project.

B. Remove foundations and debris; grade site to required elevations and clean the areas; and otherwise restore site to pre-existing condition or as indicated in the Contract Documents.

### 3.05 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section; it shall be included under the Base Bid Item for mobilization. –

END OF SECTION -

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## SECTION 01600 - MATERIAL AND EQUIPMENT

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall ensure that all material and equipment incorporated into the work:

1. Conform to applicable specifications and standards.
2. Comply with size, make, type, quantity and quality specified, or as specifically approved in writing by the CONSULTANT.
3. Manufactured and fabricated products:
  - a. Design, fabricate and assemble in accord with the best engineering and shop practices.
  - b. Manufacture like parts of duplicate units to standard sizes and gauges to be interchangeable.
  - c. Two or more items of the same kind shall be identical, by the same manufacturer.
  - d. Products shall be suitable for service conditions.
  - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. General conditions of the Contract.

B. All applicable sections of the Specifications.

#### 1.03 MANUFACTURER'S INSTRUCTIONS

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, the CONTRACTOR shall obtain and distribute copies of such instructions to parties involved in the installation, including two copies to the PROGRAM MANAGER. In addition, the CONTRACTOR shall maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the PROGRAM MANAGER for further instructions.
2. Do not proceed with work without clear instructions.

C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by the Contract Documents.

## 1.04 TRANSPORTATION AND HANDLING

A. The CONTRACTOR shall arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site. Products shall be delivered to the job site on "as needed" basis.

1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact with legible markings.
2. Immediately upon delivery, inspect shipments to assure compliance with requirements of the Contract Documents and approved submittals, and that products are properly protected and undamaged.
3. Pipe and materials shall not be strung out along installation routes for longer than forty-eight (48) hours prior to installation. However, the CONTRACTOR is to make sure that driveways to the NEIGHBORING residential and/or commercial properties cannot be obstructed.

B. Provide equipment and personnel to handle products by methods to prevent soiling and/or damage to products as well as packaging when applies.

C. Coordinate deliveries to avoid conflict with Work and conditions at site:

1. Work of other contractors, and/or the COUNTY.
2. Limitations of storage space.
3. Availability of equipment and personnel for handling products.
4. COUNTY's use of premises.

D. Deliver products in undamaged condition in original containers or packaging, with identifying labels intact and legible.

E. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit easy accumulation of parts and to facilitate orderly assembly.

F. Immediately on delivery, inspect shipment to assure:

1. Product complies with requirements of the Contract Documents and reviewed submittals.
2. Quantities are correct.
3. Containers and packages are intact and labels are legible.
4. Products are properly protected and undamaged.

G. Provide equipment and personnel necessary to handle products, including those provided by the COUNTY, by methods to prevent soiling and/or damage to products as well as packaging when applies.

H. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.

I. Handle products by methods to prevent bending or overstressing.

J. Lift heavy components only at designated lifting points.

## 1.05 STORAGE

A. The CONTRACTOR shall store products in accord with manufacturer's instructions, with seals and labels intact and legible.

1. Store products subject to damage by the elements in weathertight enclosures.
2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
3. Store unpacked products on shelves, in bins or in neat piles, accessible for inspection.

B. Exterior Storage:

1. Provide substantial platforms, blocking or skids to support fabricated products above ground, prevent soiling or staining. Cover products, subject to discoloration and/or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
2. Store loose granular materials on solid surface such as paved areas, or provide plywood or sheet materials to prevent mixing with foreign matter.
  - a. Provide surface drainage to prevent flow or ponding of rainwater.
  - b. Prevent mixing of refuse or chemically injurious materials or liquids.

C. Stored Products shall be periodically inspected on a scheduled basis. The CONTRACTOR shall maintain a log of inspections and shall make said log available to the PROGRAM MANAGER on request.

D. The CONTRACTOR shall verify that storage facilities comply with supplier's product storage requirements, subject to CONSULTANT's review and acceptance.

E. The CONTRACTOR shall verify that Supplier required environmental conditions are maintained continually.

## 1.06 MAINTENANCE OF STORAGE

A. The CONTRACTOR shall maintain periodic system of inspection of stored products on scheduled basis to assure that:

1. State of storage facilities is adequate to provide required conditions.
2. Required environmental conditions are maintained on continuing basis.
3. Surfaces of products exposed to elements are not adversely affected. Any weathering of products, coatings and finishes is not acceptable under requirements of the Contract Documents.

B. Mechanical and electrical equipment which requires servicing during long term storage shall have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on exterior of package.

## 1.07 PROTECTION

A. The CONTRACTOR shall provide protection of installed products to prevent damage from subsequent operations. Remove when no longer needed, prior to completion of work.



B. Control traffic to prevent damage to equipment and surfaces.

C. Provide coverings to protect finished surfaces from damage.

1. Protect finished floors and stairs from dirt and damage.

a. Cover wall and floor surfaces in the vicinity of construction personnel activities and all finished surfaces used by construction personnel.

D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around demolition area.

E. Erect temporary protection, such as walks, fences, barriers, railings, canopies, and covered passageways, where required by AUTHORITIES HAVING JURISDICTION.

F. Buildings and improvements to remain on site shall be cleaned of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before start of demolition.

G. Protect existing site improvements, appurtenances, and landscaping to remain.

H. Lawns and landscaping: The CONTRACTOR shall prohibit traffic of any kind across planted lawn and landscaped areas.

I. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 01660 -EQUIPMENT TESTING AND STARTUP

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. Where required, the CONTRACTOR shall perform equipment testing and startup. Note that this requirement is requisite to the satisfactory completion of the contract and, therefore, shall be completed within the contract time.

#### 1.02 EQUIPMENT TESTING

A. The CONTRACTOR shall provide the services of an experienced and authorized representative of the manufacturer of each item of equipment requiring startup who shall visit the site of the WORK and inspect, check, adjust if necessary, and approve the equipment installation. In each case, the CONTRACTOR shall arrange to have the manufacturer's representative revisit the job site as often as necessary until any and all trouble is corrected and the equipment installation and operation are satisfactory to the CONSULTANT.

B. The CONTRACTOR shall require that each manufacturer's representative furnish to the ENGINEER a written report addressed to the CONSULTANT and/or PROGRAM MANAGER certifying that the equipment has been properly installed and lubricated, is in accurate alignment, is free from any undue stress imposed by connecting piping or anchor bolts, and has been operated satisfactorily under full-load conditions.

C. The CONTRACTOR shall be responsible for scheduling all Startup testing. The CONTRACTOR is advised that the CONSULTANT and the COUNTY's operating personnel will likely witness operations testing and that the manufacturer's representative shall be required to instruct the operating personnel in correct operation and maintenance procedures. Such instruction shall be scheduled at a time arranged with the CONSULTANT and/or PROGRAM MANAGER at least 2 weeks in advance and shall be provided while the respective manufacturer's equipment is fully operational. On-site instruction shall be given by qualified persons who have been made familiar in advance with the equipment. Prior to scheduling any operations testing, the CONTRACTOR shall have previously furnished the Operations Manuals specified elsewhere.

D. The CONTRACTOR shall notify the CONSULTANT and/or the PROGRAM MANAGER at least three (3) days in advance of each equipment test.

E. The CONTRACTOR shall furnish all personnel required to conduct the testing and startup.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 01700 - CONTRACT CLOSEOUT

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall comply with all requirements as stated in **Exhibit H, General Terms & Conditions, Article 20, Completion** and any other requirements specified in the Technical or Administrative Specification.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. All applicable sections of the Specifications.

B. General Conditions

#### 1.03 SUBSTANTIAL COMPLETION

A. When the CONTRACTOR considers a portion of the work is substantially complete, it shall submit to the CONSULTANT and/or the PROGRAM MANAGER:

1. A written notice that the work or designated portion thereof, is substantially complete.
2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, the PROGRAM MANAGER, COUNTY and CONSULTANT will make an inspection to determine the status of completion.

C. Should the CONSULTANT, with input from the PROGRAM MANAGER and or the COUNTY, determine that the work is not substantially complete:

1. The CONSULTANT, through the PROGRAM MANAGER will promptly notify the CONTRACTOR in writing, giving the reasons therefore.
2. The CONTRACTOR shall remedy the deficiencies in the work and send a second written notice of substantial completion to the CONSULTANT and/or the PROGRAM MANAGER.
3. The CONSULTANT and/or the PROGRAM MANAGER and the COUNTY will reinspect the work.

D. When the CONSULTANT and/or the PROGRAM MANAGER and the COUNTY concur that the work is substantially complete, the CONSULTANT will:

1. Prepare a "Certificate of Substantial Completion" for execution by the CONSULTANT and the COUNTY accompanied by a list of items to be completed or corrected.
2. Submit the Certificate to the CONTRACTOR for its written acceptance of the responsibilities assigned therein.

#### 1.04 FINAL INSPECTION

A. When the CONTRACTOR considers the work is complete, it shall submit written certification that:

1. The Contract Documents have been reviewed.
2. The Work has been inspected for compliance with the Contract Documents.
3. The Work has been completed in accordance with the Contract Documents.
4. Equipment and systems have been tested in the presence of the COUNTY Representative and are operational.
5. The Work is completed and ready for final inspection.

B. The CONSULTANT and/or the PROGRAM MANAGER and the COUNTY will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should the CONSULTANT and/or the PROGRAM MANAGER and the COUNTY consider that the work is incomplete and defective:

1. The COUNTY Representative will promptly notify the CONTRACTOR, in writing, listing the incomplete or defective work.
2. The CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to COUNTY Representative that the work is complete.
3. The COUNTY Representative and the CONSULTANT will reinspect the work.

D. When the CONSULTANT and/or the PROGRAM MANAGER and the COUNTY find that the work is acceptable under the Contract Documents, it shall request the CONTRACTOR to make closeout submittals.

#### 1.05 REINSPECTION FEES

A. Should the COUNTY Representative perform reinspections due to failure of the work to comply with the claims of status of completion made by the CONTRACTOR:

1. The COUNTY will compensate its Representative and the CONSULTANT for such additional services.
2. The COUNTY will deduct the amount of such compensation from the final payment to the CONTRACTOR.

#### 1.06 CONTRACTOR'S CLOSEOUT SUBMITTALS TO COUNTY'S REPRESENTATIVE

A. Evidence of compliance with requirements of governing authorities.

1. Certificates of Inspection.

- a. From agencies having jurisdiction or as may be required.

B. Project Record Documents: To requirements of the Section entitled "Project Record Documents".

C. Operating and Maintenance Data, Instructions to COUNTY's Personnel: To requirements of the Section entitled , "Operating and Maintenance Data."

D. Guarantees and Bonds: To requirements of the section entitled , "Guarantees and Bonds."

E. Evidence of Payment and Release of Liens: To requirements of General and Supplementary General Conditions.

F. Certificate of Insurance for Products and Completed Operations.

1.07 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the CONSULTANT and/or the PROGRAM MANAGER.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

- a. Previous Change Orders.  
b. Allowances.  
c. Unit Prices.  
d. Deductions for uncorrected work.  
e. Penalties and Bonuses.  
f. Deductions for liquidated damages.  
g. Deductions for reinspection payments.  
h. Other adjustments.

3. Total Contract Sum, as required.

4. Previous payments.

5. Sum remaining due.

C. The COUNTY/PROGRAM MANAGER will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders, to be executed by the CONSULTANT and/or the COUNTY/PROGRAM MANAGER and CONTRACTOR.

1.08 FINAL APPLICATION FOR PAYMENT

A. The CONTRACTOR shall submit the Final Application for Payment in accordance with

procedures and requirements stated in **Exhibit H, General Terms & Conditions, Article 6, Final Payment.**

B. The CONSULTANT will prepare a "Final Certificate of Payment" to be executed by the CONSULTANT and/or the PROGRAM MANAGER and the COUNTY.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -



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## SECTION 01710 - CLEANING

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The CONTRACTOR shall execute cleaning, during progress of the Work, and at completion of the Work, as required by the General Conditions and these specifications.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. All applicable sections of the Specifications.

B. General Conditions.

#### 1.03 DISPOSAL REQUIREMENTS

A. The CONTRACTOR shall conduct its cleaning and disposal operations to comply with all applicable codes, ordinances, regulations, and anti-pollution laws.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

A. The CONTRACTOR shall use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

### PART 3 - EXECUTION

#### 3.01 DURING CONSTRUCTION

A. The Contractor shall execute periodic cleaning to keep the WORK, the site and adjacent properties free from accumulation of waste material, rubbish and windblown debris, resulting from the Construction Work.

B. The Contractor shall provide on-site containers for the collection of waste materials, debris and rubbish.

C. The Contractor shall remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

#### 3.02 FINAL CLEANING

A. The Contractor shall employ skilled workers for final cleaning.

B. The Contractor shall remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed surfaces.

C. The Contractor shall broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

D. Prior to final completion, the CONTRACTOR shall conduct an inspection of sight exposed surfaces, and all WORK areas, to verify the entire WORK is clean.

E. All storage and staging areas shall be cleaned and returned to prior conditions or better as per requirements of this section.

- END OF SECTION -

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## SECTION 01720 – PROJECT RECORD DOCUMENTS

### PART 1 – GENERAL

#### 1.01 THE REQUIREMENT

A. Unless waived in writing and in accordance with **Exhibit H, General Terms & Conditions, Article 8, Daily Reports, As-builts, and Meetings** - the CONTRACTOR shall at all times maintain at the site of the project a record copy of:

1. Drawings
2. Specifications
3. Addenda
4. Change Orders and other modifications to the Contract.
5. Approved Shop Drawings, Product Data and Samples.
6. Field Test Records.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. All applicable sections of the Specifications.
- B. General conditions.

#### 1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in CONTRACTOR's field office apart from documents used for construction.

1. Provide files and racks for storage of documents.
2. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with CSI format.

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by the COUNTY's Representatives.

#### 1.04 MARKING DEVICES

A. Provide felt tip marking pens for recording information in the following color code designation:

1. Red – Corrections
2. Yellow – Deletions
3. Green – Comments

Changes to the color code designation must be approved by the CONSULTANT and/or PROGRAM MANAGER.

## 1.05 RECORDING

A. The CONTRACTOR shall label each document, "PROJECT RECORD" in neat large printed letters, or by rubber stamp.

B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

C. Drawings: Legibly mark to record actual construction:

1. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
2. Field changes of dimension and detail.
3. Changes made by Field Order or by Change Order.
4. Details not on original Contract Drawings.
5. The Record Drawing set shall show benchmark positions and their vertical values. Benchmarks are optional for Plan Views, but required for Profile Views.

D. Specifications and Addenda; Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
2. Changes made by field order or by Change Order.

## 1.06 RECORD DRAWINGS

A. The CONTRACTOR shall maintain full size (22"X34") field drawings to reflect the "record" items of work as the work progresses. Upon completion of the work, **the CONTRACTOR shall prepare a record set of drawings on full-size, reproducible material and an electronic file in .DWG format (AutoCAD, Version 2013)**. Electronic file of the design drawings on compact disk will be furnished to the CONTRACTOR by the CONSULTANT for this purpose.

B. At a minimum the record drawings shall be reviewed on the 20<sup>th</sup> working day of every third month, or more often, as deemed necessary by the CONSULTANT and/or the PROGRAM MANAGER, after the month in which the final Notice-to-Proceed is given as well as on completion of the WORK. Failure to maintain the record drawings up-to-date shall be grounds for withholding monthly progress payments until such time as the record drawings are brought up-to-date.

C. Record drawings shall be accessible to the COUNTY at all times during construction period.

D. The cost of maintaining record changes, and preparation of the Record Drawings shall be included in the unit prices bid for the affected items. Upon completion of the WORK, the CONTRACTOR shall furnish the CONSULTANT and/or the PROGRAM MANAGER the reproducible recent Drawings and electronic files. Pay request quantities must match as-builts. The completed Record Drawings shall be delivered to the CONSULTANT and/or the PROGRAM MANAGER at least 48 hours prior to final inspection of the work. **The Final Inspection will not be conducted unless the Record Drawings are in the possession of the CONSULTANT and/or the PROGRAM MANAGER.**

E. The completed (or final) Record Drawings shall be certified by a Professional Land Surveyor registered in the State of Florida retained by the CONTRACTOR. This certification shall consist of the surveyor's embossed seal bearing the surveyor's registration number, signature and date on each sheet of the drawing set. In addition, the key sheet, cover sheet or first sheet of the plans set shall list the business address and telephone number of the surveyor.

F. As applicable, representative items of work that must be shown on the record drawings as verified, changed or added are shown below:

1. Plans:
  - a. Structure types, location with grade of rim and flow-line elevations.
  - b. Sewer type, length, size and elevations.
  - c. Utility type, length, size and elevation in conflict structures.
  - d. All maintenance access structures, valves and hydrants within right-of-way.
  - e. Grade elevations.
  - f. Sewer laterals shall be stationed between maintenance access structures.
2. Signing Plans: Sign location where installed, if different from plans.
3. All as-builts for parking lot, roadways and swales areas shall consist of the following:
  - a. As-builts shall be taken at all locations where there is a finish grade elevation shown on the design plans.
  - b. As-builts shall be taken on all paved and unpaved swales prior to placement of topsoil/sod, at enough intermediate points to confirm slope consistency and conformance to the plan details.
4. If a change is made via field order or deviation to any structure, pipeline, etc., a new location shall be noted on the as-builts. The CONSULTANT and/or the PROGRAM MANAGER may request additional as-built information to verify horizontal or vertical locations.
5. Every utility (storm, gas, telephone, power, water, forcemain, etc.) encountered and/or crossing drainage, water or sanitary sewer facilities (whether it is a conflict or has sufficient clearances) shall be located, both horizontally and vertically. The clearance between the facilities horizontal and vertical, shall be noted. For instance, if a 2-inch gas main crosses over the top of a 6-inch potable water main, the bottom elevation of the gas main shall be noted and the top of the watermain shall be noted. The difference between the two utilities will be the clearance between the two utilities. Parallel mains shall note the clearance between the outside of the mains. It shall be the CONTRACTOR's responsibility to note these crossings on a daily basis and insure that this information is reflected on the Record Drawing plan set. Crossings will not require state plane coordinates.
6. Pipelines that are "dead" or have been abandoned shall be located during construction and shall be annotated on the Record Drawing Plans.
7. As-built survey drawings shall meet applicable minimum technical standards for land surveys as outlined in Section 61G17 of the Florida Administrative Code.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 01730 - OPERATIONS AND MAINTENANCE DATA

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENTS

A. The CONTRACTOR shall compile product data and related information appropriate for COUNTY's maintenance and operation of products furnished under this Contract, as applicable.

B. The CONTRACTOR shall instruct COUNTY personnel in maintenance of products and in operation of equipment and systems, as applicable.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

A. All applicable sections of the Specifications.

B. General Conditions.

#### 1.03 QUALITY ASSURANCE

A. The CONTRACTOR shall ensure that data shall be prepared by personnel (retained by the Contractor):

1. Trained and experienced in maintenance and operation of described products.
2. Familiar with requirements of this Section.
3. Skilled as technical writer to the extent required to communicate essential data.
4. Skilled as draftsman/technician competent to prepare required drawings.

#### 1.04 FORM OF SUBMITTALS

A. Prepare data in the form of an instructional manual for use by COUNTY's personnel.

B. Format:

1. Size: 8-1/2 in. x 11 in.
2. Paper: Manufacturer's original printed data, or neatly typewritten.
3. Drawings: 22-inch to 34-inch prints
  - a. Provide reinforced punched binder tabs, bind in with text.
  - b. Fold larger drawings to size of text pages.
4. Provide fly-leaf for each separate product, or each piece of operating equipment.
  - a. Provide typed description of product, and major component parts of equipment.
  - b. Provide indexed tabs.
5. Cover: Identifying each volume with typed or printed title: "OPERATING AND MAINTENANCE INSTRUCTIONS." List:
  - a. Title of the Project.
  - b. Identification of separate structure as applicable.
  - c. Identification of general subject matter covered in the manual.

C. Binders:

1. Commercial quality three-ring binders with durable and cleanable plastic covers.
2. Maximum ring size: 1 inch.
3. When multiple binders are used, correlate the data into related consistent groupings.

1.05 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order.

1. CONTRACTOR, name of responsible principal, address and telephone number.
2. A list of each product required to be included, indexed to content of the volume.
3. List, with each product, name, address and telephone number of:
  - a. SUBCONTRACTOR or installer.
  - b. Maintenance CONTRACTOR, as appropriate.
  - c. Identify area of responsibility of each.
  - d. Local source of supply for parts and replacement.
4. Identify each product by product name and other identifying symbols as set forth in the Contract Documents.

B. Product Data:

1. Include only those sheets which are pertinent to the specific product.
2. Annotate each sheet to:
  - a. Clearly identify specific product or part installed.
  - b. Clearly identify data applicable to installation.
  - c. Delete references to inapplicable information.

C. Drawings:

1. Supplement product data with drawings as necessary to clearly illustrate:
  - a. Relations of component parts of equipment and systems.
  - b. Control and flow diagrams.
2. Coordinate drawings with information in Product Record Documents to assure correct illustration of completed installation.
  - a. Do not use Project Record Documents as maintenance drawings.

D. Written text, as required to supplement product data for the particular installation:

1. Organize in consistent format under separate heading for different procedures.
2. Provide logical sequence of instructions for each procedure.

E. Copy of each guarantee, bond and service contract issued.

1. Provide information sheet for COUNTY's personnel, give:
  - a. Proper procedures in event of failure.
  - b. Instances which might affect validity of guarantee or bonds.

1.06 MANUAL FOR MATERIALS AND FINISHES

A. Submit two copies of complete manual in final form.

B. Content, for architectural products, applied materials and finishes:

1. Manufacturers' data, giving full information on products.
  - a. Catalog number, size and composition.
  - b. Color and texture designations.
  - c. Information required for re-ordering special manufactured products.
2. Instructions for care and maintenance.
  - a. Manufacturer's recommendations for types of cleaning agents and methods.
  - b. Cautions against cleaning agents and methods which are detrimental to product.
  - c. Recommended schedule for cleaning and maintenance.

C. Content, for moisture-protection and weather-exposed products:

1. Manufacturer's data, giving full information on products.
  - a. Applicable standards.
  - b. Chemical composition.
  - c. Details of installation.
2. Instructions for inspection, maintenance, and repair.

D. Additional requirements for maintenance data: Respective sections of Specifications.

#### 1.07 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit three copies of complete manual in final form.

B. Content, for each unit of equipment and system, as appropriate.

1. Description of unit and component parts.
  - a. Function, normal operating characteristics, and limiting conditions.
  - b. Engineering data and tests.
  - c. Complete nomenclature and commercial number of replaceable parts.
2. Operating procedures:
  - a. Start-up, break-in, routine and normal operating instructions.
  - b. Regulation, control, stopping, shut-down and emergency instructions.
  - c. Summer and winter operating instructions.
  - d. Special operating instructions.
3. Maintenance Procedures:
  - a. Routine operations.
  - b. Guide to "Trouble-shooting."
  - c. Disassembly, repair and reassembly.
  - d. Alignment, adjusting and checking.
4. Servicing and lubrication schedule.
  - a. List of lubricants required.
5. Manufacturer's printed operating and maintenance instructions.
6. Description of sequence of operation by control manufacturer.
7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
8. As-installed control diagrams by controls manufacturer.

9. Each CONTRACTOR's coordination drawings.
  - a. As-installed color coded piping diagrams.
10. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
12. Other data as required under pertinent sections of Specifications.

C. Content, for each electric and electronic system, as appropriate:

1. Not applicable.

D. Prepare and include additional data when the need for such data becomes apparent during instruction of COUNTY's personnel.

E. Additional requirements for operating and maintenance data: Respective section of Specifications.

#### 1.08 SUBMITTAL SCHEDULE

A. Submit two copies of preliminary draft of proposed formats and outlines of contents prior to start of work.

1. The CONSULTANT will review draft and return one copy with comments.

B. Submit one copy of completed data in final form fifteen days prior to final inspection or acceptance.

1. Copy will be returned after final inspection or acceptance, with comments.

C. Submit specified number of copies of approved data in final form 10 days after the above said copy with comments is received.

#### 1.09 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final inspection or acceptance, fully instruct COUNTY's designated operation and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.

B. Operating and maintenance manual shall constitute the basis of instruction.

1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

– END OF SECTION -

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## SECTION 01740 - GUARANTEES AND BONDS

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT

A. The Contractor shall:

1. Compile specified guarantees and bonds.
2. Compile specified services and maintenance contracts.
3. Review submittals to verify compliance with the Contract Documents.
4. Submit to the CONSULTANT and/or the PROGRAM MANAGER Representative for CONSULTANT review and transmittal to COUNTY.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. All applicable sections of the Specifications.
- B. General Conditions.

#### 1.03 SUBMITTAL REQUIREMENTS

A. Assemble guarantees, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and Subcontractors.

B. Number of original signed copies required: Three each.

C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.

1. Product or work item.
2. Firm, with name of principal, address and telephone number.
3. Scope.
4. Date of beginning warranty, bond or service and maintenance contract.
5. Duration of warranty, bond or service maintenance contract.
6. Provide information for COUNTY personnel:
  - a. Proper procedure in case of failure.
  - b. Instances which might affect the validity of warranty or bond.
7. CONTRACTOR, name of responsible principal, address and telephone number.

#### 1.04 FORM OF SUBMITTALS

A. Prepare in triplicate packets.

B. Format:

1. Size 8-1/2 in. x 11 in., punch sheets for standard 3-ring binder. Fold larger sheets to fit into binders.
2. Cover: Identify each packet with typed or printed title "GUARANTEES AND BONDS". List:

- a. Title of Project.
- b. Name of CONTRACTOR.

C. Binders: Commercial quality, three-ring, with durable and cleanable plastic covers.

#### 1.05 TIME OF SUBMITTALS

A. Make submittals within ten days after Date of Substantial Completion, prior to final request for payment.

B. For items of work, where acceptance is delayed materially beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of guarantee period.

#### 1.06 SUBMITTALS REQUIRED

A. Submit guarantees, bonds, service and maintenance contracts for periods other than one year as specified in respective specific sections of the Specifications, (if applicable).

B. The General CONTRACTOR shall submit on the entire Project the one year guarantee in accordance with the requirements set forth in **Exhibit H, Terms & Conditions, Article 21, WARRANTY**, (except for certain portions of the work, where longer periods of time are specified in the specific applicable sections of the Specifications).

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

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## SECTION 02072

### REMOVALS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section Includes: Removal work as required on drawings and as specified in this section and repair of damage to existing facilities to remain.
- B. Related Sections:
  - 1. 02200 - Earthwork.

##### 1.02 SUBMITTALS

- A. Removal Procedure for Site Work: If requested by A/E, submit proposed procedure of removal work.
  - 1. Procedure shall provide:
    - a. Means for safe conduct of work, careful removal, and disposition of materials specified to be salvaged for Collier County Growth Management Department.
    - b. Protection of property to remain undisturbed.
    - c. Timely disconnection of utility services.
  - 2. Procedure shall include a detailed description of methods and equipment to be used for each operation, and sequence of each operation.

##### 1.03 PROJECT/SITE CONDITIONS

- A. Existing sidewalks, paving, fences, landscaping, or other existing work not specified for removal that is temporarily removed, damaged, exposed, or disturbed or altered by removal work shall be repaired, patched, or replaced at no cost to the Collier County Growth Management Department.
- B. Existing Trees:
  - 1. Do not damage trees within project site specified to be left in place.
  - 2. Protect trees indicated to remain as required with acceptable barricades or

temporary fencing during construction.

C. Environmental Protection:

1. Dust Control:

- a. Control dust resulting from demolition to prevent spread of dust to avoid creation of a nuisance in surrounding areas.
- b. Do not use water to control dust when it will result in flooding or pollution or other hazardous or objectionable conditions.

2. Fire: Do not dispose of demolished materials or trees, etc., by burning.

3. Explosives: The use of explosives is not allowed.

D. Site Inspection: Inspect entire project area to determine extent of removal, salvage, and patching work.

1.04 SCHEDULING

A. Utility Companies:

1. Coordinate with applicable utility companies and the Collier County Growth Management Department for utility line removal, if any, and related capping and utility shutdowns required by such removal work.

B. Removals:

1. Assign removals to appropriate trades under respective sections, best suited for this type of work to avoid unnecessary damage due to the efforts of unskilled workers.

PART 2 PRODUCTS

2.01 DISPOSITION OF MATERIALS NOT INDICATED OR SPECIFIED TO BE SALVAGED

A. Title to Materials:

1. Title to materials and equipment to be removed, except salvageable equipment to be retained by the Collier County Growth Management Department, is vested in the Contractor upon receipt of Notice to Proceed.

- a. The Collier County Growth Management Department will not be responsible for condition, loss of, or damage to such materials and equipment after receipt by Contractor of Notice to Proceed.
- B. Remove excess materials and equipment not specified to be salvaged from site and premises upon completion of removal operations.

PART 3 EXECUTION

3.01 REMOVAL WORK

- A. Perform removal work indicated on drawings or as specified in an orderly manner according to accepted construction schedule.
  - 1. Protect work specified to remain.
  - 2. Protect adjacent areas from damage or undue dirt and dust.
  - 3. Wet down debris or rubbish, if necessary, to minimize flying dust.

3.02 EXISTING UTILITIES

- A. Utility work shall be performed according to these specifications for the particular type of utility service involved.

3.03 EXISTING WORK

- A. Existing work may be cut, altered, removed, or temporarily removed and replaced as necessary for the performance of work required.
  - 1. Exception: Unless otherwise indicated on drawings, do not cut or alter structural members without authorization by the A/E.
- B. Filling: Holes and other hazardous openings created by removal work shall be filled following procedures specified in Section 02200 - Earthwork.
- C. Restore damaged or defaced areas or items, remaining in place, of work performed under this Contract to comparable conditions existing before the work.

END OF SECTION

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## **SECTION 02110**

### **SITE CLEARING**

#### **PART 1 - GENERAL**

##### **1 RELATED DOCUMENTS**

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

##### **2 SUMMARY**

A. This Section includes the following:

1. Protection of existing trees.
2. Removal of trees and other vegetation.
3. Topsoil stripping.
4. Clearing and grubbing.
5. Removing above-grade improvements.
6. Removing below-grade improvements.

##### **3 PROJECT CONDITIONS**

A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.

B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.

1. Protect improvements on adjoining properties and on The Owner's property.
2. Restore damaged improvements to their original condition, as acceptable to the Owner.

C. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

1. Water trees and other vegetation to remain within limits of contract work as required to

- maintain their health during course of construction operations.
2. Provide protection for roots over 1-1/2 inch diameter that are cut during construction operations. Coat cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.
  3. Repair or replace trees and vegetation indicated to remain which are damaged by construction operations, in a manner acceptable to Engineer/Architect. Employ a licensed arborist to repair damages to trees and shrubs.
  4. Replace trees which cannot be repaired and restored to full-growth status, as determined by arborist.
- D. Salvable Improvements: Carefully remove items indicated to be salvaged, and store on The Owner's premises where indicated or directed.

## **PART 2 - PRODUCTS (Not Applicable)**

## **PART 3 - EXECUTION**

### **1 SITE CLEARING**

- A. General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions as required to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. "Removal" includes digging out and off-site disposing of stumps and roots.
1. Cut minor roots and branches of trees indicated to remain in a clean and careful manner, where such roots and branches obstruct installation of new construction.
- B. Topsoil: Topsoil is defined as black / brown silica sand in a depth not exceeding 24 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.
1. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material.
    - a. Remove heavy growths of grass from areas before stripping.
    - b. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to root system.
  2. Stockpile topsoil in storage piles in areas directed by owner. Construct storage piles to provide free drainage of surface water. Cover storage piles, if required, to prevent wind erosion.

3. Dispose of unsuitable or excess topsoil same as specified for disposal of waste material.
- C. Clearing and Grubbing: Clear site of trees, shrubs and other vegetation, except for those indicated to be left standing.
1. Completely remove stumps, roots, and other debris protruding through ground surface.
  2. Use only hand methods for grubbing inside drip line of trees indicated to remain.
  3. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
    - a. Place fill material in horizontal layers not exceeding 6 inches loose depth, and thoroughly compact to a density equal to adjacent original ground.
- D. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction.
1. Abandonment or removal of certain underground pipe or conduits may be indicated on mechanical or electrical drawings, and is included under work of related Division 15 and 16 sections. Removal of abandoned underground piping or conduit interfering with construction is included under this Section.

## 2 DISPOSAL OF WASTE MATERIALS

- A. Burning on The Owner's Property: Burning is not permitted on The Owner's property.
- B. Removal from The Owner's Property: Remove waste materials and unsuitable or excess topsoil from The Owner's property.

## **PART 4 MEASUREMENT AND PAYMENT**

### 4.01 MEASUREMENT

Work under this Section will not be separately measured for payment.

### 4.02 PAYMENT

Work under this Section will be paid for as part of the Contract lump sum price for Division 2 – Site Work.

**END OF SECTION**

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## SECTION 02200

### EARTHWORK

#### PART 1 GENERAL

##### 1.01 SUMMARY

Section Includes: Earthwork for maintenance vehicle enclosure, and other grassed areas.  
Related Sections:

1. 02935 Sodding.

##### 1.02 REFERENCES

American Society for Testing and Materials (ASTM):

1. C136-96a Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. D422-63 (90) Test Method for Particle-Size Analysis of Soils.
3. D698-91 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort.
4. D1556-90 (96) Test Method for Density of Soil in Place by the Sand-Cone Method.
5. D1557-91 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
6. D2487-93 Classification of Soils for Engineering Purposes (Unified Soil Classification System).
7. D2922-91 Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
8. D2974 Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Materials.
9. D4972 Test Method for pH of Soils.

Collier County Standards.

Florida Statute, Chapter 556, Underground Facility Damage Prevention and Safety.

##### 1.03 QUALITY ASSURANCE

Trench Safety Act:

1. Comply with the Trench Safety Act, sections 553.60 through 553.64 Florida Statutes.

#### **1.04 DEFINITIONS**

"Satisfactory Fill Materials" include materials classified in ASTM D2487 as GW, GP, SW and SP properly worked by Contractor to obtain optimum moisture and compaction.

"Unsatisfactory Materials" include materials other than "Satisfactory Fill Materials". Materials of any classification determined by testing laboratory as too wet or too soft for providing a stable foundation for structure, paving, and walks will be classified as "unsatisfactory".

Degree of Compaction: Required compaction is expressed as a percentage of maximum density obtained by test procedures of ASTM D1557.

#### **1.05 SUBMITTALS**

Contractor to submit the following:

1. Compaction Tests
2. Stabilized Subgrade Composition and Density.
3. Testing Laboratory contact information.

#### **1.06 SITE CONDITIONS**

The Contractor shall retain a licensed geotechnical engineering laboratory to provide testing and make recommendation for the preparation of the subgrade at the maintenance vehicle enclosure area.

The maintenance vehicle enclosure area shall be elevated from debris, organic materials and any other unsuitable material as per applicable codes and regulations. Once all unsuitable material has been cleared the site shall be backfilled with proper materials as per geotechnical engineers' recommendations.

Subsurface data, including soil borings provided in this manual are presented only as information available indicating conditions found and limited to exact locations and shall not be interpreted as an indication of conditions that may actually develop during construction.

- Neither the Owner nor the A/E Consultant will be held responsible for variations found to exist between the subsurface data referred to above and actual field conditions that may develop during construction.

Contractor shall locate indicated existing utility lines or substructures that may be affected by this Project, and shall be responsible for any damage or injury they may sustain as a result from working on or near these existing utilities or substructures not specified to be removed or demolished.

## **PART 2 EXECUTION**

### **2.01 INSPECTION**

Do not proceed with the work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

### **2.02 GENERAL**

**Public Safety:** Accomplish work in a manner providing for the safety of the public and workers and the protection of property.

**Construction:** Do not close, obstruct, or store material or equipment in streets, sidewalks, or passageways without a permit according to local ordinances, regulations, codes, and the Owner's approval.

**Interference:** Conduct operations with minimum interference with roads and other facilities.

**Temporary Structures:** Remove temporary structures when no longer required.

**Repair:**

1. Clean up, repair, or replace property damage arising in connection with this Contract.
2. Patch and repair work shall match existing and be performed in a neat and professional manner by workers skilled in the trade involved.
3. This applies to damage to the newly graded areas within the construction area limits and damage to adjacent properties by eroded materials.

**Erosion Repair:**

4. Take every precaution and temporary measure to prevent damage from erosion of freshly graded areas.
  - a. Repair and reestablish grades to required elevations and slopes where settlement or washing occurs before acceptance.
  - b. This applies to damage to the newly graded areas within the building area limits and damage to adjacent properties by eroded materials

### **2.03 LOCATIONS AND ELEVATIONS**

Be responsible for surveys, measurements, and layouts required for proper execution of the work.

1. Lay out lines and grades from existing survey control system and as shown on drawings.

Locate by stake and mark locations and elevations of following:

2. Elevations of existing earth cut and fill.
3. Final grades for landscape contours.
4. Other items as required to execute work as specified.

## 2.04 CLEARING AND GRUBBING

Within limits of areas designated for grading and site construction work, remove trees, brush, stumps, wood debris, and other deleterious materials not required to remain as part of finished work.

Remove grass, plants, vegetation, and organic material from same area.

Burning of materials is not allowed on the site.

Remove accumulated material daily or as necessary to prevent fire hazard condition.

## 2.05 STRIPPING

Strip turf, organic material, surface litter, rubble, and overburden for entire depth of root system of grass or other vegetation within areas indicated on site plan.

## 2.06 EXCAVATION

Begin excavation after stripping, clearing, and grubbing has been completed.

Excavate to grades required to accommodate the proposed construction.

Excavate in such a manner that quick and efficient drainage of storm water will occur.

Remove "unsatisfactory materials" encountered from proposed maintenance vehicle enclosure area.

## 2.07 FILLING, BACKFILLING, AND COMPACTION

Compaction:

1. Compact existing earth surfaces (exclude rock) after excavation, backfilling, and compaction of said areas to levels required with "Suitable Backfill Materials".
  - a. Compact with equipment suited for soil compaction.
  - b. Moisten or aerate material, as necessary, to provide moisture content to facilitate obtaining specified compaction with equipment being used.
  - c. Compact each layer to not less than percentage of maximum density specified below, determined according to ASTM D1557, Method D.
  - d. Insure compaction of previously prepared fill areas has been maintained before placing new layers.

<u>Location</u>	<u>Percentage (Min.)</u>
1) Under cellular confinement areas, top 12 inches, each layer.	95
2) Under cellular confinement areas, below 12 inches, each layer.	90
3) Under landscaped areas, each	80-85

layer.

**Filling and Backfilling:**

2. Materials: "Satisfactory Fill Materials" shall be used in fills and backfills.
3. Place "Satisfactory Fill Material" in horizontal layers not exceeding 12 inches in loose depth.
  - a. Compact as specified in this section.
  - b. Do not place materials on muddy surfaces.

**Reconditioning of Subgrade:**

4. Where approved compacted subgrades are disturbed by the Contractor's subsequent operations or adverse weather, scarify and compact the subgrade as specified to required density before further construction occurs.
5. Use power driven hand tampers for re-compaction over underground utilities

**Backfilling:**

6. Do not begin backfilling until:
  - a. Construction below finished grade has been accepted by the County.
  - b. Underground utilities systems have been inspected, tested, and accepted.
  - c. Excavation is cleaned of trash and debris.
7. Bring backfill to indicated finished grades.
8. Backfill materials and compaction shall be as specified.
9. Do not place backfill in wet areas.
10. Compact the area remaining by power-driven hand tampers suitable for material being compacted.

Protection: Settlement or washing occurring in backfilled areas before acceptance of work shall be repaired and grades reestablished to required elevation and slope.

**2.08 TESTING**

The Owner will hire services of a Testing Laboratory to perform specified tests, inspections, instrumentation and inspection of work. Contractor will be responsible to coordinate all work with testing laboratory.

Tests of Materials:

1. Soil Classification:
  - a. One test from each type of material encountered or proposed to be used.
2. Laboratory Tests for Moisture-Content and Density According to ASTM D1557:
  - a. One test for each material encountered or proposed to be used.

Fill and topsoil mixture may be inspected at any stage of operation to determine compaction characteristics, densities and freedom from organic and plastic materials.

**2.09 DEWATERING**

1. Dewater excavations for inspection.
2. Keep excavations free of water while backfilling and construction therein takes place.
3. Dispose of water resulting from dewatering operations in accordance with city, county, state and federal regulations.
4. Conduct operations so that storm water runoff sediment is not discharged to the adjacent waterways, sewers, streets and adjacent properties.

**PART 4 MEASUREMENT AND PAYMENT**

4.01 MEASUREMENT

Work under this Section will not be separately measured for payment.

4.02 PAYMENT

Work under this Section will be paid for as part of the Contract lump sum price for Division 2 – Site Work.

**END OF SECTION**

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## SECTION 02271

### RIP RAP

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section Includes: The requirements for the supply and installation of riprap to the lines, grades, and dimensions shown on the drawings.
- B. Related Sections:
  - 1. 02200 - Earthwork.
  - 2. 02270 – Erosion Control

#### PART 2 PRODUCTS

##### 2.1 Riprap

Riprap shall consist of durable, hard field stone or rough, unhewn quarry stone of approximately rectangular shape. The stones shall be reasonably free from cracks, seams, and other defects that may cause deterioration and they shall be reasonably free from earth and other foreign materials. The riprap shall be well graded with a maximum individual stone weight of 75 pounds; minimum stone weight will be 4 pounds. Riprap shall meet FDOT Section 530 gradation requirements.

##### 2.2 Geotextile fabric

Geotextile fabric underliner shall be non-woven, Type D-3. Geotextile polypropylene fibers shall allow high water flow rates while providing excellent soil retention. Fibers shall be inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. (I.E. use Mirafi 140N underlines, or an approved substitute).

#### PART 3 EXECUTION

- A. Schedule and conduct construction operations in such a manner and sequence that erosion on the project site is minimized.
- B. Excavate and prepare the subgrade of areas to receive riprap to the lines, grades, and cross sections shown on the drawings. Refer to contract drawings 01 (General Notes – Rip Rap Notes); and 06 (Site Details – Bank Stabilization Detail) for additional notes



and requirements.

- C. Geotextile fabric shall be installed as shown on the drawings.
- D. Place the riprap to conform to the class, thicknesses, slopes, lines, and grades shown on the drawings. Stone may be placed by mechanical methods, augmented by hand placing where necessary, provided that when the riprap is completed it forms a properly graded, dense, neat layer of stone.
- E. Place riprap from the bottom of a slope upward, with the larger stones being placed in the lower courses. Fill open joints with spalls, and thoroughly ram them into place. The variation between the tops of adjacent stones shall be no greater than 3 inches.

END OF SECTION

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## SECTION 02280

### SOIL TREATMENT

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section Includes: Glyphosate herbicide application to areas as indicated on drawings and specified in this section.
- B. Use of chlordane, heptachlor, aldrin, dieldrin and chlorpyrifos class of chemicals are not allowed.
- C. Related Sections:
  - 1. 02200 - Earthwork.

##### 1.02 SUBMITTALS

- A. Submit the following for review before starting work:
  - 1. Product data, including manufacturer's specifications, chemical analysis, with recommended dilution, application directions, and safety precautions.
  - 2. Sample copy of applicator's warranty for review.
  - 3. Applicator's experience evidence with copies of current local and state licenses and current Certified Operator-in-Charge certificate.

##### 1.03 QUALITY ASSURANCE

- A. Work shall be done by a bonded Contractor whose principal business is herbicide treatment and can show evidence of at least 5 years of successful operation in this field.

##### 1.04 PROTECTION

- A. To avoid surface flow or overspray of toxicant from application site, do not apply soil poisons when soil or fill is excessively wet or after heavy rains.
- B. Unless treated areas are to be immediately covered, take precautions to prevent disturbance of treatment by human or animal contact.
- C. Comply with applicable laws, codes, ordinances of Federal, State, and local regulatory agencies having jurisdiction over use of herbicides.
- D. Provide warning signs and instruct workers to use protective measures for their safety.

##### 1.05 WARRANTY

- A. Upon completion of soil treatment and as a condition of substantial completion, furnish the Owner with a written warranty, from the applicator, which shall provide that:

1. Application was made at concentration, rates, and methods complying with these specifications and as called out on project's General Notes sheet.

## **PART 2 PRODUCTS**

### 2.01 MATERIALS

- A. Herbicide (glyphosate 4 lbs/ per gallon):

1. Rodeo, Aquamaster, Glypo, or equivalent.

## **PART 3 EXECUTION**

### 3.01 EXAMINATION

- A. Do not proceed with the work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

### 3.02 APPLICATION

- A. Follow manufacturer's specifications for product provided.

### 3.03 CLEAN UP

- A. Improper disposal of herbicide is a violation of federal law. Comply with manufacturer's instructions for disposal of these materials and empty containers. Do not allow supplies of chemicals to remain on site unattended.

## **PART 4 MEASUREMENT AND PAYMENT**

### 4.01 MEASUREMENT

Work under this Section will not be separately measured for payment.

### 4.02 PAYMENT

Work under this Section will be paid for as part of the Contract lump sum price for Division 2 – Site Work.

**END OF SECTION**

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## SECTION 02837

### CHAIN LINK FENCE – PVC COATED

#### PART 1 - GENERAL

##### 1.1 Summary

###### A. *Scope of Specification*

This specification prescribes the requirements for the installation of chain link fence (PVC coated) and the associated posts, rails, braces, terminal posts, gates, barbed wire, controls, and other related materials.

###### B. *Related Specifications*

The following specifications prescribe items of related Work:

02110: Site Clearing  
02200: Earthwork

Coordinate Work prescribed by this specification with Work prescribed by the above listed specifications.

###### C. *Terminology*

1. Chain Link Fence Classification: Chain link fencing shall be classified by fabric category as PVC (Polyvinyl Chloride) coated galvanized steel. Wire to be referred to as PVC coated.
2. Barbed Wire: Barbed wire for additional security shall be classified as galvanized.
3. NPS: Nominal pipe size.

##### 1.2 References

The publications listed below form part of this specification. Each publication shall be the latest revision and addendum in effect at the time of the project's execution unless noted otherwise. Except as modified by the requirements specified herein or the details of the drawings, all Work included in this specification shall conform to the applicable provisions of these publications.

**A. ASTM (American Society For Testing and Materials)**

1. ASTM A116 Specification for Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric
2. ASTM A120 Specification for Pipe - Steel, Black, and Hot Dipped Zinc-Coated (Galvanized) Welded and seamless, for Ordinary Uses
3. ASTM A121 Specification for Zinc-Coated (Galvanized) Steel Barbed Wire
4. ASTM A123 Specification for Zinc Hot-Dipped (Galvanized) Coatings on Iron and Steel Products
5. ASTM A143 Recommended Practice for Safeguarding Against Embrittlement of Hot Dipped (Galvanized) Structural Steel Products and Procedure for Detecting Embrittleness
6. ASTM A153 Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware
7. ASTM A392 Specification for Zinc-Coated Steel Chain Link Fence Fabric
8. ASTM A475 Specification for Zinc-Coated Steel Wire Strand
9. ASTM A525 Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process
10. ASTM A570 Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled Structural Quality
11. ASTM F567 Practice for Installation of Chain Link Fence
12. ASTM F626 Specification for Fence Fittings
13. ASTM F668 Specification for PVC (Polyvinyl Chloride) Coated Steel Chain Link Fence Fabric
14. ASTM F669 Specification for Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence Fabric
15. ASTM F934 Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials
16. ASTM F1083 Specification for Pipe, Steel, Hot-dipped, Zinc coated (Galvanized) Welded for Fence Structures

**B. OSHA (Occupational Safety and Health Administration)**

1. OSHA Construction Industry Standard, Title 29, Code of Federal Regulations, Part 192, Safety and Health Regulations for Construction.

1.2 Storage and Protection

A. Store materials 12 inches off the ground or slab by using wood blocking or other approved materials.

1.3 Scheduling and Sequencing

The contractor shall assume responsibility for proper scheduling of fence installation with the removal of existing fence in order to provide continuous security to adjacent fenced areas.

## **PART 2 - PRODUCTS**

### **2.1 Materials**

#### **A. General**

Fence fabric, posts, top rail, tension wire, corner posts, barbed wire, and appurtenances shall conform to the ASTM codes and standards for the appropriate type of materials as listed under Section 1.2 of this specification, and more specifically listed in the sections below.

#### **B. Materials shall be uniform, consistent, and meet the following requirements:**

1. Fabric shall be 72 inches high (or adjust to match existing fence section), ASTM F668, 7 mils of thermally bonded PVC over 0.30 ounces zinc substrate; 2 inch mesh 9 gage wire (0.148 inches in diameter); with the top and bottom selvages twisted and barbed. Color shall be in accordance to ASTM F934, (Black).

#### **2. Line Posts**

a. For fabric up to 8 feet high, line posts shall be C-section rolled from steel conforming to ASTM A570, Grade 45, 1.875 inches by 1.625 inches continuous coated in accordance with ASTM F669 and primed to receive 10 to 15 mils thermal fusion coating of PVC.

#### **3. End Corner and Pull Posts**

a. End corner and pull posts 8 feet high or less shall be C-section rolled formed from steel conforming to ASTM A570, Grade 45, coated in accordance with ASTM A525, and primed to receive 10 to 15 mils thermal fusion coating of PVC

#### **4. Top Rails**

Top rails shall conform to 1-1/4 inch NPS schedule 40 galvanized steel pipe in accordance with ASTM A525 and primed to receive 10 to 15 mils thermal fusion coating of PVC.

#### **5. Tension Wire**

Tension wire shall be 7 gage U.S. Steel wire galvanized in accordance with ASTM A116 and PVC coated of same quality, color, and process as specified for the fabric. The tension wire shall be stretched near the bottom of the fence and attached at 2 foot intervals. If top rail is not used, the tension wire shall be stretched at the top also.

#### **6. Appurtenances**

Brace bands, tension bands, and tension bars shall be fabricated of 1/8 inch by 7/8 inch



galvanized steel with galvanized steel carriage bolts and nuts as per ASTM A123. Tension bars shall be 1/4 by 3/4 inch galvanized and thermally fused PVC coated 10 to 15 mil.

#### 7. Fabric Ties

Fabric ties shall be 9 gage, Class I galvanized steel wire thermal fused and PVC coated 10 to 15 mils.

#### 8. Post Tops

One post top shall be provided for each post, with openings to permit through passage of top rail. Materials shall be pressed steel or malleable iron that is designed as watertight closure cap for tubular posts and shall be thermally fusion coated with PVC 10 to 15 mils.

#### 9. Barbed Wire

Barbed wire shall consist of 3 strands of 12-1/2 gage ASTM A121, Class III, galvanized wire with 4 point round barbs, spaced on 4 inch centers (FDOT Index 802).

#### 10. Gates

Gate materials such as fabric, bolts, nuts, tension bars, and barbed wire, shall be consistent with fence materials. Gates shall consist of the following types:

- Single and double swing gates
- (Refer to Drawings for types and locations)

Gates shall be manually operated. Shop drawings for gates over 12 feet wide shall be submitted for approval, when required.

### **PART 3 - EXECUTION**

#### 3.1 Examination

The physical locations of features such as fence lines, gates, terminal posts shall be in accordance with the plans. Removal of trees, shrubs, or landscape areas is subject to prior approval unless specifically shown to be removed on the drawing.

#### 3.2 Preparation

Provide a reasonably smooth profile at the fence line. The bottom of the fence shall not be more than 2 inches above the finished ground line. Where the fence crosses features such as streams and drainage ditches and it is impractical to conform the fence to the ground contour, the fence shall span the depression, unless otherwise shown on the plans. Close the space below the bottom of the fence with extra fence fabric or barbed wire. If extra length fence posts are required at such

locations, they shall be furnished and installed in lieu of standard length posts, together with any intermediate posts, stakes, braces, extra fabric, or wire as may be required.

### 3.3 Installation

#### A. Post spacing

Install line posts and brace posts at intervals not to exceed 9 feet. Posts shall be evenly spaced. Locate corner and terminal posts shall be as located on the construction plans. Install corner or slope posts where changes in grade exceed a 30 degree deflection.

#### B. Installation of Line, Corner, Pull, and Terminal Posts

1. Set line, corner, pull, and terminal posts vertically in cylindrical concrete foundation in accordance with the schedule in Table 1 and in accordance with ASTM F567.

2. The exposed surface of the concrete foundation shall be smooth 1/2 inch crown, sloping away from the post. The post shall be 6 inches from the bottom of the concrete pour.

3. Holes may be hand augured or drilled. Spread soil from the excavations uniformly adjacent to the fence line or as directed by Construction Manager. If rock is encountered, drill into the rock for at least 12 inches for line posts, and 18 inches for corner or terminal posts. Drill holes 1 inch larger than the diameters. If solid rock is below soil overburden, drill to full depth required, except penetration into rock need not exceed minimum depths specified.

#### C. Setting Posts

Remove any loose and foreign materials from the sides and bottoms of the holes; moisten the soil prior to placing the concrete. Center and align posts in the holes. Place the concrete in a continuous pour in the hole around the posts, and tamp to consolidate. Check post for vertical and horizontal alignment, and secure to allow proper curing of the concrete.

1. Extend footings for gate posts to the underside of the bottom of the hinge. Keep concrete surfaces moist for at least 7 days after placement, or cure with membrane curing material or other approved method.

2. Posts that are set in sleeved holes shall be grouted in place using a non-shrink Portland cement grout approved by the engineer.

3. Prior to placing components such as fabric, rails, tension wire, and gates, ensure that the concrete has reached at least 75 percent of its design strength as prescribed on the plan details, or has cured a minimum of 7 days after setting the posts.

#### D. Rails and Bracing

1. Install the chain link fence fabric so that the posts are enclosed. Stretch the fabric taut, approximately 2 inches above the ground, and fasten securely to the posts.
2. Cut the fabric and attach each span independently at all terminal and corner posts. Use stretcher bars with fabric bands spaced at a maximum 15 inch intervals to fasten fabric to terminal posts. Use tie wire, metal bands, or other approved material, attached at maximum 15 inch intervals to fasten fabric to line posts. Fasten the top edge of the fabric to the top rail or tension wire with wire ties at intervals not exceeding 15 inches. Fasten the bottom edge of fabric to the bottom tension wire with wire ties at intervals not exceeding 15 inches.

#### E. Barbed Wire

Install barbed wire on gates to match that installed on the line fence fabric. To accommodate barbed wire, extend the end members of gates 1 foot above the horizontal section of the gate frame. Space strands uniformly and attach to frame with bands, clips, or eyebolts. Incline extension arms on line posts and corner posts away from the property enclosed at approximately 45 degrees. Stretch the strands of barbed wire to remove sag, and anchor firmly to extension arms. Use 3 strands of barbed wire.

#### F. Installing Gates

1. Install gates according to the locations, type, and size indicated on the plans.
2. Gates shall be properly braced and trussed to prevent sagging, buckling, and weaving, and shall be covered with same type of fabric as the fence. Vertical members of the gate shall carry the top of 3 strands of barbed wire. Fixed end ratchet bands shall be furnished for fastening the barbed wire. Furnish gates with necessary fittings and hardware. Latches provided for use with padlocks and hinges shall allow swing gates to swing 180 degrees. Plunger bars shall have top, bottom, and middle locking points with the middle point arranged for padlocking.
3. Install gates plumb, level, and secure for the full opening without interferences.
4. Install ground items set in concrete in accordance with gate manufacturer's recommendations. Inspect all parts and attachments for defects, and install, lubricate, and adjust equipment to ensure smooth operation.

#### G. Miscellaneous Installation

Use U-shaped tie wires, conforming to the diameters of pipe, that clasp the pipe and fabric firmly with ends twisted at least 2 full turns.

1. Bend ends of exposed wires to minimize hazards to persons or clothing.
2. Install nuts for fasteners on tension bands and hardware bolts on the side of the fence opposite the fabric. The ends of bolts, once secure and checked for smooth operation, shall be peened to prevent removal of nuts.
3. Repair (fence fabric, posts, etc.) coatings damaged in the field with methods and techniques as recommended by the manufacturer.

### 3.4 Grounding

#### A. Fence

Fence shall be grounded at each side of every gate, at point 150 feet each side of overhead power-transmission lines, at intervals of every 1000 to 1500 feet of length when fences are located in isolated places, and every 500 to 750 feet when in close proximity (100 feet or less) to public roads, highways, and buildings. Fence shall be grounded at locations where the fence alignment changes more than 15 degrees.

#### B. Fence Posts

Each fence post to be grounded shall be connected to a ground electrode consisting of a copper-clad steel ground rod 3/4 inch in diameter and 10 feet long, driven not less than 11 feet into the ground with rod located at the fence line or as near the fence line as is practicable. Connection of fence post to ground electrode shall be made below grade with not less than No. 4 AWG stranded-copper wire with TW insulation by approved molded exothermic weld process or approved clamp-type fitting of copper on fence post and electrode. Each gate panel shall be bonded with a flexible bond strap to its gate post.

### 3.5 Clearing

Where the area occupied by the fence outside the limits of clearing and grubbing for the project, the contractor shall perform clearing to a width of at least 2 feet on each side of the fence line, as necessary to allow a proper fence installation.

### 3.6 Protection

A guarantee shall be provided for all materials, installation, and workmanship to be free of defects for a period of 1 year from the date of acceptance unless noted otherwise in the contact documents. Any defect in installation or workmanship shall be repaired, and defective materials shall be replaced during the guarantee period without any cost to the owner.

**PART 4      Attachments**

**Not applicable.**

**END OF SECTION**

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## SECTION 02935

### SODDING

#### PART 1 - GENERAL

##### 1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

##### 2 SUMMARY

A. This Section includes the following:

1. Protection of existing trees.
2. Removal of trees and other vegetation.
3. Sod installation

##### 3 PROJECT CONDITIONS

A. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

1. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during course of construction operations.
2. Provide protection for roots over 1-1/2 inch diameter that are cut during construction operations. Coat cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.
3. Repair or replace trees and vegetation indicated to remain which are damaged by construction operations, in a manner acceptable to Engineer/Architect. Employ a licensed arborist to repair damages to trees and shrubs.
4. Replace trees which cannot be repaired and restored to full-growth status, as determined by a certified arborist.

## **PART 2 - PRODUCTS**

### **A. SOD:**

An “approved well established no less than 18 month old, well rooted, healthy nursery grown sod blend with a uniform color, leaf texture, and density.

## **PART 3 - EXECUTION**

### **1 SODDING**

- A. Limit preparation of areas which will be immediately sodded.
- B. Incorporate fertilizer into soil to a depth of ½ inch prior sodding.
- C. Initial watering shall provide a thoroughly wet sod and sod bed. No more than one hour shall elapse between the laying and initial watering of the sod.
- D. Sod shall be carefully placed in rows or strips evenly.
- E. Minimize traffic on newly laid sod during installation

### **2 MAINTENANCE**

- A. Begin maintenance immediately following installation of sod and continue for a period until sodded areas are established with sod knitted in place. Maintenance period shall be a minimum of 14 days.
- B. Maintenance of sodded areas shall include watering, weeding, mowing to a 2-2 ½ inch height after growth has exceeded 3 inches and prior to a 4 inch growth, and replacement and installation of sod as originally specified for sodded areas failing to survive. Clippings from mowing which mat on the grass, are to be removed.

### **3. CLEAN-UP**

- A. Perform cleaning during installation of work and upon completion
- B. Remove from site all excess materials, debris, and equipment.
- C. Repair any damage resulting from sodding operations



#### 4. ACCEPTANCE

- A. Sodded areas are healthy, even colored viable lawn is established, free of weeds, undesirable grass species, disease, and insect
- B. Sod is “knit down” to the soil so that it cannot be pulled up.
- C. Sodded areas are without scattered bare spot, dead or dormant sod.

### **PART 4 MEASUREMENT AND PAYMENT**

#### 4.01 MEASUREMENT

Work under this Section will not be separately measured for payment.

#### 4.02 PAYMENT

Work under this Section will be paid for as part of the Contract lump sum price for Division 2 – Site Work.

**END OF SECTION**

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## **SECTION 03600**

### **GROUT**

#### **PART 1 GENERAL**

##### 1.01 SCOPE

- A. Grout between steel and concrete members.

#### **PART 2 PRODUCTS**

##### 2.01 MATERIALS

- A. Grout: Masterbuilders MASTERFLOW 713 non-shrink grout, Sauerisen F-100 level fill, or Burke Company's non-ferrous, non-shrink grout, or approved equivalent.

#### **PART 3 EXECUTION**

##### 3.01 PREPARATION OF CONCRETE SURFACES

- A. Clean concrete surfaces of laitance, oil, grease, dirt, and loose particles.
- B. Saturate concrete surfaces for 24 hours prior to grouting but remove all free water just prior to grouting.

##### 3.02 FORMING

- A. Provide rigid leak-proof forms.

##### 3.03 MIXING

- A. Mix grout for 3 minutes in a paddle-type mortar mixer or other suitable mechanical mixer.
- B. Provide for continuous rapid placing.

##### 3.04 PLACING

- A. Place quickly and continuously. Do not overwork grout. Do not vibrate. Do not re-temper.
- B. Place grout from one side taking care to avoid air pockets.

**PART 4: MEASUREMENT AND PAYMENT**

4.01 MEASUREMENT:

Work under this Section will not be separately measured for payment.

4.02 PAYMENT:

Work under this Section will be paid for as part of the Contract lump sum price for Division 3 – Concrete.

**END OF SECTION**

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## SECTION 03900

### CONCRETE REPAIR

#### PART 1 GENERAL

##### 1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Crack Repairs by Epoxy Injection: Section 030132.
- B. Masonry Restoration: Section 040121.
- C. Cementitious Waterproofing: Section 071613.
- D. Water Repellent Coating: Section 071900.
- E. Joint Sealers: Section 079200.
- F. Opaque Exterior Wall Resurfacing: Section 099704.

##### 1.02 REFERENCES

- A. Except as shown or specified, the Work of this Section shall conform to the requirements of International Concrete Repair Institute (ICRI), 3166 S. River Rd., Suite 132, Des Plaines, IL 60018, (847) 827-0830, [www.icri.org](http://www.icri.org).
  - 1. ICRI Guideline No. 310.1R-2008 Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion (formerly Guideline No. 03730).

##### 1.03 SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions for factory packaged products.

##### 1.04 QUALITY ASSURANCE

- A. Field Examples: Prior to performing the Work of this Section, prepare a sample panel, or a portion of existing concrete which is to be repaired, to represent each type of rehabilitation work required. Approved samples will be used as quality standards for the Work. Maintain approved samples at the site until the Work is completed.
- B. Material Container Labels: Material containers shall bear the manufacturer's label indicating manufacturer's name, trade name of product, lot number, shelf life of product, and mix ratio (if applicable).

## **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to the site in original, sealed containers. Do not deliver materials that have exceeded shelf life limitation set forth by the manufacturer.
- B. Comply with manufacturer's printed instructions for storing and handling materials.

## **1.06 PROJECT CONDITIONS**

- A. Environmental Requirements: Comply with the product manufacturer's printed limitations and instructions.

## **PART 2 PRODUCTS**

### **2.01 COMPANIES**

- A. The Euclid Chemical Company, 19218 Redwood Rd., Cleveland, OH 44110-2799, (800) 321-7628, [www.euclidchemical.com](http://www.euclidchemical.com).
- B. Sika Corporation, 201 Polito Ave., Lyndhurst, NJ 07071, (800) 933-7452, [www.sikausa.com](http://www.sikausa.com).
- C. Kaufman Products, Inc., 3811 Curtis Ave., Baltimore, MD 21226, (800) 637-6372, [www.kaufmanproducts.net](http://www.kaufmanproducts.net).
- D. L&M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152, (800) 362-3331, [www.lmcc.com](http://www.lmcc.com).
- E. Conproco Corp., 17 Production Dr., Dover, NH 03820, (800) 258-3500, [www.conproco.com](http://www.conproco.com).
- F. BASF Building Systems, 889 Valley Park Dr., Shakopee, MN 55379, (800) 433-9517, [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).

### **2.02 MATERIALS**

- A. The following brand names are specified to establish product generic type and standard of quality. Other comparable products in the manufacturer's same product series may be required to closely fit the particular job conditions. Use appropriate product for depth of patch and temperature at time of application. More than one product may be required for a particular type of patching mortar. When a color choice is available, select the color to match adjoining concrete as closely as practicable. A bonding agent/primer and/or sealer shall be used as recommended by the patching mortar manufacturer.
- B. Cement/Acrylic/Latex Base Patching Mortars:

1. Type C-1 Patching Mortar: “Verticoat”, by The Euclid Chemical Company; “SikaTop 122 Plus” or “SikaTop 123 Plus” by Sika Corp; “Patchwell VO” or “HiCap Plus” by Kaufman Products, Inc.
  2. Type C-2 Patching Mortar: “SikaTop 121 Plus”, “SikaTop 122 Plus” or “SikaTop 111 Plus” by Sika Corp.; “Patchwell Kit”, “Patchwell Deep”, “SureFlow 040”, or “SureFlow 042” by Kaufman Products, Inc.; “Thincoat” or “Concrete Coat” by The Euclid Chemical Company;
  3. Type C-3 Patching Mortar: “Patchwell VO”, “HiCap”, “HiCap Plus” or “DressUp” by Kaufman Products, Inc.; “SikaTop 123 Plus” or “SikaTop 144” by Sika Corp.; or “Verticoat Supreme” by The Euclid Chemical Company.
- C. Epoxy Base Patching Mortars:
1. Type E-1 Patching Mortar: 100 percent solids, low modulus, low viscosity, moisture insensitive, epoxy resin and aggregate system; “Sikadur 21 Lo-Mod LV” by Sika Corporation; “Flexocrete Epoxy System” by The Euclid Chemical Company; “SurePoxy LMLV” by Kaufman Products, Inc.
  2. Type E-2 Patching Mortar: 100 percent solids, low modulus, high viscosity, moisture insensitive, epoxy resin and aggregate system; “Sikadur 23 Lo-Mod Gel” by Sika Corporation; “Flexocrete Gel” by The Euclid Chemical Company; “SurePoxy LM Gel” by Kaufman Products, Inc.;
  3. Type E-3 Patching Mortar: High modulus, medium/low viscosity, moisture insensitive, epoxy resin and aggregate system; “Sikadur 35” or “Sikadur 62” by Sika Corporation, “Duralcrete” by The Euclid Chemical Company or “SurePoxy HM”, “SurePoxy HM, Class B”, “SurePoxy HMLV”, “SurePoxy HMLV, Class B”, “SurePoxy HMSLV”, “SurePoxy HiBild” by Kaufman Products, Inc.
  4. Type E-4 Patching Mortar: High modulus, high viscosity, moisture insensitive, epoxy resin and aggregate system; “Sikadur 31 Hi-Mod Gel” or “Sikadur 31 Hi-Mod Gel SBA Slow Set” by Sika Corporation; “Duralcrete Gel” by The Euclid Chemical Company; or “SurePoxy HM Gel”, or “SurePoxy 117” by Kaufman Products, Inc.
  5. Aggregate: As recommended by the patching mortar manufacturer for the binder and application.
- D. Rapid-hardening Cementitious Patching Mortar:
1. Type R-1 Patching Mortar: “Durapatch” by L&M Construction Chemicals, Inc.; or “SikaSet Roadway Patch” by Sika Corp or “Duracrete II”, “Duracrete II HW”, “Duracrete II FR”, Duracrete II HWFR”, by Kaufman Products, Inc.;
- E. Rebar Coating: “SurePoxy HMEPL” or SurePoxy HM 12” by Kaufman Products, Inc.; “ECB” by Conproco Corp.; or “Emaco P22” or “Emaco P24” by BASF Building Systems.
- F. Cleaning Agent, Bonding Agent/Primer, Sealer/Topcoat: As recommended by the patching mortar manufacturer, including primer for the reinforcing steel and primer for the concrete substrate.
- G. Concrete and Bonding Agent (for concrete): Normal weight cast-in-place concrete and



adhesive bonding agent as specified in Section 03300.

H. Accessories:

### **PART 3 EXECUTION**

#### **3.01 PREPARATION**

- A. Protection: Cover or otherwise protect adjacent surfaces not being repaired.
- B. Surface Preparation:
  - 1. Prepare surfaces to be repaired in accordance with the product manufacturer's printed instructions and as specified.
  - 2. Cut out and remove cracked, spalled, and disintegrated concrete. Cut back to sound concrete. Cut edges of patch perpendicular to surface of patch, unless otherwise recommended by mortar manufacturer. If steel reinforcing bars are exposed, chip concrete out from behind exposed length of bars as required for a minimum clearance around circumference of bar of 3/4 inch. In addition, cut a minimum one inch length of sound concrete away from each end of exposed length of reinforcing bars.
  - 3. Clean exposed steel reinforcement; remove bits of concrete and loose rust. If reinforcement is bowed out toward surface of the concrete, bend reinforcement back from surface.
  - 4. Remove paint, oils, grease, dirt, salt deposits, laitance and other contaminants from surfaces to be patched. Use cleaning agent where required.
  - 5. Clean areas to be patched with oil-free air or water under pressure, except as otherwise recommended by the mortar manufacturer.

#### **3.02 COATING REBAR**

- A. Coat reinforcing as soon as possible after completion of surface preparation.
- B. Place reinforcement coating complying with manufacturers printed instructions.

#### **3.03 PATCHING CONCRETE**

- A. Patch concrete as soon as possible after completion of surface preparation.
- B. Mixing Patching Mortar: Comply with mortar manufacturer's printed instructions. Proportion components and sizes of aggregate as recommended by mortar manufacturer for the particular job conditions.
- C. Patch concrete in accordance with the product manufacturer's printed instructions.
  - 1. Coat contact surfaces of existing concrete and steel reinforcing with a bonding

agent/primer as recommended in the product manufacturer's instructions.

D. Bring patches out to the original surfaces in true planes. Finish patches to match texture of adjoining concrete as close as possible.

E. Cure patches in accordance with the product manufacturer's printed instructions.

### **3.04 CLEANING**

A. Clean up spatters and droppings.

### **3.05 PROTECTION**

A. Protect mortar after placement in accordance with the product manufacturer's printed instructions.

**END OF SECTION**

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## SECTION 11290

### ALUMINUM WEIR GATES

#### **PART 1 GENERAL**

##### **1.01 GATES**

The fabricated 6061-T6 aluminum gates shall be Series 5500 as manufactured by WACO Products, Inc., Baltimore, Maryland or equal. Gates shall be furnished with all necessary accessories and parts for a complete installation and shall be the latest standard product of a manufacturer regularly engaged in the production of equipment of this type. All gates shall be furnished by the same manufacturer. Upward opening gates shall be designated “slide gates” and downward opening gates shall be designated as “weir gates”.

##### **1.02 DESIGN**

Except as otherwise indicated by this specification, all gates will be designed and manufactured to meet or exceed all AWWA Standard C513, most current edition, including, but not limited to, those defining: allowable leakage, head and loading calculations, structural strength, deflection requirements, and material specifications including minimum dimensions.

Structural components shall have a minimum design safety factor of 4 with regard to ultimate tensile, compressive, and shear strength and a minimum safety factor of 2 with regard to tensile, compressive, and shear yield strength.

##### **1.03 SLIDE PLATE**

The slide plate is to be fabricated from minimum 1/4” thickness 6061-T6 aluminum plate and shapes, reinforced as required to meet the engineer’s specified design head.

Deflection under full design head will be no more than 1/360 of the span width of the gate.

##### **1.04 GUIDE FRAME & BENCH**

The guide frame is fabricated from minimum 1/4” thickness 6061-T6 aluminum extrusions and structural members to resist loads imposed by the design head. Additionally, any self-contained frame will require no additional reinforcing where it extends above the operating floor to support the operator.

The frame is extruded with an integral dovetail slot to accommodate an Ultra High Molecular Weight Polyethylene (UHMW) bearing bar on each side of the slide plate. These bearing bars are supplied mounted in the frame dovetails to reduce friction and wear between the slide/weir plate and frame faces and require no bolts or otherwise fastened retainers. Each bearing bar shall have a minimum 3/4” surface area in contact with the slide plate. UHMW polymer shall be made from black virgin resins with an

ultraviolet inhibiting formula. The UHMW bearing bar can be replaced without dismantling or loosening any portion of the frame.

On self-contained frames the bench (yoke) to support the operator is formed by two back to back structural shapes, angles or channels as loading requires, which are welded or bolted to the guide frame to provide a rigid one-piece frame assembly. The bench shall be capable of supporting all loads imparted by the operator, and shall have a deflection under full design head operation of no more than 1/360 of the span width of the gate.

For non-self-contained frames, a fabricated pedestal of the same alloy as the frame is mounted on the operating floor or over-hung off of a wall at the operating level by means of an offset wall bracket. The pedestal shall be capable of supporting all loads imparted by the operator.

### **1.05 INVERT**

Slide gate: The slide gate frame invert shall be a flush-bottom design formed by a neoprene block installed within a groove with an integral keeper. The invert frame member shall be a one-piece 6061-T6 aluminum extrusion which forms a seating surface for the edge of the plate bottom, retains the neoprene invert seal, and forms a structural cross-member for the frame. The gate shall be installed so that the gate invert shall be flush with the channel invert in order to maximize flow and prevent fouling.

Weir gate: Adjustable p-seals (j-seals) are attached to the invert frame which is welded to the guide frame sides across the bottom to form a continuous frame and seal assembly. The frame is mounted so that the gate invert is flush with the channel or port bottom. The flush-bottom design maximizes flow to that of the channel, or port opening.

### **1.06 SEALS**

All gate side frames, slide gate upper seals, and weir gate invert seals shall prevent leakage using an adjustable neoprene p-seal with extruded aluminum retainer bar system. The p-seal retainer bar shall exert sealing pressure on the p-seal, compressing the seal against the plate face.

The p-seals can be adjusted as necessary by means of slots within the p-seals and retainers in parallel to the flow of water through the gate. The retainer bars are secured with stainless steel nuts and bolts. The p-seal and retainer can be replaced without dismantling or loosening any portion of the frame.

### **1.07 MANUAL OPERATOR**

The standard gate operator will be a BS-1015 horizontal handwheel type mounted on a pedestal or benchstand unless otherwise specified. The bronze operating nut of the operator will be accurately machined to match the thread of the rising stem. Non-rising stems shall be used where specified, where overhead space is limited, or where mounting the operator in a floor box is required. The operating nut shall

be supported by regreasable ball or roller thrust bearings top and bottom secured in an accurately machined cast aluminum or iron housing bolted to the bench or pedestal.

Where torque, operation (including dual stems) or space requirements dictate, bevel gear boxes with either a handcrank or handwheel shall be supplied in lieu of the standard operator. Bevel gear boxes shall have stainless steel input and/or output shafts, accurately machined gears supported by ball or roller bearings secured in an accurately machined cast aluminum or iron housing bolted to the bench or pedestal. An AWWA nut with or without a floor box will be supplied where t-wrench or portable actuator operation is required and may be a standalone input or an integral part of a crank, handwheel, or gear box.

The maximum effort on the handwheel, crank or AWWA nut is to be limited to less than a 40 lb. pull. The lift mechanism will be capable of withstanding an effort of up 200 lbs. or more without damage to the operator, stem or gate frame. Manually operated gates are to be supplied with adjustable stop collars as required to set the gate opening range. Where the size of the gate requires lift assist but the frequency of operation does not indicate use of a permanent electric operator, a portable electric or hydraulic operator with height adjustable floor stand or bench mount will be supplied as specified.

#### **1.08 ELECTRIC OPERATOR (OPTION – NOT USED)**

The slide/weir gate will be provided with an electric multi-turn operator incorporating integral limit switches to stop the gate plate in the desired open and closed positions. The operator will also have a torque limit switch to prevent damage to an obstructed gate. Operators can be specified for modulating function where required to maximize level or flow control. Electric operators shall be in accordance with ANSI/AWWA C540 “Standard for Power-Actuating Devices for Valves and Slide Gates”.

#### **1.09 DUAL OPERATOR**

When the plate width exceeds twice the height or 60 inches, interconnected operators and stems are to be used. Operators for multiple stems will be linked with stainless steel shafts and couplings and can be manually or electrically powered.

#### **1.010 STEMS**

Stem shall be of 1½” diameter stainless steel rod with accurately machined Acme stub threads. Stem shall be designed for a safety factor of 2 based on a critical buckling compressive load calculated by the Euler Column formula where C=2 and assuming a 50 lb. torque on the AWWA nut. A stem pocket shall be welded to the face of the stiffened side of the plate and to the uppermost stiffener. The stem shall fit within the slide plate stem pocket and be attached to the pocket by means of a stainless steel bolt capable of withstanding the full force of the operator stem under full design head.

Stem guides will be supplied to support the stem as required to meet the stem design criteria and shall be fabricated of the same alloy material as the gate and frame. Stem guides shall have bronze or UHMW bushings to reduce stem friction and wear as required by the installation. Stem guides shall be adjustable in multiple dimensions to allow for alignment with operator and gate stem nut. Guides will be mounted on the gate frame or installation wall as required to support and align the stem(s) properly.

## **PART 2      NOTES**

### **2.01      OTHER FEATURES**

All WACO Products gates are made to order from approved drawings and our standard designs can be customized to fit virtually any specific head, mounting, or operating condition.

### **2.02      SPECIFYING STYLE**

Please call WACO Products Engineering Department for recommendations and model designation.

**END OF SECTION**



# WACO Products, Inc.

1330 Knecht Avenue  
Baltimore, MD 21229-5511

Phone: 410-242-1000  
Fax: 410-247-4890

[sales@wacoproducts.com](mailto:sales@wacoproducts.com)

November 10, 2015

WACO Quote # JCH110815-1, Rev.A

**Job Reference:** Collier County, FL; WMD 6 Control Structure at Tower Rd.

**Bid Date:** n/a

**Engineer:** Wilson, Miller, Barton, Soll & Peak

WACO Representative Firm: MTS Environmental

Contact: Bob Bierhorst

Phone: 904-273-8600

**Attn:** Mike Nellis

Phone: 813- 636-1564

Company: Amec Foster Wheeler

Email: michael.nellis@amecfw.com

Dear Sirs,

We are pleased to offer the following quotation for specified WACO Products' 6061-T6 aluminum equipment below based on the drawings indicated and with performance and construction as per WACO standard specification section in accordance with AWWA C561:

Line #	Quantity Quoted	Description	Lot Price
01	3 ea	WACO Series 5564 slide gate: 10'0" w X 2'8" h with non-self-contained frame. BS-2090 manual rising dual stem operator with support bench and wall brackets, handcrank, stem guides as required, stem covers and stop collars. Includes 304 stainless steel mounting wedge anchors and hardware. <b>Weir Box Weir Gates 1-3: Sheets 3 of 8 and 6 of 8.</b>	\$29,781.00

*Credit if original bevel gearboxes are returned to WACO:*

02	6 ea	Used bevel gearboxes: 3 x dual input, 3 x single input.	-\$1,200.00
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**Important: Our pricing above is based upon market conditions at the time of quotation and taking into consideration the notes below. Buyer is encouraged to call the WACO Products Representative Firm (above) for clarifications prior to using this quotation for bid or purchase.**

#### Notes:

(1) The service of a factory representative for **start-up, training, testing and/or inspection are NOT included** in the above pricing. The charge for **on-site services will be \$860.00 per man/day plus expenses** for any one trip to the jobsite area; this does not include holidays, weekends, or other layovers which will incur charges in addition to the per diem rate.

(2) **Freight to job site is included** based only on full shipment of all materials at time of fabrication completion **via common carrier box trailer**. Other shipment arrangements or schedules may incur additional charges unless otherwise noted above.



(3) This quotation does not include any local taxes, erections, Professional Engineer stamps, or field measurements.

(4) **Delivery:** Delivery of finished goods will be negotiated at time of receipt of all approved drawings. As of the date of quotation and with a purchase order accepted within 30 days, **electronic PDF format drawings for approval** can be completed and e-mailed within 4-6 weeks and fabrication can be completed within 5-7 weeks after approvals are received. This is subject to change based on workload at the time of purchase order acceptance and/or receipt of approved drawings.

(5) **All submittals and WACO standard Installation, Operation and Maintenance manual (O & M) in PDF electronic format submitted via e-mail are included** as standard approval information with unlimited copy permission for Contractor and/or Owner. Hard copies or non-WACO standard formats for any purpose are available for an additional fee.

(6) **Our terms are net 30 days with no retention of monies applicable with approved credit.** Interest charges of 1 ½% per month will be charged on invoiced accounts beyond 30 days. (Also see Terms & Conditions).

(7) The quotation has been based on the referenced specifications and drawings, but is limited to the items shown above as described. It is the Buyer's sole responsibility to review our scope of supply as meeting the specification, and WACO Products assumes no responsibility for items omitted, or quoted items specifically called out as not meeting the specification(s). All aluminum in contact with concrete will be coated with bitumastic paint, and all operators and/or actuators will be standard factory shop painted. All other metals will have a mill finish, unless otherwise noted.

(8) **Pricing is valid for 90 days from date of quote**, unless otherwise specifically noted above or agreed to in writing by WACO Products, Inc. at the time of purchase order acceptance.

(9) **Purchase order(s) must reference our quote number which indicates Buyer's acceptance of this quotation, including all Notes, and of WACO Products, Inc.'s Terms and Conditions (below). Purchase orders omitting this requirement or in any way altering our Notes or Terms and Conditions will not be accepted.**

(10) Please execute your purchase order in the name of WACO Products, Inc., 1330 Knecht Ave., Baltimore, Maryland 21229-5511. The Buyer is required to provide WACO Products, at no charge, one set of all applicable and most current contract drawings and specifications required for our use, within 10 working days of purchase order acceptance.

Sincerely,

Jim Harvey  
Sales Manager  
Ext. 338



# **WACO Products, Inc.**

## **TERMS AND CONDITIONS**

- 1. This quotation does not signify a contract unless a purchase order for this proposal is accepted by an authorized representative of WACO Products, Inc. at the company's home office and until so accepted, this quotation may be withdrawn at any time.**
2. This quotation, upon purchase order acceptance, shall constitute the entire contract and no representation or agreement, written or verbal, not included herein and made part hereof is binding upon us. No person, unless authorized in writing by an officer of the Company, has authority to alter the terms hereof.
3. The Company shall not be liable for loss or damage occasioned by delay in shipment or transportation, strikes, fires, or other casualties, Government Regulation and Priorities, failure of sub-contractors or suppliers to make delivery, or any other circumstance beyond its control.
4. The Company's responsibility ceases upon delivery of goods to carrier for transportation.
5. Claims for errors must be made immediately upon receipt of goods or they cannot be recognized.
6. Reasonable doubt, at any time, of the Buyer's financial responsibilities shall entitle the Company to stop operations, decline shipment, or stop any material in transit without liability, until the Buyer shall have paid for the operations and/or material or have satisfactory evidence of his financial responsibility.
7. Notwithstanding any other term or condition in this contract to the contrary, WACO Products, Inc., reserves the right to withhold shipment of material or to cancel the contract in its entirety if at the time of shipment any invoice between WACO Products, Inc. and the Buyer is past due.
8. Our terms are net 30 days from shipment invoice dates with no retention of monies applicable, pending credit approval, unless otherwise noted. A 1 ½% per month simple interest (18% APR) will be assessed on overdue accounts. First time purchasers are required to pay 30% with order, 30% prior to shipment and balance net 30 days with approved credit, or prepay in full unless otherwise specifically agreed to in the quotation or in writing by authorized WACO representative.
9. Any license fees, property, sales, use or excise tax which may at any time be levied or assessed by Federal, State, or Local law upon any goods or services which are subject matter of this quotation, or which may be imposed by similar authority by reason of manufacture, purchase or sale thereof, shall constitute an extra to this proposal and shall be paid by the Buyer. Only Maryland State sales tax can be invoiced and collected by WACO Products; it is the Buyer's responsibility to pay all other taxes and fees directly.
10. This quotation does not include any field erection, field measurements or field visitations unless otherwise noted.
11. This quotation is submitted for a period of 30 days from the printed date of quote. We reserve the right to change at any time and for any reason (including but not limited to errors or omissions on the part of Buyer or WACO Products) all or any portion of quotation including but not limited to: terms, delivery dates, price, product specifications, and scope of items to be bid.
12. In the event this becomes an order please forward the purchase order in the name of WACO Products, Inc. at 1330 Knecht Ave., Baltimore, Maryland 21229.

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***INSTALLATION, OPERATION AND  
MAINTENANCE MANUAL FOR  
MANUALLY OPERATED  
SLIDE GATES & WEIR GATES:***

**PROJECT:**

**EAGLE CREEK WEIR GATE REFURBISHMENT**

# WEIR GATE INSTALLATION, OPERATION AND MAINTENANCE MANUAL

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## **UNLOADING & STORAGE - SLIDE & WEIR GATES**

### 1. **Unloading WACO Equipment**

WACO equipment is packed on custom built pallets to ease unloading and movement on the job site. These pallets are designed to be used with standard adjustable width forks on forklifts at either a loading dock or from ground level. Pallets may also be moved using cranes by lifting a pallet from suitable beams located through the pallet fork slots and using spreader bars as required above the load to prevent damage to the load from lifting cables or slings. Pallets should always be lifted and set in place. At no time should a pallet of WACO equipment be dropped to the ground nor should it be pushed or dragged while on the ground. Leave equipment on pallets until ready for installation whenever possible. It is up to the Customer's discretion whether crates with mounting hardware, operators, and other miscellaneous parts are broken out and stored separately from the gates or put into a secure area prior to installation. Once the Customer has signed for a shipment of equipment, the Customer is responsible for all of the equipment shown on the packing list for that shipment.

**It is the responsibility of the Customer to check the shipment** against the bill of lading and packing list(s) to make sure that the shipment has arrived complete **and undamaged**. If the Customer sees damage on, including but not limited to, the equipment, pallets, or banding it should be brought to the carrier driver's attention immediately **and noted on the carrier's paperwork prior to signing for the shipment**. If such notations are required, WACO should be notified immediately at 410-242-1000 and fax copies of the paperwork should be sent to WACO in order to start a claim with the carrier. If possible, photographs should be made of the received material **prior to unpacking**. Failure to follow this procedure may void the carrier's responsibility for damage incurred during shipment and WACO's warranty.

### 2. **Storage Prior to Installation:**

#### **Storage:**

The gates are made of materials and components that by their nature are suitable for outdoor use for the life of the equipment. Generally, no special storage requirements are necessary to maintain the operability of the gates other than to prevent abuse and damage prior to installation. WACO recommends that:

- 1) The gates should remain securely on the shipping pallets
- 2) No other material should be piled or stacked on top of each gate or gate pallet load until installation in order to minimize the potential for damage, promote worker safety, and to ease movement of the equipment on the job site.
- 3) In very dirty environments or for cosmetic purposes, the gates may be covered with a tarp to prevent excess build-up of dirt which could potentially foul the gate guides or seals. However, most dirt and dust can simply be washed off of the gate prior to installation.
- 4) If the pallet banding is broken, it should be removed immediately for worker safety reasons.

## **INSTALLATION INSTRUCTIONS - SLIDE GATES**

### **1. Frame Styles:**

**Self-Contained Gates** are provided as a single assembly of the slide plate, guide frame and operator, unless the size of the assembly exceeds practical shipping size.

**Non-Self-Contained Gates** are provided with the slide plate and guide frame separate from the operator pedestal and/or mounting bracket. Non-self-contained gate slide plate assemblies may also be shipped separately from the guide frame depending on installation requirements for a particular gate(s). Hardware for installation is shipped in a separate crate with packing list identified with the Installer's required information and WACO job number.

### **2. Bituminous coating (aluminum gates only):**

Each aluminum gate is shipped to the jobsite with a black bitumastic coating applied to the aluminum where it is designed to come in contact with concrete and/or grout. This coating prevents corrosion of the gate frame. Contractor must touch up those areas where this protective coating has been scraped off or marred in handling, storage, or installation prior to pouring concrete or grout.

### **3. Installing the Frame:**

#### ***A – General Notes***

Generally, complete gates may be set and secured in place with the slide plates remaining in the frames or the slide plate assemblies may be removed and wood braces inserted as required in the guide frames to maintain the frame dimensions while the gates are being installed. Care should be taken to protect the slide plate stem threads when installing or removing the slide plate assembly.

**IMPORTANT:** If the slide plate assembly has been shipped separately from the frame, then the frame should always be installed prior to inserting the plate assembly. This separate shipment indicates that the mounting requirements prevent slide plate installation prior to setting the gate frame to maintain proper access to mounting bolts or to address clearance issues. See also “*C-Gate Plate Installation*” below.

#### ***B – Installation by Frame Type***

**Embedded Frame Gates** are designed for the guide frame to be embedded in the concrete walls of the channel. If the specifications allow, it is acceptable for embedded frames to be set in place with the floor and wall concrete pour. During forming, the gate is installed and held rigidly in place with the side guides plumb, square, and the flush-bottom invert level with the channel bottom elevation. It is imperative that concrete forms or bracing in and around the gate do not affect the proper alignment prior to the pour. It is just as important to make sure that the frame is adequately supported so that the weight or pressure from the

concrete pour does not change the gate alignment; gate frames are not designed to be stand-alone forms. It is the installer's responsibility to verify the proper stiffening of the frame with wood bracing prior to the pour and during curing of the concrete.

For grouted installations, adequate space for the guide frame should be blocked out in the concrete walls and floor when they are poured. Check WACO drawings for minimum block-out dimensions. When the concrete has set and the blocking has been removed, the gate is installed and held rigidly in place with the side guides plumb, square, and the flush-bottom invert level with the channel bottom elevation. Care should be taken to make sure that any forms required do not affect the proper position or alignment of the gate. The space around the perimeter of the guide frame shall be completely filled with non-shrink grout to secure the gate in place.

**Wall Mounted Frames** are secured with anchor bolts to the interior walls and floor of a channel or the face of a channel, port, or pipe outfall. Gate frames may be either grouted type or gasket back type as indicated on the WACO drawings. Some plans call for a wall-mounted gate to have an embedded invert; in this case the invert area must be blocked out as indicated in Embedded Frame Gates (above) before mounting, and grouted around the invert after bolt installation. **NOTE: Gasket back frames require the mounting surfaces to be plumb, square, and level prior to mounting the gate.** Improper alignment of the gate will occur if the mounting wall is not properly prepared, resulting in poor operating and sealing performance, and excessive load on the operator.

The wall mounted guide frame is placed and held in position in its mounting location in order to use the frame mounting holes as a template for bolt locations. The guide frames must be plumb, square and true with the flush-bottom invert located at the proper elevation. Mark the locations for and drill the bolt holes to the anchor manufacturer's required depth. Bolts that are not set to the proper depth can result in a loss of load capacity or prevent nuts or counter-sink head types of fasteners from being tightened securely. Either or both of these conditions can lead to a gate failure. Install the wedge-anchor or chemical capsule anchor bolt and secure according the anchor manufacturer's instructions. If equipped, header bar frame must be plumb and square with seals in full contact with gate plate surface across the entire width. If header bar seals are not in full contact with gate plate adjust header bar in or out using hex nuts provided with anchor bolts before grouting. Verify seal contact with gate plate through full range of gate plate travel.

For gasket back frames, tighten the anchor bolts to the anchor manufacturer's recommendation to secure the guide frame and compress the gasket between the frame back and the mounting wall. For grouted type frames, the drawings call for the frames to be spaced away from the wall using double nuts on the bolts on either side of the frame. After securing the anchors in the wall, the frame can be spaced off of the wall face as shown on the WACO drawings, and the double nuts can be used to adjust the final position and alignment of the gate. After this adjustment, the double nuts are tightened securely, and the space between the frame back and wall face is filled with a non-shrink grout.

**Special notes for Wall-mounted Non-Self-Contained gate frames:** Mount the gate frame prior to locating and mounting stem guides and /or pedestals. Stem guides and pedestals



(with or without mounting brackets) can be adjusted or shimmed as required to insure proper alignment of the entire gate system.

### ***C – Gate Plate Installation***

As noted above for particular installations or frame types it may be necessary to install or re-install the gate plate within the gate frame. Slide gate plates should be installed from the top down to avoid damage to the head and invert seals. **If the gate has an upper seal**, a thin shim plate (1/32” or less such as aluminum roof flashing) the width of the inside of the gate should be used to guide the leading edge of the plate past the top of the seal prevent binding and should be removed as soon as the plate edge has cleared that part of the seal. Install the plate into the guide, making sure that the guide seats are located on both sides of the plate before exerting pressure in the plate. The gate seals usually exert enough pressure on the plate to require more than hand pressure to install the plate. A come-along may be used to pull the gate plate into position by pulling on a plate stiffener ***that is already within the frame guide*** with the other end of the come-along secured to the gate frame.

#### **4. Installing the Manual Operator and Setting Position Limits**

Prior to operator and/or pedestal installation, verify that the slide gate is in the fully lowered (closed) position, with the bottom of the gate fully engaged with the invert seal.

**IMPORTANT:** **If the gate has an upper seal**, do not raise any part of the slide plate beyond the top seal on the gate; this can cause the compressed seal to spring out of its compressed position leading to possible damage to the seal, operation difficulty or failure of the gate, and may void the gate warranty. If the gate is inadvertently raised in this way see 3.C. above, but if in question about the procedure do not attempt to reseal the gate without first calling WACO Products for assistance.

**Self-Contained (SC) Frame Slide Gates** with manual operators are usually shipped fully assembled with the operator installed on the gate. For **Non-Self-Contained (NSC) Frame Slide Gates** or if the operator and/or stem was shipped separately, or should the Contractor have removed the operator and stem during frame installation, the following procedure is used for remounting:

Lower the stem between the bench (yoke) members of the frame or through the pedestal, wall bracket and/or slab hole and attach the gate stem to the stem pocket with the supplied fasteners. If necessary, detach the operating handwheel or handcrank from the manual operator. Make sure to install the lower stop collar now, if applicable; do not set the collar adjustment at this time. Set the operator pedestal (if applicable) in place over the stem and wall bracket or slab hole. For slab mounted pedestals, verify the plumb and square location of the pedestal and that the stem in its plumb position will not be contacting the pedestal or slab hole, shim as required, then locate and mark the pedestal base mounting holes and secure to the slab with the provided anchors. Grout under the slab mounted pedestal base as required and shown in the shop drawings and continue with the operator setting procedure once the grout

has cured. For wall bracket mounted pedestals, verify that the pedestal as installed will not contact the stem during operation, adjust and shim the wall bracket if necessary, and secure the pedestal using the supplied mounting bolts.

Verify that the gate plate is still in the fully closed (down) position. Lower the operator over the upper threaded section of the stem and rotate it down onto the stem until its base rests squarely and snugly on the frame bench or pedestal. Install the upper stop collar and rotate down the stem, adjust it until it almost contacts the operator stem drive nut but do not tighten set screw(s) at this time. Grease the gate stem threads over the full length.

**Warning:** Do not use bare hands to apply grease as freshly cut threads are very sharp.

**Setting the Position Limits** begins by installing the operator mounting bolts finger tight to stop rotation when turning the handwheel or handcrank which can now be installed and used with the operator to raise the stem to the full open position indicated on the shop drawing. **If the gate has an upper seal**, the lower edge of the gate plate should be approximately ½” below the bottom of the upper seal in the fully raised position.

**IMPORTANT: If the gate has an upper seal**, do not raise any part of the slide plate beyond the top seal on the gate; this can cause the compressed seal to spring out of its compressed position leading to possible damage to the seal, operation difficulty or failure of the gate, and may void the gate warranty. If the gate is inadvertently raised in this way see 3.C. above, but if in question about the procedure do not attempt to reseal the gate without first calling WACO Products for assistance.

With the gate in the fully open (up) position, mark the location of the bottom of the operator on the stem, remove the finger tightened operator mounting bolts, and rotate the operator up the stem enough to access the lower stop collar. Set the lower stop collar even with the mark indicating the bottom of the operator and secure with the set screws provided. Re-lower the operator in place and use the operator mounting bolts to fully tighten and secure the operator to the bench or pedestal at the pre-drilled hole locations. Re-mount the handwheel or handcrank as necessary and verify that it is secured with the provided set screws. Using the handwheel or crank, lower the gate to its fully closed (down) position.

With gate still in fully closed position, lower the previously installed upper stop collar until it touches the top of the operator nut, and secure with the set screws provided. After setting the upper stop collar position, install the clear plastic stem cover on top of the operator. Position the supplied indicator tape(s) on the outside of the stem cover, with the zero (fully closed) mark level with the top of the stop collar and with only that part of the indicator tape (about ½” to 1”) having the backer strip peeled back. After verifying the zero (fully closed) mark, hold the indicator tape straight to the top of the stem cover and remove the rest of the backer strip upward to completely adhere it to the stem cover. Position of upper stop collar will now indicate relative position of the slide plate at or above the invert elevation.

## INSTALLATION INSTRUCTIONS

### WEIR GATES

#### 5. Frame Styles:

**Self-Contained Gates** are provided as a single assembly of the slide plate, guide frame and operator, unless the size of the assembly exceeds practical shipping size.

**Non-Self-Contained Gates** are provided with the slide plate and guide frame separate from the operator pedestal and/or mounting bracket. Non-self-contained gate slide plate assemblies may also be shipped separately from the guide frame depending on installation requirements for a particular gate(s). Hardware for installation is shipped in a separate crate with packing list identified with the Installer's required information and WACO job number.

#### 6. Bituminous coating (aluminum gates only):

Each aluminum gate is shipped to the jobsite with a black bitumastic coating applied to the aluminum where it is designed to come in contact with concrete and/or grout. This coating prevents corrosion of the gate frame. Contractor must touch up those areas where this protective coating has been scraped off or marred in handling, storage, or installation prior to pouring concrete or grout.

#### 7. Installing the Frame:

##### *A – General Notes*

Generally, complete gates may be set and secured in place with the slide plates remaining in the frames or the slide plate assemblies may be removed and wood braces inserted as required in the guide frames to maintain the frame dimensions while the gates are being installed. Care should be taken to protect the slide plate stem threads when installing or removing the slide plate assembly.

**IMPORTANT:** If the slide plate assembly has been shipped separately from the frame, then the frame should always be installed prior to inserting the plate assembly. This separate shipment indicates that the mounting requirements prevent slide plate installation prior to setting the gate frame to maintain proper access to mounting bolts or to address clearance issues. See also “*C-Gate Plate Installation*” below.

##### *B – Installation by Frame Type*

**Embedded Frame Gates** are designed for the guide frame to be embedded in the concrete walls of the channel. If the specifications allow, it is acceptable for embedded frames to be set in place with the floor and wall concrete pour. During forming, the gate is installed and held rigidly in place with the side guides plumb, square, and the flush-bottom invert level with the channel bottom elevation. It is imperative that concrete forms or bracing in and around the gate do not affect the proper alignment prior to the pour. It is just as important to

make sure that the frame is adequately supported so that the weight or pressure from the concrete pour does not change the gate alignment; gate frames are not designed to be stand-alone forms. It is the installer's responsibility to verify the proper stiffening of the frame with wood bracing prior to the pour and during curing of the concrete.

For grouted installations, adequate space for the guide frame should be blocked out in the concrete walls and floor when they are poured. Check WACO drawings for minimum block-out dimensions. When the concrete has set and the blocking has been removed, the gate is installed and held rigidly in place with the side guides plumb, square, and the flush-bottom invert level with the channel bottom elevation. Care should be taken to make sure that any forms required do not affect the proper position or alignment of the gate. The space around the perimeter of the guide frame shall be completely filled with non-shrink grout to secure the gate in place.

**Wall Mounted Frames** are secured with anchor bolts to the interior walls and floor of a channel or the face of a channel, port, or pipe outfall. Gate frames may be either grouted type or gasket back type as indicated on the WACO drawings. Some plans call for a wall-mounted gate to have an embedded invert; in this case the invert area must be blocked out as indicated in Embedded Frame Gates (above) before mounting, and grouted around the invert after bolt installation. **NOTE: Gasket back frames require the mounting surfaces to be plumb, square, and level prior to mounting the gate.** Improper alignment of the gate will occur if the mounting wall is not properly prepared, resulting in poor operating and sealing performance, and excessive load on the operator.

The wall mounted guide frame is placed and held in position in its mounting location in order to use the frame mounting holes as a template for bolt locations. The guide frames must be plumb, square and true with the flush-bottom invert located at the proper elevation. Mark the locations for and drill the bolt holes to the anchor manufacturer's required depth. Bolts that are not set to the proper depth can result in a loss of load capacity or prevent nuts or counter-sink head types of fasteners from being tightened securely. Either or both of these conditions can lead to a gate failure. Install the wedge-anchor or chemical capsule anchor bolt and secure according the anchor manufacturer's instructions.

For gasket back frames, tighten the anchor bolts to the anchor manufacturer's recommendation to secure the guide frame and compress the gasket between the frame back and the mounting wall. For grouted type frames, the drawings call for the frames to be spaced away from the wall using double nuts on the bolts on either side of the frame. After securing the anchors in the wall, the frame can be spaced off of the wall face as shown on the WACO drawings, and the double nuts can be used to adjust the final position and alignment of the gate. After this adjustment, the double nuts are tightened securely, and the space between the frame back and wall face is filled with a non-shrink grout.

**Special notes for Wall-mounted Non-Self-Contained gate frames:** Mount the gate frame prior to locating and mounting stem guides and /or pedestals. Stem guides and pedestals (with or without mounting brackets) can be adjusted or shimmed as required to insure proper alignment of the entire gate system.

## *C – Gate Plate Installation*

As noted above for particular installations or frame types it may be necessary to install or re-install the gate plate within the gate frame. **Slide gate plates should be installed from the top down, and weir gate plates should be installed from the bottom up to avoid damage to the head and invert seals.** Install the plate into the guide, making sure that the guide seats are located on both sides of the plate before exerting pressure in the plate. The gate seals usually exert enough pressure on the plate to require more than hand pressure to install the plate. A come-along may be used to pull the gate plate into position by pulling on a plate stiffener *that is already within the frame guide* with the other end of the come-along secured to the gate frame.

### **8. Installing the Manual Operator**

Prior to operator and/or pedestal installation, verify that the weir gate is in the fully raised (closed) position, with the bottom of the gate fully engaged with the invert seal, nominally with about ½” of the plate still below the invert seal when fully raised.

**IMPORTANT: Do not raise or lower any part of the weir plate beyond the top or bottom of the invert seal; this can cause the compressed seal to spring out of its compressed position leading to possible damage to the seal, operation difficulty or failure of the gate, and may void the gate warranty.** If the gate is inadvertently raised in this way do not attempt to reseal the gate without first calling WACO Products for assistance.

**Self-Contained (SC) Frame Weir Gates** with manual operators are usually shipped fully assembled with the operator installed on the gate. For **Non-Self-Contained (NSC) Frame Weir Gates** or if the the operator and/or stem was shipped separately, or should the Contractor have removed the operator and stem during frame installation, the following procedure is used for remounting:

Lower the stem between the bench (yoke) members of the frame or through the pedestal wall bracket or slab hole and attach the gate stem to the stem pocket with the supplied fasteners. If necessary, detach the operating handwheel or handcrank from the manual operator. Make sure to install the lower stop collar now, if applicable; do not set the collar adjustment at this time. Set the operator pedestal (if applicable) in place over the stem and wall bracket or slab hole. For slab mounted pedestals, verify the plumb and square location of the pedestal and that the stem in its plumb position will not be contacting the pedestal or slab hole, shim as required, then locate and mark the pedestal base mounting holes and secure to the slab with the provided anchors. Grout under the slab mounted pedestal base as required and shown in the shop drawings. For wall bracket mounted pedestals, verify that the pedestal as installed will not contact the stem during operation, adjust the wall bracket if necessary, and secure the pedestal using the supplied mounting bolts.

Verify that the gate plate is still in the fully closed (up) position. Lower the operator over the upper threaded section of the stem and rotate it down onto the stem until its base rests squarely and snugly on the frame bench or pedestal. Install the upper stop

collar and leave at or near the top of the stem. Grease the gate stem threads over the full length.

**Warning:** do not use bare hands to apply grease as freshly cut threads are very sharp.

**Setting the Position Limits** begins by installing the operator mounting bolts and securing to the bench or pedestal at the pre-drilled hole locations. The handwheel or handcrank which can now be installed and used with the operator to lower the stem to the full open position indicated on the shop drawing. **Because the gate has an invert seal,** the lower edge of the gate plate should be approximately 1/2" below the bottom of the upper seal in the fully closed (up) position.

With the gate still in the fully closed (up) position, mark the location of the bottom of the operator on the stem and lower the gate with the operator down enough to access the lower stop collar. Set the top of the lower stop collar even with the mark on the stem and secure with the set screws provided. Lower the gate to its fully open (down) position.

**IMPORTANT: Do not raise or lower any part of the weir plate beyond the top or bottom of the invert seal; this can cause the compressed seal to spring out of its compressed position leading to possible damage to the seal, operation difficulty or failure of the gate, and may void the gate warranty.** If the gate is inadvertently raised in this way do not attempt to reseal the gate without first calling WACO Products for assistance.

Lower the upper stop collar and rotate down the stem, adjusting it until it contacts the operator stem drive nut and mark the position on the stem. Raise the stem if necessary to access the set screws, move the bottom of the stop collar to the mark on the stem and tighten the set screw(s) to hold position. With the gate still in fully open position, install stem cover on top of operator. Position supplied Mylar indicator tape with zero mark level with top of stop collar and adhere to stem cover. Position of upper stop collar will now indicate relative position of weir plate at or above the invert elevation.

### **OPERATION - SLIDE GATES**

1. Prior to operation, verify that the stop collars have been set, the stem cover with indicator is in position, and that the stem is greased. Do a visual inspection of the gate to make sure that there are no interferences on or within the gate guides and operating area that could adversely affect the gate's operation or allow the gate to contact other equipment or items in the basin/channel when operated.
2. Open the gate by rotating the handcrank or handwheel in a counter-clockwise direction to raise the gate plate. Close the gate by rotating the handcrank or handwheel in a clockwise direction to lower the gate plate. Stop collars, or other specified means of setting full open/closed positions, will prevent the operator from moving past the fully open or closed elevations. Relative elevation can be determined by checking the top of the stop collar within the graduated stem cover.

### **OPERATION - WEIR GATES**

3. Prior to operation, verify that the stop collars have been set, the stem cover with indicator is in position, and that the stem is greased. Do a visual inspection of the gate to make sure that there are no interferences on or within the gate guides and operating area that could adversely affect the gate's operation or allow the gate to contact other equipment or items in the basin/channel when operated.
4. Open the gate by rotating the handcrank or handwheel in a clockwise direction to lower the gate plate. Close the gate by rotating the handcrank or handwheel in a counter-clockwise direction to raise the gate plate. Stop collars, or other specified means of setting full open/closed positions, will prevent the operator from moving past the fully open or closed elevations. Relative elevation can be determined by checking the top of the stop collar within the graduated stem cover.

## TROUBLESHOOTING –SLIDE & WEIR GATES

### **Leakage:**

All gate seats and seals are adjusted prior to leaving the factory. WACO gates without p-seals use a self-adjusting seal/seat mechanism that IS NOT FIELD ADJUSTABLE. If it is believed that leakage is an issue, check the leakage specification, and calculate the allowable GPM based on the gate dimensions. Measure leakage to confirm if a problem exists. The Contractor or Owner should check the following items of installation and adjustment prior to consulting the factory or the WACO Representative:

1. Inspect to make sure that gate plate fully contacts all seals and is not obstructed by debris.  
Common debris sources: Installation grout in plate guides; foreign matter from other sources during construction or operation including but not limited to: weld spatter, wood, sewage solids, algae, sawdust, rocks, grit, sand and gravel.  
Solution: Clear guides, operate and retest.
2. Inspect gate frame to assure that sides of frame are still plumb and square to one another. If gate is racked or out of plumb seats and seals will not properly contact plate surfaces.  
Solution: Re-mount gate, adjust alignment; make sure gate is securely positioned prior to re-grouting. Operate and retest.
3. **Gates with p-seals only:**
  - a) Check P-seals for damage or contamination. Tears and rips during operation can occur on the invert P-seal from the gate plate itself (if the gate stop collars are not set and a gate edge moves beyond the seal) or on all the seals from debris trapped in and around the seal being dragged over or past the seal. The latter can occur when the gate is insufficiently exercised and material is allowed to build up and compact on the seals. Debris that is allowed to dry and harden during shut-downs or maintenance can also damage and contaminate the seals after the shut-down is complete and the gates are put back into service. Any debris or material contaminant that can get wedged between the seals and gate plate can cause leakage at the point of contact. Severe contamination or build-up can cause the seal to distort or deflect the plate away from the seal.  
Solution: Check the p-seals for contamination, clean as necessary and replace damaged p-seals. Adjust seals, operate and re-test.
  - b) P-seals may require tightening against the gate plate IF the leakage is observed between the plate and the seal and there is no contamination of ,or damage to, the seal. Check to see if P-seal and/or seal retainer has loosened in the area where the leakage is observed. If so, push the P-seal snugly against the plate and re-tighten the P-seal retainer. If the problem is observed continuously around the seal perimeter, starting from the bottom and working up the side guides and from the center out on top and bottom seals, readjust and retighten all of the P-seal and retainer. This is often required if loosening the seals was necessary to get the gate plate installed, or if replacing the seals on an older gate. Caution: over-tightening P-seals can lead to excessive load on the operator.  
Solution: Readjust P-seals and retainers, operate, and retest.
4. Inspect grout or wall conditions behind the gate frame.



**Gasket-back gates:** If leakage is occurring on a gasketed frame, check to see if leakage is between the mounting wall and frame. Visual inspection using a flashlight should confirm water leakage points, if any, when water is not available. **Verify that wall condition is sufficient to allow for proper sealing with the gasket and frame;** if not, remove gate, repair wall as required and re-install gate. If the wall condition is good, check frame guides to make sure they are aligned, plumb and square. If frame alignment is good, then gaskets may not be compressed sufficiently.

Solution: Retighten the mounting bolts, being very careful not to warp the gate frame, operate and retest.

**If frame appears warped or out of alignment on wall, but gasket allows leakage, the wall condition may not be sufficient to allow for proper gasket sealing and gate alignment.** Do not continue to tighten the gate on the wall when warpage or distortion of the frame is observed; this is an indication that the wall is not sufficiently plumb and square to allow for proper sealing and operation. If over-tightened, permanent damage to the gate may occur, and if sealing to wall is achieved in this condition the operation of the gate will be impaired. ***Damage from over-tightening will void the warranty on the gate.*** If this is the case, consult the factory for recommendations as a grouted installation may be required to allow for proper sealing and operation of the gate.

**Grouted gate:** If leakage is occurring behind the frame on a grouted frame gate it is sometimes possible to repair the grout after draining the water from the gate, making sure to allow for cure time after the repair. If the mounting bolts were not properly secured in the wall or on the frame, water pressure can cause the gate to shift and break the grout. Generally, grout problems are indicative of future problems of the same type, and it may be better to remove all of the grout and perform a detailed inspection.

Solution: Remove grout, inspect the frame for plumb and square, check bolts for proper installation and re-grout the installation. After curing, operate and retest.

5. If the performing the above does not resolve the issue, please call your WACO Representative or the factory for further assistance.

## Operation:

Most operation issues are indicated as difficulty in turning the manual operator handwheel or handcrank. If the gate performed adequately on start-up, then this is likely to be a lubrication maintenance issue. If maintenance does not resolve operator issues, binding should be addressed. Binding due to several causes can cause the operator to require more than normal force to work properly:

1. Alignment: Check the frame for plumb and square. The threaded stem between the gate stem pocket and the operator mechanism must be plumb. All stem guides must also be located properly to assure that the gate stem remains plumb. Misalignment can cause serious binding, especially through the operator nut, and can possibly cause permanent damage to the gate if not addressed.

Solution: realign gate components; see Installation

2. Inspect to make sure that gate guides are clean and not obstructed by debris.  
Common debris sources: Concrete or grout in plate guides; compacted as gate operated.  
Foreign matter from other sources during construction; weld spatter, wood and sawdust, concrete, rocks, sand and gravel.

Solution: Clear guides

3. Inspect stem to make sure it is clean and free of debris. Look directly above and below the operator for signs of dirt or dirt-filled grease accumulation.

Solution: Clean threaded portion of stem, relubricate as indicated in Maintenance, and make sure stem cover is kept in place to prevent premature fouling of stem.

4. Inspect operator mounting bolts. Loose bolts can cause operator to rack and mis-align during operation putting excessive stress on stem, stem nut, and yoke or pedestal.

Solution: Relieve stress on stem/operator and reset mounting bolts.

5. **P-Seal style gates only:**

If binding occurs when the gate is not wet (especially for gates that are normally fully open) pour water over p-seals and plate prior to operation. Do not use boiling water to avoid spot damage to seals and seats; ambient temperature or cold water is fine.

Sometimes the P-seals located in the thimble can be too tight against the gate plate and cause binding. Loosen the P-seal retainer bolts and adjust the P-seal position back from the plate 1/32 of an inch or so. Be careful not to adjust the seal too loosely or excessive leakage may occur. Re-tighten the retainer.

6. All mechanical operators are filled with lubricant before they leave the factory. Since it is possible (although unlikely) that lubricant can be lost during transit, storage, or installation, the Installer should check lubrication levels. Lubrication of the manual operator mechanism is covered in the Maintenance section.
7. If all of the items above have been addressed and the gate still does not operate properly, the Installer should disconnect the gate stem from the stem pocket by removing the stem bolt. Test to see if the operating mechanism operates at or below the 40 lbs. maximum pull specified, then consult the WACO factory for assistance.

## **MAINTENANCE –SLIDE & WEIR GATES**

### **1 - Cleaning**

If gates become discolored due to contact with steel tools, clay, cement or other environmental agents, buffing with a Scotch-Gard pad or similar non-metallic abrasive pad will restore the mill finish of the metal. Sand-paper or emery cloth can damage the finish of the metal if not used carefully, and all Scotch-Gard materials or abrasives should only be used fresh to prevent contamination from previously worked surfaces. NEVER clean WACO gates with steel wire brushes as these will leave residual iron particles which can “bloom” as rust marks. Pressure washers can be used for heavy cleaning if required (but NEVER with abrasive additives or detergents), but care must be taken to insure that the seats and seals are not damaged, as high pressure water can pit or cut through neoprene and/or UHMW polyethylene.

### **2 - Routine Maintenance & Exercising**

Maintenance on the gate is minimal. Gates have two moving parts; the operator and the gate plate itself. “Exercising” these moving parts is the best way to assure long, reliable life of your gate. The 6500 Series gate plate requires no lubrication as the seats and seals are made of Polyglide UHMW which are self-lubricating. Series 5500 gates have rubber P-seals for sealing against the plate, but these require no lubrication or service unless damaged. Routine preventative maintenance is primarily accomplished by exercising the gate through its full range of motion at least quarterly, and partially (approximately 6” up and down) monthly. This helps to keep the gate plate guides free of debris build-up, the invert free of silt/solids build-ups, and keeps the stem lubricated. If normal operations of the gate are at least as frequent as this schedule, no additional exercising should be required. However, severe or difficult operating or water conditions may indicate more frequent exercise and should be dictated by operational experience within the first 3 months after start-up.

### **A - Stem & Lubricants**

The threads on the stem must be lubricated if dry. Frequency of lubrication will be determined by the frequency of operation and severity of the operating environment, but should be performed quarterly at a minimum. If the grease on the stem cannot be seen clearly through the stem cover, remove the cover to permit proper inspection. If the stem is inspected and is dry to the touch it should be lubricated with fresh grease. If the stem yields grease that still feels slippery, but is visibly dirty or feels “grainy” to the touch, the stem should be cleaned and lubricated with fresh grease. Dirty grease or a lack of grease will increase the operating force necessary to open or close the gate and will accelerate the wear in the stem nut. Graphite based lubricants are not recommended since the graphite will tend to cause excessive wear on the bronze operator nut over time. The best ways to maintain proper clean stem lubricant is to keep the stem cover on the operator at all times and follow the operator exercise schedule (see above).

**1. Stem Lubrication:** With the stem threads visible for at least 1” on both the top and bottom of the operators, put a generous amount of grease on the stem on both sides. Exercise the stem (move up and down with the operator) to get the lubricant spread throughout the threaded portion of the stem and within the operator’s bronze nut. We recommend the following (or equal) greases:

<u>Manufacturer</u>	<u>Product</u>	<u>Temperature Range</u>	<u>Type/NLGI</u>	<u>Base</u>
Esso/Exxon	Beacon EP2 lithium/moly	-30degC to +125degC	EP 2	
Esso/Exxon	Unirex EP2 lithium/min.oil	-10degC to 150degC	EP 2	
Shell	Darina XLEP-Moly synthetic/moly	-20degC to 120degC	EP 2	
Fuchs	Renolit CL-X2	-54degC to +120degC	EP 2	calcium

**2. Operator Lubrication:**

BS-1015 Operators

All WACO BS-1015 horizontal hand wheel operators are furnished with grease fittings for lubrication. Recommended lubricants are the same as indicated for the stem above.

BS-2000 Operators

Waco vertical handcrank or handwheel gates use the BS-2000 bevel gear operator. This unit is greased from the factory and sealed for life requiring no periodic lubrication.

**3. Recommended Spare Parts**

None – All seals, seats, stem covers, stop collars are available from stock for next day shipment.

**4. Ordering Parts**

Each gate assembly is supplied with an individual name plate designating WACO job number and the gate identification number. The name plate is located near the top of the gate frame. The shop drawings/parts lists for each gate are included in the pockets at the end of this manual. To order parts, get the gate information from the name plate, reference the matching drawing supplied with this O&M package, and identify the part(s) required from the Bill of Materials on the shop drawing/parts list. To order, contact WACO Products, Inc. directly at:

1330 Knecht Avenue  
Baltimore, MD 21229  
410-242-1000

WACO accepts purchase orders using credit card or net 30 day terms (with credit approval).

## **WARRANTY**

WACO Products, Inc. warrants that the equipment furnished by this company shall be free from defects in materials and workmanship and agrees to replace or repair any parts found to be defective as such in the sole opinion of WACO Products, for a period of one (1) year from start-up or installation and use, whichever comes first. This warranty excludes damage, breakage, or failure caused by improper use, storage, maintenance or due to abuse. Notice of the defect shall be communicated to WACO Products, Inc. by the Owner including unmistakable evidence of same. Should WACO personnel be required to make a site visit to service the Warranty and find that the problem is not due to a material or workmanship defect, the Owner will be liable for time and materials at normal company rates as a service call for the work. The liability of WACO Products, Inc. shall not in any case exceed the value of the repairing or replacing the defective parts, and in no way shall the company be liable for any other loss, expense, or consequential damages to the Owner or any other party.