

**CLAYTON COUNTY WATER AUTHORITY**

**Request for Bid**

**CCWA PARKING LOT ADDITION**

**Bid Opening:**      **Tuesday, August 4, 2015 at 3:30 p.m. (local time)**  
**1600 Battle Creek Road, Morrow, GA**

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**A D D E N D U M # 1**

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Dated: July 28, 2015

***Acknowledgment of receipt of this addendum **MUST BE SIGNED AND INCLUDED**  
**IN YOUR RESPONSE TO THE RFB.*****

**REVISIONS:**

1. Replace existing Table of Contents, pages i through iii with pages iR through iiiR provided with this Addendum.
2. Replace existing Division 4, Section 4: Construction Standards with the revised section provided with this Addendum on pages 4-4.1R to 4-4.29R. Revisions were made to add Item D under Section 4.1.1, and to add new Section 4.18.3.

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SIGNATURE

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COMPANY NAME

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DATE

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**Attachments**

Interim Waiver and Release Upon Payment  
Waiver and Release Upon Final Payment

**Addendum**

None Issued at This Time

**Construction Plan**

Construction Drawings

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## **Division 4**

## **Specifications**

### **Section 4: Construction Standards - Revised**

#### **4.1 General**

##### 4.1.1 General

- A. Project shall be completed in accordance with the Contract Document and Construction Plan.
- B. CCWA shall obtain necessary Land Disturbance Activity (LDA) permits from Clayton County Transportation and Development (CCTD) and pay associated fees. Contractor shall have a copy of the LDA permits and construction plan stamped approved by CCTD on the job site whenever work is being performed.
- C. The CCWA shall obtain the National Pollutant Discharge Elimination System (NPDES) permit from the Georgia Environmental Protection Division (EPD) and pay associated fees.
- D. The Contractor shall obtain all other necessary permits and pay associated fees to complete the project.
- E. The Contractor shall provide all labor, equipment, tools and materials (unless indicated otherwise) to complete the Work Items in accordance with the Contract Documents.
- F. The Contractor shall be responsible for survey staking/layout for the project. CCWA shall provide a CAD drawing file for Contractors use to generate survey points.

##### 4.1.2 Weather Delays

Delays due to weather shall not be considered.

##### 4.1.3 Differing Subsurface or Physical Conditions

- A. If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:
  - 1. Is of such a nature as to require a change in the Contract Documents; or
  - 2. Differs materially from that shown or indicated in the Contract Documents; or
  - 3. Is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

## **Division 4**

## **Specifications**

### **Section 4: Construction Standards - Revised**

Then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any work in connection therewith except in an emergency, notify CCWA in writing about such condition. Contractor shall not further disturb such condition or perform any work in connection therewith (except as aforesaid) until receipt of written order to do so by CCWA. In the case of emergency, the Contractor must notify CCWA immediately, not to exceed 12 hours, of becoming aware of the condition.

- B. After receipt of required written notice, the CCWA and Contractor shall promptly review the pertinent condition, determine the necessity of obtaining additional exploration or tests with respect thereto, and determine a mutually accepted course of action.
- C. The contract price or the contract times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor cost of, or time required for, performance of the Work; subject, however, to that the condition meets Division 1, Section 3, Part 2.1A.

#### **4.1.4 Submittals**

- A. This section describes the minimum information that is required to be provided by the Contractor upon contract execution to facilitate the work.
  - 1. The Contractor shall schedule and make submissions as to cause no delay in the work and/or Time for Completion of Project.
  - 2. Additional information may be requested as indicated in Contract Documents.
- B. Material Submittals: Contractor shall submit, to the CCWA for approval to use, product information on all materials required to be provided by the Contractor unless noted otherwise.
  - 1. Material Submittals may be provided via email. Where hard copy submittals are provided, three (3) copies of final approved material data will be required; one (1) copy of approved product material will be returned to the Contractor.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

2. Where a material manufacturer is not specified, Contractor shall submit for use domestically manufactured materials.
  3. For each material supplied, provide the following minimum information.
    - a) Shop drawings and manufacturer's data showing compliance with Contract Documents.
    - b) Identify any deviation from Contract Documents.
    - c) Resubmission of a submittal shall clearly identify the correction or change made.
    - d) Handling and storage instructions, as applicable.
    - e) Installation instructions, as applicable.
    - f) Manufacturer's Warranty, as applicable.
  4. Submittals shall be sequentially numbered. Resubmission of a submittal shall have the original submittal number with sequential alphabetic suffix. Each submittal or resubmittal shall be provided with the following minimum information.
    - a) Project title.
    - b) Contractor name.
    - c) Submittal number.
    - d) Date of submittal.
    - e) Reference the material to the specific "Material Requirements" section.
  5. Materials provided by the Contractor not approved by the CCWA shall be subject to rejection without further justification.
  6. Upon receipt of a material submittal, the CCWA shall complete its review and return CCWA comments to Contractor within 10 business days.
- C. Submittals to be provided with Mobilization.
1. Initial construction schedule.
  2. Preconstruction video.
  3. Specifications of materials being supplied.
  4. Work sequence.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

- D. Submittals to be provided with each Application for Payment.
  - 1. Document(s) to support requested payment. Provide two (2) copies with original signatures.
  - 2. Applicable Waiver and release Upon Payment Affidavit. Provide two (2) copies with original signatures.
  - 3. Updated Construction Schedule.
  - 4. Construction Photos.
  - 5. NPDES monitoring reports.
  - 6. Form SLBE-5: Post Award – Monthly Slbe Participation Report – Contract Goal.

#### 4.1.5 Construction Schedule

- A. Contractor shall prepare and submit for CCWA approval a comprehensive construction schedule.
  - 1. The schedule shall begin with the date of Notice to Proceed and conclude with the date of Final Completion.
  - 2. The schedule shall use days as a unit of measure.
- B. Show complete sequence of construction and identify work of separate stages and other locally grouped activities and clearly identify critical paths of activities. Please note this is an occupied facility and activities will need to be scheduled to minimize impact to employees for access and parking. Construction work will need to be completed such that work cannot be performed on the parking addition at the same time as modifications to the east parking lot and work cannot be performed on the driveway addition at the same time as the heavy duty paving. Include as a minimum:
  - 1. Submittals for early product procurement.
  - 2. Mobilization and other preliminary activities.
  - 3. Site clearing.
  - 4. Parking Pavement.
  - 5. Driveway Grading and paving.
  - 6. Heavy Duty Paving

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## **Specifications**

### **Section 4: Construction Standards - Revised**

7. Storm Grassed Swale.
  8. Fence/Gate installation.
  9. East Parking Lot Modifications.
  10. Battle Creek Road Entrance Removal.
  11. Project cleanup and demobilization.
- C. The construction schedule shall be updated and submitted to the CCWA on a bi-weekly basis and include the following as a minimum:
1. Progress of work to within five (5) working days prior to submission.
  2. Approved changes in work scope and activities modified since original submission.
  3. Delays in submittals, resubmittals, deliveries or work.
  4. Other identifiable changes.
  5. Revised projections of progress and completion.

#### **4.1.6 Work Times**

- A. Work on a site shall be allowed Monday through Friday from 7:00 am to 7:00 pm; other times may be allowed by CCWA permission only.
- B. Heavy duty paving shall be coordinated with CCWA to minimize impact to daily operations for CCWA and minimize impact to Contractor.
- C. The existing access driveway to Southlake Parkway may be closed to thru traffic during widening activities. Once driveway is closed, all construction activities shall commence immediately and be completed in a timely manner. Provide CCWA written notification of driveway closing seven days prior to closing date.
- D. Work shall not be permitted on the following dates:
  1. November 26-27, 2015
  2. December 24-25, 2015
  3. January 1, 2016

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## **Specifications**

### **Section 4: Construction Standards - Revised**

#### 4.1.7 Site Safety and Precaution

- A. Construction shall comply with the Department of Labor, Occupational Safety and Health Administration, 29 Code of Federal Regulations Part 1926, Subpart P, revised July 1, 1995.
- B. The Contractor shall be responsible for preparing and implementing a Confined Space Entry Plan in accordance with the Occupational Safety and Health Administration's (OSHA's) Permit Required Confined Space standard, contained in 29 Code of Federal Regulations (CFR) 1910.146. The CCWA reserves that right to have this document submitted at any time.
- C. The Contractor shall provide all staff with photo identification and use vehicles with permanent company logos/markings/identification that are prominently displayed and clearly visible at all times.
- D. The Contractor shall provide an experienced supervisor in charge of field operations and subcontractors. The field supervisor shall be responsible for the safety of all site workers and site conditions, as well as ensuring that all work is conducted in conformance with these Specifications and to the level of quality specified. The field supervisor shall be responsible for reporting any safety or regulatory issue of concern immediately to CCWA.
- E. The Contractor shall be responsible for site security. Contractor shall leave existing vehicle gates in place for security until proposed construction requires the removal of the gate or new vehicle access gate and controls have been installed.
- F. The Contractor shall be responsible for providing and maintaining a safe work site. Contractor shall utilize safety cones, barricades, caution lights, caution tape, safety fencing, etc. as necessary to protect the workers and the public at all times.
- G. The Contractor shall fence off any open ditches or holes at the end of each work day to provide precautionary measures for the protection of persons or property.
- H. The Contractor shall use special care in work methods and take all necessary precautions against improper use of equipment to avoid damaging pipe and/or structures or CCWA, public and private

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## **Specifications**

### **Section 4: Construction Standards - Revised**

property. If, in CCWA's opinion, the Contractor's work has caused damage, the Contractor shall repair the damage timely and to the complete satisfaction of CCWA at no additional cost. In the event that funds are expended by CCWA related to these activities the Contractor shall reimburse CCWA for any and all such costs.

- I. The CCWA shall not be responsible or compensate the Contractor for the damage to and/or loss of Contractor's equipment as result of the work.

#### **4.1.8 Material Handling and Storage**

- A. Prior to accepting (unloading) any material on the Project site, the Contractor shall complete a thorough inspection of the material for contract compliance and damages.
  1. Once an unloading process has started, the Contractor is responsible for storage and protection of the material until Final Acceptance by CCWA.
  2. Any material found to be out of compliance with contract conditions or damaged shall be immediately reported to CCWA and its manufacturer for further inspection.
  3. Should CCWA agree to accept a material that is out of compliance with contract conditions or damaged, then the Contractor shall not be responsible for the material.
- B. The Contractor shall furnish equipment and facilities for loading, unloading and material distribution.
  1. The Contractor shall handle the material in accordance with the manufacturer's instructions.

Any component or material in the possession of the Contractor that is stolen or damaged by impact, vibration, abrasion, discoloration or other damage shall be repaired in accordance to manufacturer instructions or replaced at the discretion of the CCWA at the expense of the Contractor.

- C. The Contractor shall have an area designated at the west end of the existing parking lot along the access drive for material/equipment staging and Contractor employee/subcontractor parking.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

#### **4.2 Site Work**

##### **4.2.1 General**

- A. The Contractor shall be responsible for locating existing utilities in accordance with state and local regulations.
- B. The Contractor shall complete excavation work utilizing trench shoring devices where applicable.
- C. The CCWA shall provide water as necessary for construction purposes at no expense to the Contractor. The excessive use of water shall be prohibited.
- D. The work may be accessed on paved surfaces or non-paved surfaces. Contractor shall provide equipment capable of maneuvering all surfaces; this includes all-terrain vehicles. CCWA shall not be responsible for Contractor's equipment that becomes un-maneuverable due to site conditions.
- E. The Contractor shall employ the "best practicable means" to minimize and mitigate noise as well as disturbance resulting from operations. Mitigation measures shall include the utilization of sound suppression devices on all equipment and machinery.
- F. Contractor or any other worker may not establish quarters for the purpose of overnight stay or temporary residency on the work site.
- G. The Contractor shall maintain the work site in a neat and orderly condition throughout the construction period. Remove and dispose of all construction related debris in accordance with local and state regulations. The burning of materials is not permitted on the work site or other CCWA property. At completion of work, remove temporary facilities, debris and equipment.

##### **4.2.2 Preparation**

- A. Display permits and contact respective agencies as required by permit conditions.
- B. Prior to commencing any on-site work, the Contractor shall establish perimeter erosion control measures and orange safety fencing as indicated on the Construction Drawings.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

- C. Prior to commencing any other job site activity, installed erosion control measures shall be inspected and approved by CCTD.

#### **4.2.3 Clearing and Grubbing**

- A. Area within the proposed work shall be cleared of all trees, stumps, buried logs, brush, grass and other unsatisfactory components unless noted otherwise.
- B. The Project location is at an occupied facility and adjacent to an existing parking lot and access driveway. Clearing activities within the construction limits will need to be scheduled with CCWA during closed hours or weekends for safety reasons.
- C. Trees to remain in or near work area shall be protected from clearing activities and encircled with orange safety fencing.
- D. All damaged trees over three (3) inches in diameter shall be repaired by an experienced nursery expert.
- E. Tap roots and other projections exceeding 1-inch in diameter shall be grubbed out to a depth of at least 18 inches.
- F. All holes remaining after grubbing activities shall be filled with suitable material and properly compacted in layers to density required for in-place backfill.
- G. Prior to commencing any other job site activity, installed erosion control and sedimentation measures shall be inspected and approved by Clayton County.
- H. All materials cleared and grubbed shall be disposed of off-site in accordance with applicable local, state and federal regulations.
- I. Burning of any material or debris shall not be permitted.
- J. Prior to and upon completion of clearing and grubbing activities, install erosion control measures as identified on the construction drawings.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

#### 4.2.4 Topsoil Stockpiling

- A. Remove topsoil to full depth encountered in areas to be graded and stockpile soil.
- B. Soil shall be placed such that the integrity of an excavation or proposed excavation is not jeopardized.
- C. Soil shall not be stockpiled against tree trunks.
- D. Stockpile shall be shaped to drain and install appropriate erosion control measures.

#### 4.2.5 Removing Pavement

- A. Roadway pavement shall be removed for the entire lane width or as indicated on the Construction Drawings. Removal of roadway pavement shall be performed so as not to endanger roadway activity. Work shall be coordinated with CCWA.
- B. Sidewalks shall be removed to their full width from the edge of curb, road pavement or construction/control joint to the nearest adjacent construction/control joint.
- C. Curbs shall be removed for the entire length from control joint to control joint.
- D. Pavement shall be marked squarely and neatly to size as indicated on Construction Drawings.
- E. Pavement shall be scored and broke along the marked lines using a rotary saw and jackhammer. Pavement shall not be machine pulled for initial brake.
- F. Adjacent pavement damaged during construction shall be removed as described above and replaced in accordance with the Construction Drawings at the expense of the Contractor.
- G. Upon removal, pavement shall be loaded and disposed of off-site.

#### 4.2.6 Grading

- A. Grade areas to lines and elevations indicated on drawings or to surrounding surface grades.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

- B. Graded areas shall be within 0.10 foot of required subgrade elevation and shall not permit the ponding of water.
- C. In areas to receive grassing, redistribute stockpiled topsoil over graded areas to a minimum depth of four (4) inches. Provide additional topsoil to achieve required depth.
- D. Where finish grade meets or abuts curbs, walks or pavement, uphill grades shall be slightly higher than curb or pavement to permit drainage.
- E. Excess soil, rock and debris shall be removed from the jobsite and disposed of per county, state and federal regulations.
- F. Stabilize Project in accordance with the erosion control Construction Drawings.

#### **4.2.7 Clean-Up**

- A. Upon site being stabilized with vegetation, all erosion control measures and any remaining debris (i.e. silt fence, stakes, hay bales, orange security fence) shall be removed from site areas and disposed of.

### **4.3 Traffic Control**

- A. CCWA operates as an agency within Clayton County and in coordination with other agencies including Clayton County and incorporated cities. The CCWA shall be responsible for coordinating the work in accordance with the requirements of local, state and federal authorities and jurisdictions as required; this includes fire, police, school, traffic and other public safety authorities.
- B. When required, the Contractor shall provide and maintain traffic control. Prior to work, the Contractor shall prepare and provide the CCWA and/or approving agency a copy of the local/state approved traffic control plan. Traffic safety devices including cones, signs, flashing lights, and other necessary safety equipment must be used to comply with local jurisdiction requirements and standard industry practices.
- C. A minimum of two Department of Transportation (D.O.T.) certified Flaggers will be required when closing any lane or road.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

#### **4.4 Excavation**

##### **4.4.1 Pit and Trench**

- A. Excavation shall include those measures necessary to establish grades indicated on Construction Drawings for utilities and appurtenances.
- B. Excavation should be completed to natural undisturbed soil. Where unsuitable material is encountered, over excavate through unsuitable material and backfill to required grade with No. 57 stone. The CCWA Inspector shall determine depth of over excavation.
- C. Excavated soil shall be placed in a location such that the integrity of the excavation is not jeopardized.
- D. Excavation walls shall be sloped or stepped in accordance with recognized industry standards.
- E. The excavation shall provide space for inspection of utilities and appurtenances.
- F. Maintain excavations dry at all times using pumps, well points or other dewatering means. Remove sediment from collected water using appropriate erosion control measures. Dispose of water in a manner that does not cause soil erosion.
- G. When laying pipe, limit trenching to not greater than 100 feet ahead of completely backfilled work.
- H. Open trenches shall be made safe at all times. Excavations shall be covered in accordance with applicable regulations and/or barricaded and roped-off with identifying tape during work progress.

#### **4.5 Pipe Work**

##### **4.5.1 Bedding**

- A. Pipe shall be laid to elevations and grade as shown on the Construction Drawings.
- B. Pipe shall be laid atop No. 57 stone. Stone shall be shovel sliced from beneath the pipe up to one-third (1/3) the pipe diameter.
- C. Gravity flow pipe shall be laid atop a 4-inch bed of No. 57 stone.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

- D. When installing pipe in areas of excavated rock, pipe shall be placed on a bed of No. 57 stone, minimum six (6) inches in depth.
- E. Soil determined to be unsuitable by the CCWA Inspector shall be removed to a determined depth and replaced with No. 57 stone to desired grade.

#### **4.5.2 Pipe and Fittings for Stormwater Drainage**

- A. Prior to placement, the interior of pipes and fittings shall be cleaned free of dirt and debris.
- B. Pipe, fittings and accessories shall not be laid or jointed in water.
- C. Pipe, fittings and accessories shall be lowered into their respective positions using an excavator with choker straps. A slight hole shall be dug where pipes are to be jointed to relieve pipe bell of any load. Pipe barrel shall be supported for its entire length.
- D. Install compression type gaskets on pipe to ensure proper joint sealing. The pipe mating ends (bell and spigot) shall be thoroughly cleaned and soaped before jointing. The mating ends shall be aligned and carefully shoved together using a steady force.
- E. Pipe may be cut to lengths as required in accordance with manufacturer instructions using a rotary-type abrasive wheel saw.
- F. Prior to joining consecutive pipe, backfill previously jointed pipe with sufficient material to prevent movement.
- G. Backfill pipe trench to the required grade in accordance with backfill and compaction requirements.
- H. Testing shall be performed when all backfill is to finished grade, compaction are complete and dewatering has been discontinued for a minimum 24 hour period at the location of the test. A CCWA Inspector must be present and witness pipe testing for it to be accepted.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

#### **4.6 Manholes**

##### **4.6.1 Drop Inlet Installation**

- A. Drop inlet shall be installed at location and elevations as shown on Construction Drawings.
- B. Drop inlet shall be set atop a twelve (12) inch bed of No. 57 stone that extends a minimum of twelve (12) inches beyond all exterior sides.
- C. The bed shall be prepared so that the drop inlet is set level.
- D. Drop inlet sections shall be handled with lifting straps or hooked cables using a minimum of two (2) of the manufactured manhole lifting holes.
- E. Drop inlet sections shall be positioned such that the effluent piping enters the center of its respective opening .Pipe shall not rest on invert of opening.
- F. Annular space between cored opening and pipe shall be sealed with non-shrink grout.
- G. Prior to joining consecutive sections, tongue-and-grooved ends shall be cleaned free of dirt and debris.
- H. Tongue-and-grooved ends shall be fitted with preformed gasket sealing compound.
- I. Drop inlet sections shall be stacked level and plumb at all times.
- J. Drop inlet lifting holes shall be sealed using non-shrink grout throughout the entire depth of hole.
- K. Upon bringing drop inlet to required grade, install cover.
- L. Drop inlet shall be kept free of dirt and debris.

##### **4.6.2 Existing Catch Basin**

- A. Install storm piping to elevation as shown on Construction Drawings.
- B. Core opening into existing catch basin of sufficient size to install piping.
- C. Seal annulus between pipe and core using non-shrink grout.

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## **Specifications**

### **Section 4: Construction Standards - Revised**

#### **4.7 Backfill and Compaction**

##### **4.7.1 Backfill**

- A. Excavations shall be backfilled using suitable material.
- B. Place no backfill until any poured concrete has sufficient compressive strength.
- C. Place backfill against below grade walls in uniform level lifts to prevent wedging action.
- D. Backfill shall not be placed on surfaces that are saturated, frozen or containing frost or ice.
- E. Place backfill in excavations as follows:
  - 1. Backfill in loose lifts not exceeding 6 inches when compacting using manual tamping devices (jumping jack).
  - 2. Backfill in loose lifts not exceeding 12 inches when compacting using vibrating/ramming devices (sheep-foot vibratory roller).
- F. Any settlement shall be filled and compacted to conform to adjacent surfaces.

##### **4.7.2 Compaction**

- A. Backfill shall be compacted using manual tamping devices or vibrating/ramming devices.
- B. Use manual tamping devices to compact soil as follows, otherwise use vibratory devices.
  - 1. When area is inaccessible to vibrating devices and within 2 feet of below grade walls (includes drop inlet).
  - 2. From bottom of pipe trench to twelve (12) inches above the top of pipe.
- C. Compaction requirements are as follows:
  - 1. Backfill in road right-of-way shall be compacted the entire depth to a minimum of 95% of the maximum dry density as determined by a Standard Proctor Analysis.
  - 2. Backfill not described above shall be compacted for the entire depth to a minimum of 90% of the maximum dry density as determined by a Standard Proctor Analysis.

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#### **4.8 Erosion and Sedimentation Control**

- A. The Contractor shall provide and maintain appropriate erosion and sedimentation control measures in accordance with the Construction Drawings. Erosion and sedimentation control measures shall remain in-place until all work is complete and the work areas are fully stabilized. Once work areas are stabilized with vegetation, the Contractor shall remove any remaining erosion and sedimentation control measures.
- B. The Contractor shall perform NPDES Monitoring in accordance with erosion control NPDES notes on the drawings.
  - 1. Submit results to CCWA on a monthly basis.

#### **4.9 Concrete**

##### **4.9.1 Formwork**

- A. Formwork shall comply with ACI 347-04.
- B. Contractor shall be responsible for design and construction of concrete formwork capable of supporting construction loads. Forms shall be as follows.
  - 1. Wood.
  - 2. Earth.
- C. Construct formwork to lines and elevations as shown on Construction Drawings.
- D. Construct forms to be removed without hammering or prying against concrete.
- E. Clean forms of dirt and debris prior to each use.
- F. Plug holes in existing forms to prevent leakage of cement.

##### **4.9.2 Placement**

- A. Place concrete in accordance with ACI 301-05.
- B. A CCWA Inspector shall approve formwork layout prior to placing concrete. Provide 24-hour notice prior to placing concrete.
- C. Concrete shall not be placed on loose, saturated or frozen soil.

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- D. Concrete shall not be placed in water unless approved by the CCWA Engineer.
- E. Do not drop concrete more than five (5) vertical feet.
- F. Concrete shall be placed only when ambient temperature is at 40° F and rising.
- G. During hot weather (>80°F), place concrete in accordance with ACI 305.
- H. Consolidation.
  - 1. Consolidate all placed concrete with vibrator of suitable vibrations per minute.
  - 2. Provide back-up vibrator.
  - 3. Do not pull or push concrete with vibrator.
- I. Saw control joints as soon as concrete can be traveled by foot without leaving impressions. Saw joint depth shall be ¼ of the slab depth.

#### 4.9.3 Form Work Removal

- A. Removal of formwork shall take place no sooner than 24 hours after placement of concrete.
- B. Forms used below grade shall be removed prior to backfill.
- C. Prior to applying finish, remove fins left by formwork even with adjacent surfaces.
- D. All formwork will be removed and disposed of off-site once removed.

#### 4.9.4 Finishing

- A. Screed slabs by use of straight edge or screed board.
- B. Concrete shall be finished as follows.
  - 1. Exterior slab exposed.....slight broom finish.
  - 2. Unexposed concrete.....form finish.

#### 4.9.5 Curing and Sealing

- A. Prevent freshly placed concrete from premature drying and protect from excessive hot or cold temperatures.

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- B. Maintain freshly placed concrete, without drying, at a relatively constant temperature.
- C. Begin curing after placement and finishing of concrete as soon as free water has disappeared from concrete surface.
- D. Curing methods shall be by the continuous application of water or by applying a liquid membrane forming curing-sealing compound to the fresh concrete surface.
  - 1. Curing by the continuous application of water shall occur for a period of not less than 72 hours.
  - 2. After application of liquid membrane forming curing-sealing compound, maintain continuity of coating and recoat areas damaged during curing period. Curing period shall be not less than 72 hours.

#### **4.10 Asphalt**

- A. Remove asphalt as necessary to facilitate construction. Dispose of asphalt off-site immediately after removal in accordance with local and state regulations.
- B. Prior to replacement, saw cut existing asphalt edge neat to provide clean edge to pave to.
- C. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excessive yielding. Do not proof-roll wet or saturated subgrades.
- D. Sub-base grade will be considered acceptable when results of proof-roll show no soil movement or rutting.
- E. Proceed with paving only after unsatisfactory conditions have been corrected.
- F. Apply prime / tack coat as necessary to facilitate asphalt placement.
- G. Install Type-E light duty asphalt in new parking lot area as detailed on the plans. Compact asphalt layers as necessary.
- H. Install Superpave heavy duty asphalt in other areas indicated and as detailed on the plans. Compact asphalt layers as necessary.

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1. Existing gravel lot shall be excavated to allow for proper depth of asphalt and for final layer of asphalt to be flush with adjacent surfaces.
2. Existing gravel lot shall be sloped to drain storm runoff to existing grate inlet in newly paved area.
- I. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
  1. Spread mix at minimum temperature of 250 deg F (121 deg C).
  2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- J. Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.
- K. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material from forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.
- L. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specifications.
- M. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Owner.
- N. Allow paving to age 30 days before starting pavement marking.
- O. Sweep and clean surface to eliminate loose material and dust.
- P. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).
  1. Broadcast glass beads uniformly into wet pavement markings at a rate of 6 lb/gal. (0.72 kg/L).

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#### **4.11 Electrical Conduit**

- A. Underground conduits shall be a minimum of 24 inches below final grade.
- B. All threaded conduits shall be terminated with specified bushings.
- C. Conduit joints:
  - 1. Ream end of conduit smooth.
  - 2. Conduit ends shall meet in coupling.
  - 3. Provide unions where required, of the Erickson Type.
  - 4. Provide joint compound on the male threads of RMC and IMC conduit.
- D. Use double locknuts at threaded conduit terminations.
- E. The conduit system shall be left free of all debris, water and foreign materials. Plug or cap all conduits while exposed ends to prevent entrance of concrete or other foreign material. Pull a cleaning swab through all conduits prior to pulling conductors.
- F. All threaded joints in rigid conduit shall have pipe compound applied to the male thread only, to be watertight where buried below grade and not encased in concrete.
- G. All conduit shall have pull string installed equal to Greenlee 430 poly pull line.
- H. Underground Warning Tape:
  - 1. Description: 4 inch wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.
  - 2. Location: Along length of each underground conduit or direct buried cable or duct bank. Install one tape per trench at 3 inches below finished grade and at 12 inches above top of conduits.

#### **4.12 Electrical Wire**

- A. Conductors shall not be pulled in ambient temperatures lower than 15° F.
- B. Adequate wire lubricants shall be used to minimize pulling tension.
- C. Conductors shall not be bent, either manually or with bending tools, in a manner that puts excessive stress on insulation or causes it to buckle. Avoid bending to a radius less than manufacturers recommended minimum. Conductors with visibly damaged insulation shall be replaced at no additional cost to the Owner.

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- D. Conductors installed in vertical raceways shall be supported by wedge fittings attached to the conduit at intervals as prescribed by code. Provide suitable sized pull box enclosures as required to contain the support wedges.
- E. All terminations of feeder conductors not made directly on device terminals shall be made with compression lugs installed in accordance with the manufacturer's instructions and with a compression tool approved for the terminator used.
- F. Feeder conductors shall be individually identified at each end and at all intermediate pull boxes and other accessible locations with feeder designation, source, load, voltage and phase.
- G. General-purpose control conductors and all special equipment conductors shall be identified on each end with a unique number or designation. This identification shall be recorded on the contractor's as-built drawings.

#### **4.13 Pole Mounted Lighting**

- A. Existing poles will be removed and stored for reuse as indicated on the drawings.
- B. Existing poles LP4, LP5 and LP6 will be removed by means so as not to damage wood.
- C. Existing poles damaged by contractor will be replaced at no expense to the Owner.
- D. Additional poles removed and not used will be delivered to the Owner.
- E. Poles LP9 and LP10 at parking addition shall be mounted on concrete base with anchor bolts per manufacturer recommendations.
- F. Reinforcement in concrete base shall comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- G. Existing poles LP9, LP10 and LP11 to be re-used at parking addition shall be fitted with dual trunnion mounts and lighting positioned to provide maximum coverage.
- H. Existing pole LP9 mounted with two (2) CCTV cameras at parking addition shall have two (2) new 2 inch conduit installed from existing manhole at existing J-box to new pole location and ends sealed for future use. Conduits shall have pull string installed equal to Greenlee 430 poly pull line.

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- I. Poles shall be set plumb and height to match existing.

#### **4.14 Fencing**

- A. Verify areas to receive fencing are completed to final grades and elevations.
- B. Follow the individual installation instructions for the appropriate fence style in setting posts. For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade.
- C. Concrete for setting posts shall be minimum 28-day compressive strength of 3,000 psi.

#### **4.15 Gate Installation**

- A. Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary. Install gate according to manufacturer's instructions, plumb, level and secure.
- B. Gate posts shall be spaced according to the manufacturer's gate drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware required.
- C. Type and quantity of gate hinges shall be based on the application, weight, height, and number of gate cycles. The manufacturer's gate drawings shall identify the necessary gate hardware required for the application. Gate hardware shall be provided by the manufacturer of the gate and shall be installed per manufacturer's recommendations.

#### **4.16 Gate Operator Installation**

- A. Install gate operators on concrete pads according to manufacturer's instructions. Adjust for smooth, trouble-free operation.
- B. Advise and consult with Owner to obtain the requirements for standard available programmable features or adjustable controls (such as time delays, interlocks, or safety devices), and make necessary adjustments.
- C. Install loop sensor in existing asphalt per manufacturer specifications on exit gate location.

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#### **4.17 Access Controls**

- A. Communication wiring shall be connected to existing wire termination at current vehicle gate entrance that will be removed as part of this contract.
- B. Communication wire shall be trenched from existing j-box at existing vehicle gate through 1 inch diameter schedule 40 PVC conduit to kiosk location and gate openers. Asphalt shall be patched per section 4.12 Asphalt. Contractor shall have the option to bore existing asphalt driveways in lieu of open trench at no additional expense to the Owner.
- C. Wire devices following manufacturer's specifications.
- D. Provide schematic of wiring layout to owner prior to installation.
- E. Mounting post and access card reader shall be installed on 6 inch raised slab, 6 feet by 2 feet, oval in shape as shown on the construction drawing. Exact location of slab shall be determined by gate location and operation.
  - 1. Cut asphalt for dimensions above and remove asphalt and base 12 inches below adjacent asphalt elevations.
  - 2. Prepare subgrades for concrete placement of raised slab.
  - 3. Prepare forms per Section 4.9 Concrete, to install kiosk slab 6 inches above adjacent asphalt elevation.
  - 4. Raised slab shall have broomed finish with beveled edges.
- F. Pipe bollard to protect access card reader at gate shall be 48 inches tall exposed and set a minimum 42 inches below grade in 18 inches diameter of concrete. Bollard shall be painted safety yellow on exposed pipe.

#### **4.18 Landscaping**

##### **4.18.1 Trees and Shrubs**

- A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.
  - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, oils, gasoline, diesel fuel, paint thinner, turpentine, tar or acid has been deposited in soil within a planting area.
  - 2. Do not mix or place soils and soil amendments in frozen, wet or muddy conditions.

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3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
  4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
  - C. If contamination by foreign or deleterious material or liquid is present in soil with a planting area, remove the soil and contamination as directed by Owner and replace with new planting soil.
  - D. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
  - E. Install erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
  - F. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Owner's acceptance of layout before excavating or planting. Make minor adjustments as required.
  - G. Apply antidessicant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling and transportation.
    1. If deciduous trees or shrubs are moved in full leaf, spray with antidessicant at nursery before moving and again two weeks after planting.
  - H. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs and foliage to protect from wind and other damage during digging, handling and transportation.
  - I. Excavate pits with sides sloped inward and with bottom of excavation slightly raised at center to assist drainage. Excavate approximately three times as wide as ball diameter. Scarify sides of plant pit smeared or smoothed during excavation.

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1. Set trees and shrubs plumb and in center of pit with top of ball raised above adjacent finish grades.
  2. Remove burlap and wire baskets from tops of balls and partially from sides, but do not remove from under balls. Carefully remove root balls from containers without damaging root ball or plant. Do not use planting stock if ball is cracked or broken before or during planting operation.
  3. Place backfill around ball in layers, tamping to settle backfill and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Water again after placing and tamping final layer of planting soil mix.
  4. Prune, thin and shape trees and shrubs after planting.
- J. Mulching: Before mulching, install weed control barriers. Apply organic mulch, 3 inches thick, and finish level with adjacent finished grades. Do not place mulch against trunk or stems.
- K. Guying and staking: Install staking and guying system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.
- L. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash and debris, and legally dispose of it off Owner's property.

#### **4.18.2 Turfgrass Sod**

- A. Sod: Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.
1. Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
  2. Turfgrass Species: Bermuda Sod.
- B. Planting soil: ASTM D 5268 topsoil, with pH range of 5.5 to 7, a minimum of 2 percent organic material content or Existing, native topsoil formed under natural conditions with the duff layer retained during excavation process or Existing, in-place surface soil. Verify

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suitability of soil to produce viable planting soil. Clean soil of roots, plants, sod, stones, clods, lumps, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix soil with loose compost, lime and fertilizers in the quantities recommended by the soil analysis to produce planting soil.

- C. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- D. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
  - 1. Lay sod across angle of slopes exceeding 1:3.
  - 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.
- E. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below sod.

#### **4.18.3 Warranty**

- A. Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
  - 1. Failures include but are not limited to the following:
    - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
    - b. Structural failures including plantings falling or blowing over.

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2. Warranty Periods from date of Final acceptance:
  - a. Trees, shrubs & sod: 12 months.
3. Include the following remedial actions as a minimum:
  - a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
  - b. Replace plants that are more than 25 percent dead or in unhealthy condition at end of warranty period.
  - c. Provide extended warranty period equal to original warranty period, for replaced plant material.

#### **4.19 Alternate Bid Item 1 (Existing Parking Lot Resurface and Re-stripe)**

##### 4.19.1 Patch existing Potholes

- A. Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement. Cut excavation faces vertically. Remove excavated material and recompact unbound aggregate base course to form new subgrade.
- B. Tack coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving area at a rate of 0.05 to 0.15 gal./sq. yd.
  1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
  2. Avoid smearing or staining adjoining surfaces, appurtenances and surroundings. Remove spillages and clean affected surfaces.
- C. Patching: Fill excavated pavements with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

##### 4.19.2 Cold Milling Asphalt and Re-stripe

- A. Clean existing paving surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement, including hot mix asphalt and, as necessary, unbound-aggregate base course, by cold milling at 1-1/2 inches average depth.

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1. Repair or replace curbs, manholes, and other construction damaged during cold milling.
- B. Place hot mix asphalt overlay 1-1/2 inches in depth on newly cold milled asphalt surface per Section 4.11 Asphalt.
- C. Install pavement markings per Section 4.11 Asphalt. Provide layout to Owner prior to installation for approval to maximize spaces allowed.

#### **4.20 Alternate Bid Item 2 (Remove Existing Curb, Asphalt, Sidewalk. Sod Area & Construct New Sidewalk & Curb & Gutter)**

##### 4.20.1 Remove Existing Curb, Asphalt and Sidewalk.

- A. Saw cut perimeter of asphalt to be removed with vertical cuts to facilitate curb and gutter construction.
- B. Remove asphalt, curbing and base material below grade to undisturbed soils.
- C. Existing curbing to be removed shall be to existing control joint.

##### 4.20.2 Sod area

- A. Grade area per Section 4.2.6 Grading.
- B. Install turfgrass per Section 4.18.2 Turfgrass Sod.

##### 4.20.3 Sidewalk and Curb & Gutter

- A. Construct 10 foot wide sidewalk per Section 4.10 Concrete in location shown on drawings to connect two existing sidewalks.
- B. Construct curb & gutter as shown per Section 4.10 Concrete.

#### **4.21 Material Testing Services**

- A. CCWA will be testing soil fill and backfill for compaction requirements referenced in the Work Items. Soil tested and that does not meet the required percent compaction shall be excavated, replaced and compacted to meet the required percent compaction at the expense of the Contractor. The cost of any retesting due to a failure of a test will be paid for by the Contractor.

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#### **4.22 Acceptance**

- A. A CCWA Inspector shall inspect all components of work for compliance with the Contract. The Contractor shall, at all times, permit and facilitate inspection of work by the CCWA. The presence of a CCWA Inspector or other CCWA staff on the site of work shall not be construed to, in any manner, relieve the Contractor of their responsibility for strict compliance with the Contract. The CCWA Inspector shall inform the Contractor when work is deficient from the Contract. Deficiencies shall be addressed in a timely manner as determined by the CCWA Inspector.
- B. Final Acceptance of the work by the CCWA shall be when the Contractor has met all terms and conditions as set forth by the Contract. The date of Final Acceptance shall be no later than the date the CCWA approves the Contractor's final request for payment. Where applicable, Final Acceptance shall be written, signed and dated by the CCWA.

**END OF SECTION**