



Utilities & Engineering Department
Contracts

1136 Washington Street, Columbia, SC 29201 · Phone 803-545-3372 · Fax 803-545-3322

INTER OFFICE MEMORANDUM

TO: Ms. Teresa Wilson, City Manager

FROM: Kimberley R. Roof, Asst. Contracts Administrator

SUBJECT: **CITY COUNCIL AGENDA ITEM:** Agreement for Engineering Services between the City of Columbia and Hazen & Sawyer, P.C. for design construction and rehabilitation of the MWTP Anaerobic Digester (SS7253)

Date: February 17, 2014 Initial:

The attached Agreement will allow the City to engage Hazen & Sawyer, P.C. for design, construction and rehabilitation of the MWTP Anaerobic Digester.

The Wastewater Engineer and staff have negotiated a fee totaling \$3,246,477.00 for the specified needs above with Hazen & Sawyer, P.C. a non-DBE firm located in Columbia, South Carolina. Hazen & Sawyer, P.C. is an approved Mentor Protégé firm with offices located in Columbia, SC. Construction Dynamics, Inc. their protégé, will provide construction administration and observation services for 12.6% of the total contract. Additional subs including other protégés in the program and minority and female owned firms are providing sub consulting services under this Agreement totaling 22.7%. A detailed breakdown is listed below:

Protégé/MBE/SBE Firms

| | | |
|-----------------------|---------------------|-------|
| Chao & Associates | \$ 50,910.00 | 1.6% |
| John Bowman Architect | \$ 28,180.00 | 0.9% |
| Howard Engineering | \$110,910.00 | 3.4% |
| 4D Engineering | \$ 27,275.00 | 0.8% |
| Construction Dynamics | <u>\$408,180.00</u> | 12.6% |
| | \$625,455.00 | 19.3% |

| | | |
|---|---------------------|-------|
| <u>SBE non Protégé</u> | | |
| Bufford Goff & Associates | <u>\$ 28,180.00</u> | 0.9% |
| | \$ 28,180.00 | 0.9% |
| <u>Other Consultants</u> | | |
| ICA Engineering (formerly Florence & Hutcheson) | \$ 20,000.00 | 0.6% |
| Terracon | \$ 47,725.00 | 1.5% |
| MR Systems | <u>\$ 15,450.00</u> | 0.5% |
| | \$ 83,175.00 | 2.6% |
| | | |
| Total Protégé/Subconsultant | \$736,810.00 | 22.7% |
| | | |
| Total Project | \$3,246,477.00 | |

Funding for this Agreement will come from the Sanitary Sewer Improvements Fund (5529999-SS7253-688505). Services to be performed will impact all City Council Districts.

The Legal Department has reviewed the Agreement and approved as to form. The Director of Utilities and Engineering and the ACM for Operations recommends its approval.

Enclosure

AGREEMENT FOR ENGINEERING SERVICES

THIS AGREEMENT is made this ____ day of _____, 20__, by and between the City of Columbia, South Carolina (hereinafter referred to as the "City") and Hazen and Sawyer P.C., (hereinafter referred to as the "Engineer"), for Engineer to render certain services required for design, construction and Rehabilitation of the Metropolitan Wastewater Treatment Plant Anaerobic Digester (SS7253).

For and in consideration of the mutual covenants and promises contained herein, the parties agree as follows:

I. Scope of Services

Upon written notification by the City to proceed, the Engineer shall complete the scope of services more fully described in Exhibit A, attached hereto. The Engineer shall perform any and all incidental services not specifically set forth in Exhibit A, which are necessary to fully complete the scope of services described in Exhibit A.

II. Supplemental or Additional Services

Supplemental or Additional Services may be required of the Engineer by the City or recommended by the Engineer and approved by the City in writing.

The Engineer must obtain written approval from the City for any Supplemental or Additional Services prior to the work being performed. If the Engineer fails to obtain prior written approval to perform the work, the City is under no obligation to compensate the Engineer for services performed.

III. Term of Agreement

This Agreement shall expire, unless terminated earlier as provided for herein, on January 1, 2018, or at such time the total compensation provided for herein is reached, whichever is earlier.

IV. Schedule for Completion of Services

Time is of the essence. The Engineer shall complete any and all services performed under this Agreement within the timeframes as outlined in Exhibit "C, attached hereto.

V. Compensation

A. The compensation to be paid by the City to the Engineer under this Agreement for Phase 1 Detailed Design Services and Expenses as set forth in Exhibit B shall not exceed One Million Four Hundred Seventy Nine Thousand Three Hundred Seventy Nine and No/100 (\$1,479,379.00) dollars.

The compensation to be paid by the City to the Engineer under this Agreement for Phase 2 Bid Phase Services and Expenses as set forth in Exhibit B shall not exceed Thirty Nine Thousand Three Hundred and Four No/100 (\$39,304.00) dollars.

The compensation to be paid by the City to the Engineer under this Agreement Phase 3 Construction Management Services and expenses as set forth in Exhibit B shall not exceed One Million Seven Hundred Twenty Seven Thousand Seven Hundred Ninety Four and No/100 (\$1,727,794.00) dollars.

The total compensation to be paid by the City to the Engineer under this Agreement shall not exceed Three Million Two Hundred Forty Six Four Hundred Seventy Seven and No/100 (\$3,246,477.00) dollars.

B. The Engineer shall submit invoices no more frequently than monthly for services rendered during each phase of the Project. Each invoice submitted must describe the services for which payment is requested, show payment calculations and specify the person(s) rendering such service(s). **Each invoice must also clearly identify any portion of the fee invoiced for subcontracted services, including any such services that are specified in the Summary of Proposed Sub-consultants shown on Exhibit D hereto, and identify if the subcontractor is a Minority or Female Business Enterprise.** Each invoice shall bear the signature of the Engineer, which signature shall certify that the information contained in the invoice is true and accurate and that the invoice amount is currently due and owing. The City will not pay interest or penalty on any past due amount.

VI. Indemnification, Hold Harmless And Insurance

A. The Engineer shall provide to the City evidence of Professional Liability Insurance in an amount not less than One Million and no/100 (\$1,000,000.00) Dollars per occurrence and Two Million and no/100 (\$2,000,000.00) Dollars Aggregate and General Liability Insurance in accordance with the current Columbia Code of Ordinances, Section 11.71, which can be located at www.columbiasc.net.

B. The Engineer shall furnish the City with a certificate showing satisfactory proof of carriage of the insurance required hereunder and such insurance shall be approved by the City prior to the Engineer and any subcontractor of the Engineer commencing any services under this Agreement. The City of Columbia shall be the Certificate Holder and shall be named as an Additional Insured.

C. The Engineer shall hold harmless, defend and indemnify the City from any and all claims, actions, suits, charges and judgments whatsoever that arise out of the Engineer's performance or nonperformance of the services or subject matter called for in this Agreement.

VII. Permits and Licenses

A. The City shall be responsible for obtaining any approvals, permits and/or licenses as may be required of the Engineer in performing the services required under this Agreement. The City shall be responsible for any costs relating to same.

B. The Engineer shall be responsible for identifying and providing any applications and supporting documentation to the City for any approvals and/or permits required of the City in order for the Engineer to perform the services required under this Agreement. Such approvals and/or permits may include, but not necessarily be limited to, SCDHEC Construction Permits, SCDHEC Stormwater Management for Construction Sites Permits, SCDHEC Water Resources Permits, Corps of Engineers Permits, City/County/SCDOT Encroachment Permits, Encroachment Permits for other utility rights-of-way and Railroad Right-of-Way Encroachment Permits/Agreements. The City shall obtain the approvals and/or permits identified by the Engineer and pay any costs relating to same.

C. The Engineer shall answer questions and consult with the City and/or appropriate authorities as necessary to assist the City's efforts in obtaining required permits/approvals.

D. The Engineer shall procure a City of Columbia business license while performing services under this Agreement.

VIII. Duties Upon Termination

At termination of this Agreement, the Engineer shall immediately provide the City with all records and data in any format the Engineer is capable of producing and at no cost to the City, which were generated, created or received by the Engineer in performance of the services required by this Agreement or as the City may deem necessary to perform the required services by the City or the Engineer's successor. All records shall be free from any proprietary claims or interest. The Engineer agrees to fully cooperate with the City and any successor to ensure an effective transition to continuously provide the required services.

IX. Termination of Agreement

The City may terminate this Agreement at any time upon any of the following grounds:

A. Failure by the City to appropriate funds for the performance of any of the services required in this Agreement in any annual budget;

B. The Engineer fails to perform any of the services required in this Agreement and does not correct such deficiency within fifteen (15) days having been notified by the City of such deficiency;

C. Force Majeure;

D. The City shall, at its sole option and discretion, have the right to terminate this contract for any reason whatsoever. A termination for default under this Agreement, if wrongfully made, shall be treated as a termination for convenience under this clause;

E. Upon expiration of the term of this Agreement; and

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F. By mutual agreement.

Notice of termination shall be sent by registered mail, return receipt requested. In the event of termination, the Engineer shall only be entitled to the actual direct costs of all labor and material expended on the services required under this Agreement prior to the effective date of the termination or the Engineer shall be entitled to be paid a pro-rata percentage of the total Agreement price which is equal to its percent of completion, whichever of the two methods provides the lowest sum to be paid to the Engineer. In no event shall the Engineer be entitled to anticipatory profit or damages for any termination under this Agreement. In no event shall the Engineer be entitled to assert a claim in quantum meruit or any other measure of damages other than that stated herein.

X. Ownership of Project Documents

All data, documents or other information of any description generated by or used by the Engineer or any subcontractor retained by the Engineer and related to the services required by this Agreement shall be the property of the City and shall not be used by the Engineer for any purpose whatsoever except to perform the services required by this Agreement.

XI. Notice

A. Written notice to the City shall be made by placing such notice in the United States Mail, postage prepaid and addressed to: Director of Utilities and Engineering, City of Columbia, Post Office Box 147, Columbia, South Carolina 29217.

B. Written notice to the Engineer shall be made by placing such notice in the United States Mail, postage prepaid and addressed to: Hazen & Sawyer P.C., 1122 Lady Street Suite 1230, Columbia, SC 29201.

XII. Miscellaneous

A. Nothing in this Agreement shall be construed to give any rights or benefits to anyone other than the City and the Engineer.

B. The Engineer shall be responsible for performance of all services required by this Agreement. The Engineer does not act as the City's agent or employee.

C. The Engineer will not assign or sublet its obligations to perform the services required by this Agreement without the written consent of the City.

D. In the event there are any disagreements between the City and the Engineer with regard to any of the requirements, specifications or interpretation of this Agreement, the Engineer agrees to defer to the reasonable interpretations of the City as, from time to time may be made by the City. Ambiguities in the terms of this Agreement, if any, shall not be construed against the City.

E. This Agreement shall be construed in accordance with the laws of the State of South Carolina. The Engineer agrees to subject itself to the jurisdiction and venue of the Circuit Courts of Richland County, State of South Carolina as to all matters and disputes arising or to arise under this Agreement and the performance thereof. The City may seek attorney's fees and the Engineer agrees to pay such fees as awarded by the Court or other body. No attorney's fees may be sought by, nor will be paid to, the Engineer.

F. This Agreement represents the entire agreement between the City and the Engineer and supersedes all prior communications, negotiations, representations or agreements, either written or oral. Only written Change Order signed by both the City and the Engineer may amend this Agreement.

G. The failure of either the Engineer or the City to insist upon the strict performance of any provision of this Agreement shall not be deemed to be a waiver of the right to insist upon strict performance of such provision or of any other provision of this Agreement at any time. Partial payment by the City shall not be construed as a waiver. Waiver of any breach of this Agreement shall not constitute waiver of a subsequent breach.

H. In the event any provision of this Agreement is determined to be void or unenforceable, all other provisions shall remain in full force and effect.

I. This Agreement is subject to City Council approval.

J. The Engineer is subject to the provisions of the 1991 Ethics Reform Act (8-13-100, et seq, South Carolina Code of Laws, 1976, as amended). Under this Act, City employees are prohibited from accepting anything of value from any person. "Anything of value" includes, but is not limited to, lodging, transportation, entertainment, food, meals, beverages, money, gifts, honorariums, discounts and interest-free loans.

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Signatures appear on the next page

Witness the parties' respective hands and seals on the date first written above.

Hazen & Sawyer, P.C.

Terry Morrison
Witness

By: [Signature]
Title: SENIOR ASSOCIATE

CITY OF COLUMBIA, SOUTH CAROLINA

Witness

By: _____
Teresa Wilson, City Manager

RECOMMENDED BY: [Signature] Director of Utilities and Engineering

RECOMMENDED BY: _____ Assistant City Manager for Operations

**Exhibit A
Scope of Services**

**Metropolitan Wastewater Treatment Plant
Anaerobic Digester Rehabilitation**

**City of Columbia, South Carolina
CIP SS7253**

PURPOSE OF AGREEMENT

Hazen and Sawyer (H&S) recently completed a Solids Handling Master Plan at the City of Columbia (City) Metropolitan Wastewater Treatment Plant (Metro WWTP) which evaluated long-term solids thickening, digestion, dewatering, and disposal alternatives. For each solids handling unit process, deficiencies were identified and recommendations provided. The study revealed that much of the existing equipment is experiencing mechanical problems and/or approaching its useful service life thereby requiring either rehabilitation or total replacement. The purpose of this Agreement is to provide professional engineering services for the rehabilitation of the five (5) existing anaerobic digesters.

SCOPE OF WORK

Services to be provided by H&S under this Agreement include Phase 1 (Detailed Design), Phase 2 (Bid Phase Services), and Phase 3 (Construction Management Services) and their associated tasks delineated below. A Purchase Order will be issued initially for Phase 1 and 2 services. Funding for Phase 3 will be applied at a later date and a Separate Purchase Order issued after successful completion of Phase 1 and 2.

Phase 1 – Detailed Design

- Task 1.1 – Develop Detailed Drawings
- Task 1.2 – Develop Technical Specifications
- Task 1.3 – Develop Front-End Bidding Requirements
- Task 1.4 – Regulatory Coordination
- Task 1.5 – Quality Assurance / Quality Control
- Task 1.6 – Review Meetings
- Task 1.7 – Specialty Subconsultants

Phase 2 – Bid Phase Services

- Task 2.1 – Bidding Assistance
- Task 2.2 – Attend Pre-Bid Meeting
- Task 2.3 – Bid Documents Interpretation
- Task 2.4 – Attend Bid Opening
- Task 2.5 – Prepare Official Notices
- Task 2.6 – Conform Bid Documents

Phase 3 – Construction Management Services

- Task 3.1 – Office Construction Administration
- Task 3.2 – Field Construction Observation
- Task 3.3 – Facility Start-Up
- Task 3.4 – O&M Manual / Operator Training
- Task 3.5 – Post Construction Services
- Task 3.6 – Specialty Subconsultants

Phase 1 – Detailed Design

Task 1.1 Develop Detailed Drawings – Prepare detailed drawings suitable for regulatory review and approval, and for competitive bidding by a General Construction Contractor. It is estimated that 141 detailed drawings will be prepared as summarized below:

Estimated No. of Detailed Drawings

| <u>Series Description</u> | <u>Number</u> |
|------------------------------------|---------------|
| General | 5 |
| Yard Civil / Site Work | 15 |
| Exist Digester Headhouse (3 total) | |
| - Mechanical | 33 |
| - Structural | 15 |
| - Architectural | 6 |
| - HVAC | 9 |
| - Electrical | 17 |
| New Boiler Facility | |
| - Mechanical | 4 |
| - Structural | 2 |
| - Architectural | 4 |
| - HVAC | 2 |
| - Electrical | 7 |
| Misc. Standard Details | 22 |
| TOTAL | 141 |

Drawings will detail the following recommended improvements from the Solids Handling Master Plan and will consider future plant improvements:

- Yard piping modifications to convey co-thickened primary and waste activated sludges from the existing Train 1 and Train 2 DAF Buildings to each of the five anaerobic digesters. Flexibility will also be provided to convey primary sludge from Train 1 and Train 2 directly to each of the five anaerobic digesters.
- Demolition of existing equipment, piping, valving, and appurtenances from the three (3) existing Digester Headhouses.
- Each existing Digester Headhouse will be provided with the following new equipment:

- Tube-in-Tube heat exchangers with dedicated sludge recirculation pumps (total of five).
 - Sludge process, hot water supply and return, and gas handling piping.
 - Control valving and associated instrumentation to allow feeding individual digesters on a time or volume basis.
 - Sludge transfer pumps (total of five) sized to convey digested sludge to existing sludge storage tank located in the Centrifuge Building, and to future "wide spot" tank prior to belt filter press dewatering.
 - Lighting and ventilation to conform to NFPA 820 (2012 edition) requirements.
- The new Boiler Facility will be a concrete slab on-grade building, CMU block wall construction with brick facing, and a standing metal seam roofing system to match the recently constructed Septage Receiving Facility. The following new equipment will be provided:
 - Hot water boilers with dual fuel capability for burning digester gas or natural gas.
 - Hot water supply and return, and gas handling piping.
 - Gas dryer, compressor, and iron sponge for H₂S removal (duty and standby units) to allow digester gas to be utilized as fuel for the new hot water boilers.
 - Waste gas burners (duty and standby units) with dual pilot to operate using digester gas or natural gas.
 - Lighting and ventilation to conform to NFPA 820 (2012 edition) requirements.
 - Each existing anaerobic digester will be provided with the following new equipment:
 - Painted carbon steel floating gas-holder type covers with associated gas safety equipment (duty and standby pressure-vacuum relief valves assemblies with flame arresters).
 - Dedicated mechanical pump mixing equipment with dedicated pump and manifold piping system similar to the Siemens Jet Mixing System or Vaughan Rotamix System. Pumps will be located exterior to the digesters within the existing tank access entry way. Existing tank wall penetrations will be utilized for pump suction and discharge piping. A new canopy will be provided to protect equipment and O&M Staff from inclement weather.

Task 1.2 Develop Technical Specifications – Prepare performance based technical specifications in CSI format for all aspects of the work such that the project results in a complete, working facility. H&S shall identify any sole-sourced equipment items and assist the City in pre-selection and negotiation of such equipment. Where possible, H&S shall identify two or more equipment manufacturers capable of providing suitable equipment and/or materials.

Related work to be performed by H&S under this task includes:

- Maintenance of Plant Operations during Construction – H&S will develop a detailed plan for maintenance of plant operations during construction including consideration of maintaining permit compliance while sequencing new facilities into service and demolishing existing facilities, as necessary. H&S will conduct a workshop with Plant Staff to ensure that the

proposed plan fully addresses Plant Staff's concerns, maintenance of access to existing facilities, and other constraints vital to project success.

- Functional Control Descriptions – H&S will develop functional control descriptions describing the required operation, monitoring, and control of the new and rehabilitated facilities. New and/or modified graphic display screens depicting the anaerobic digestion facility improvements will be described by H&S and incorporated into the existing plant SCADA system by the General Contractor during construction. H&S will coordinate integration design with the City's instrumentation and control integrator (MR Systems).
- Opinion of Cost – H&S will develop and maintain a detailed cost estimate throughout the design of the work. Formal opinions of probable cost shall be provided at 60% complete, at 90% complete, and at 100% final design. H&S will provide periodic updates to the City regarding bid opening results from other projects in the region. H&S will promptly identify any cost impacts resulting from design decisions made by the City and communicate such impacts to the City.

Task 1.3 Develop Front-End Bidding Requirements – Prepare bidding and general requirements utilizing H&S standard front-end documents for water and wastewater construction projects.

Bidding documents to include:

- Invitation for Bids
- Notice to Bidders
- Instruction to Bidders
- Proposal
- Contract
- General Conditions (EJCDC, 2007 Edition)
- Supplementary Conditions

General requirements to include:

- Summary of Work
- Modification Procedures
- Coordination
- Abbreviations
- Reference Standards
- Project Meetings
- Submittals
- Construction Schedule and Sequence
- Seismic Anchorage and Bracing
- Special Inspections
- Quality Control
- Watertightness Testing of Concrete Structures

- Temporary Utilities
- Maintenance of Utility Operations During Construction
- Protection of Existing Facilities
- Demolition and Removal of Existing Structures and Equipment
- Site Access and Storage
- Temporary Environmental Controls
- Field Office, Equipment and Services
- Materials and Equipment
- Equipment Testing and Start-Up
- Project Closeout

Task 1.4 Regulatory Coordination – Identify, prepare, and submit all required permit packages to the applicable regulatory agencies for review and approval. Where necessary, H&S will discuss the proposed project with the applicable regulatory agencies to fully define the permit requirements and to identify the major permitting issues that must be resolved. A permitting strategy will be developed to address the major issues identified and to facilitate the permit acquisition process. Applications for the required permits and approvals will be prepared for submittal to the respective agencies. The City will pay for all application fees associated with the permitting process. It is anticipated that the following permits, as a minimum, will be required:

- SC DHEC WWTP Construction Permit
- SC DHEC / Richland County Stormwater Permit
- Richland County Land Development Permit
- Richland County Building Permit
- Richland County Floodplain Development Permit

Task 1.5 Quality Assurance / Quality Control – H&S will conduct an internal technical/constructability review at the 90% completion milestone. Technical Review Committee members and a Construction Field Engineer will provide a review of the design to date including:

- Specified manufacturers of major equipment items
- Design calculations
- Construction cost estimate
- I/O listing and functional control descriptions
- Construction phasing
- Inter-discipline review to ensure coordination and completeness
- Front-end documents and technical specifications

Task 1.6 Review Meetings – H&S will conduct ½-day project review meetings at 30%, 60%, and 90% completion milestones for City Staff input and review. Six (6) additional discipline focus meetings (i.e., mechanical, electrical, and instrumentation and control) will be coordinated and conducted with Plant Staff to discuss: equipment preferences; manufacturers to be named in the individual equipment, electrical, and instrumentation and control specifications; materials of construction; and, functionality. Minutes from all meetings will be recorded and distributed to all participants to document key design decisions and impact to cost of construction.

Task 1.7 Specialty Subconsultants – H&S will coordinate the activities of the following local specialty subconsultants to perform the specific services delineated below:

- **Chao & Associates** – Provide surveying and topographic mapping of area where new construction is anticipated. Established on-site benchmarks will be utilized for horizontal and vertical control. Subsurface utility engineering for identifying location of buried infrastructure (e.g., piping and electrical ductbank) will be provided on an as needed basis. Chao & Associates will also provide structural design services for the new Boiler Facility.
- **4D Engineering** – Provide civil site work design services (i.e., site grading, staking, paving, and drainage) and related permitting services (i.e., stormwater and land development).
- **John Bowman Architect** – Provide architectural design services for the new Boiler Facility.
- **Bufford Goff & Associates** – Provide HVAC design services for the new Boiler Facility.
- **Howard Engineering** – Provide electrical design services for the new Boiler Facility.
- **Terracon** – Conduct a subsurface field investigation and provide a geotechnical report to include recommendations on foundations, allowable bearing pressures, lateral earth pressures, estimated settlements, presence/absence of rock, suitability of on-site material for structural fill, and seismic parameters for all proposed structures.
- **MR Systems** – Provide instrumentation and control (I&C) design services for the anaerobic digestion facility improvements.
- **Construction Dynamics, Inc.** – Provide third party constructability review and construction cost estimate at the 90% design completion milestone.

Phase 2 - Bid Phase Services

Task 2.1 Bidding Assistance – H&S will assist the City with preparing an advertisement for bid and for identifying and contacting potential General Contractors that may be capable and available to conduct the construction. It is acknowledged that the City will be responsible for Contract Document reproduction and distribution to all potential bidders, vendors, and plan rooms.

Task 2.2 Pre-Bid Meeting – Attend a pre-bid meeting to describe the project and the requirements of the Contract Documents to interested bidders and respond to questions concerning the project requirement.

Task 2.3 Bid Documents Interpretation – During the bid period, H&S will be available to answer any questions concerning the requirements of the Contract Documents. If required, H&S will develop and distribute to all plan holders such addenda as may be deemed necessary to clarify or modify the requirements of the Contract Documents to clearly communicate the intent of the work.

Task 2.4 Bid Opening – Attend the bid opening and prepare a tabulation of all bids received. H&S will analyze all bids received and prepare and certify a bid tabulation, and prepare and submit a recommendation for award.

Task 2.5 Official Notices – Upon City Council approval of contract award, H&S will issue official "Notice of Award" to the successful bidder, and prepare construction contracts for execution by City Staff and the successful bidder. H&S will issue official "Notice to Proceed."

Task 2.6 Conform Bid Documents - Incorporate all modifications to the Contract Documents resulting from the issuance of addenda during the bid period, and issue conformed plans and specifications (a total of 20 sets) to the City and the General Contractor.

Phase 3 – Construction Management Services

Task 3.1 Office Construction Administration Services – H&S will provide construction related office services delineated as follows under this task:

- **Preconstruction Conference** – H&S will prepare for and conduct the preconstruction conference. Minutes of the meeting will be prepared and distributed to all attendees.
- **Show Drawings and Other Submittal Reviews** – H&S will establish and administer a procedure for receiving and tracking all submittals. H&S will provide technical review of all shop drawings, detailed construction drawings, erection drawings, and other submittals. H&S will discuss/incorporate any City review comments as appropriate. Presentations by H&S and the General Contractor's proposed vendor(s) to City Staff may be needed for complex submittals or proposed alternate equipment items. Copies of all submittal review shall be forwarded to the City and the General Contractor in a timely manner.
- **Pay Requisition Review** – H&S will receive and review General Contractor's pay requisitions for work completed. H&S will verify the appropriateness of the pay requests, the state of completion of the work and the proper storage and maintenance of General Contractor's stored materials, and then forward the General Contractor's pay requisitions along with recommendation for payment to the City in a timely manner.
- **Requests for Information (RFI) and Clarifications (RFC)** – H&S will receive, review, and respond to General Contractor RFIs in a timely manner. Where required, H&S will provide written responses to RFIs incorporating clarifications of the design intent and City decisions.
- **Request for Proposals (RFP)** – H&S will prepare RFPs from the General Contractor for items of work outside of the defined scope of work in the plans and specifications. Such RFPs may be developed for additions to or deletions from the project based on unforeseen conditions and/or City requests. H&S will respond to any clarifications requested by the General Contractor regarding the RFPs. H&S will develop an engineer's estimate of the cost impacts of the RFP to the project and make recommendations to the City regarding the appropriateness of General Contractor pricing on such proposals.

- **Change Orders** – Should the General Contractor submit claims related to the project and/or modifications become necessary to meet the City's needs for the project, H&S will review the claims and/or proposed modifications and advise the City on the approach for resolution of the related issues. H&S will review justification for all claims for modifications to the project cost and/or schedule and develop recommendations to the City for the fair and equitable resolution of such claims.
- **Progress Review Meetings** – H&S will schedule, prepare for, attend, and conduct progress meetings at the project site to include City Staff and the General Contractor's representative(s). These meetings shall be normally held on a once per month basis. During critical times of construction, the meetings may be held every two weeks. Minutes of the meetings will be prepared and distributed to all attendees and key project team members. H&S will verify that the General Contractor is responsive to both the City's and H&S's concerns expressed during the course of the project, including maintaining the project schedule.
- **Project Management** – H&S will be responsible for overall project management for the project on behalf of the City, including services provided by the local specialty subconsultants. H&S will direct the construction observation activities and will receive and review all daily construction observation progress reports. H&S will maintain all documentation of project activities on behalf of the City.

Task 3.2 Field Construction Observations Services – H&S will provide construction observation services as required by a Registered Professional Engineer and a Resident Project Representative to assure high quality and conformity with the Contract Documents. Services provided under this task are delineated as follows:

- **Periodic Site Visits by Engineer** – Provide periodic site visits (on average approximately 1 trip per week for the duration of the project estimated at 24 months) by a Registered Professional Engineer employed by H&S, to observe the work in progress and to make appropriate reports to the City regarding project completion, scheduling, and quality control. Adherence to International Building Code Special Inspection Requirements will be monitored, documented, and submitted to Richland County Building Codes/Inspections Department on a weekly basis.
- **Resident Project Representative** – Provide full-time construction observation services for the duration of the project estimated at 24 months. The services of the Resident Project Representative (RPR) will be provided by a local specialty subconsultant (Construction Dynamics), but will be under the direct supervision of H&S.
- Through such additional observations of General Contractor's work in progress and field checks of materials and equipment by the RPR and assistants, H&S will endeavor to provide further protection of the City against defects and deficiencies in the work. However, H&S will not, during such visits or as a result of such observations of General Contractor's work in progress, supervise, direct, or have control over the General Contractor's work nor will H&S have authority over or responsibility for the means, methods, techniques, sequences, or procedures selected by General Contractor, for safety precautions and

programs incident to the General Contractor's work in progress, for any failure of General Contractor to comply with laws and regulations applicable to General Contractor's performing and furnishing the work, or responsibility of construction for General Contractor's failure to furnish and perform the work in accordance with the Contract Documents.

- The duties and responsibilities of the RPR are further described and limited as follows:
 - General: RPR is H&S's agent at the site, will act as directed by and under the supervision of H&S, and will confer with H&S regarding RPR's actions. RPR's dealings in matters pertaining to the General Contractor's work in progress shall in general be with H&S and General Contractor, keeping City advised as necessary. RPR's dealings with subcontractors shall only be through or with the full knowledge and approval of General Contractor. RPR shall generally communicate with City with the knowledge of and under the direction of H&S.
 - Schedules: Review the progress schedule, schedule of shop drawing and sample submittals, and schedule of values prepared by General Contractor and consult with H&S concerning acceptability.
 - Conferences and Meetings: Attend meetings with General Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings.
 - Liaison: Serve as H&S's liaison with General Contractor, working principally through General Contractor's superintendent and assist in understanding the intent of the Contract Documents. Assist H&S in serving as the City's liaison with General Contractor when General Contractor's operations affect the City's on-site operations. Assist in obtaining from the City additional details or information, when required for proper execution of the work.
 - Interpretation of Contract Documents: Report to H&S when clarifications and interpretations of the Contract Documents are needed and transmit to General Contractor clarifications and interpretations as issued by H&S.
 - Shop Drawings and Samples: Record date of receipt of samples and approved shop drawings. Receive samples which are furnished at the site by the General Contractor, and notify H&S of availability of samples for examination. Advise H&S and General Contractor of the commencement of any portion of the work requiring a shop drawing or sample submittal for which the RPR believes that the submittal has not been approved by H&S.
 - Modifications: Consider and evaluate the General Contractor's suggestions for modifications in drawings or specifications and report with the RPR's recommendations to H&S.
 - Review of Work and Rejection of Defective Work: Conduct on-site observations of General Contractor's work in progress to assist H&S in determining if the work is in

general proceeding in accordance with the Contract Documents. Report to H&S whenever the RPR believes that any part of General Contractor's work in progress will not produce a completed project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise H&S of that part of work in progress that the RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

- o Inspections, Tests, and System Startups: Consult with H&S in advance of scheduled major inspections, tests, and systems start-ups of important phases of the work. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate City Staff, and that General Contractor maintains adequate records thereof. Observe, record, and report to H&S appropriate details relative to the test procedures and systems start-ups. Accompany visiting inspectors representing public or other agencies having jurisdiction over the project, record the results of these inspections, and report to H&S.
- o Records: Maintain at the site orderly files for correspondence, reports of job conferences, reproductions of original Contract Documents including all change orders, field orders, work change directives, addenda, additional drawings issued subsequent to the execution of the Contract, H&S's clarifications and interpretations of the Contract Documents, progress reports, shop drawing and sample submittals received from and delivered to General Contractor, and other project related documents. Prepare a daily report or keep a diary or log book, recording General Contractor's hours on the site, weather conditions, data relative to questions of change orders, field orders, work change directives, or changed conditions, site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to H&S. Record names, addresses and telephone numbers of General Contractor, all subcontractors, and major suppliers of materials and equipment. Maintain detailed records for use in preparing project documentation. The resident project representative will maintain detailed records of locations of underground construction and deviations from the contract construction drawings for preparation of as-built record drawings by H&S. These records shall be discussed with the General Contractor at least on a monthly basis to ensure that all locations and deviations are recorded. Upon completion of the work, furnish original set of all RPR project documentation to H&S for subsequent submittal to the City.
- o Reports: Furnish to H&S periodic reports as required of progress of the work and of General Contractor's compliance with the progress schedule and schedule of shop drawing and sample submittals. Draft and recommend to H&S proposed change orders, work change directives, and field orders. Obtain backup material from General Contractor. Furnish to H&S and the City copies of all inspection, test, and system start-up reports. Report immediately to H&S the occurrence of any site accidents, any hazardous environmental conditions, emergencies, or acts of God endangering the work, and property damaged by fire or other causes.

- **Payment Requests:** Review Applications for Payment with General Contractor for compliance with the established procedure for their submission and forward with recommendations to H&S, noting particularly the relationship of the payment requested to the schedule of values, work completed, and materials and equipment delivered at the site but not incorporated in the work.
- **Certificates, Operation and Maintenance Manuals:** During the course of the work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the specifications to be assembled and furnished by the General Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to H&S for review and forwarding to the City prior to payment for that part of the work.
- Resident Project Representative will not:
 - Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
 - Exceed limitations of H&S's authority as set forth in the Agreement or the Contract Documents.
 - Undertake any of the responsibilities of the General Contractor, subcontractors, suppliers, or General Contractor's superintendent.
 - Advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of the General Contractor's work unless such advice or directions are specifically required by the Contract Documents.
 - Advise on, issue directions regarding, or assume control over safety precautions and programs in connection with the activities or operations of the City or General Contractor.
 - Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by H&S.
 - Accept shop drawing or sample submittals from anyone other than the General Contractor.
 - Authorize the City to occupy the project in whole or in part.

Task 3.3 Facility Start-Up Services – Provide start-up services on the rehabilitated anaerobic digester and new Boiler Facility. Services provided under this task are delineated as follows:

- **Start-up Assistance and Training** – Prior to final acceptance, H&S will conduct operational testing of new equipment, troubleshooting of electrical and I&C issues that may arise, and enforcing 30-day performance tests. H&S will also provide optimization assistance related

to bringing the rehabilitated and new facilities on-line. Optimization will include both on-site and teleconferencing assistance by H&S senior level engineers from various disciplines and specialties. It is anticipated that a full month will be required for each rehabilitated Digester Headhouse and associated digester(s).

- **Finalize Punchlist and Closeout Project** – H&S's lead discipline project engineers and construction manager will assist the RPR in reviewing the completed work at the intermediate and final inspection milestones. H&S will develop and manage a punchlist of items for the General Contractor to address, assist in resolving punchlist items with the General Contractor, and perform follow-up inspections to verify the satisfactory resolution of all punchlist items. Upon full and satisfactory completion of all required construction work, H&S will issue a Certificate of Substantial Completion and Acceptance at which time the warranty period will commence.
- **Prepare Record Drawings** – Using information provided by the General Contractor and confirmed by on-site observations, H&S will provide record drawings of the completed project. H&S will confirm the validity of the record drawing information provided by the General Contractor by using digital photographs and other techniques to provide records of construction details. Record drawings will be furnished on reproducible media and on CD-R in AutoCAD's latest release and in PDF format.

Task 3.4 O&M Manual/Operator Training – Prepare an operation and maintenance (O&M) manual and provide operator training. Services provided under this task are delineated as follows:

- **Operations and Maintenance Manual** – H&S will update the existing anaerobic digester O&M manual previously prepared by Florence & Hutcheson. The O&M manual will conform to EPA requirements. The O&M manual will be submitted for review to Plant Staff prior to finalization. H&S will incorporate all review comments, then finalize and deliver 10 copies of the manual to the City. H&S will also assemble and deliver to the City a complete set of approved shop drawings, operational instructions, maintenance publications, and manufacturer's documents prior to final acceptance.
- **Operations Training** – H&S will provide project specific operator training as the project construction is being completed and facilities are being placed into service. H&S will train Plant Staff on the operational philosophy and details of operation of anaerobic digesters. Training will be conducted in a classroom setting on-site. Two sessions each of three classroom training classes are anticipated. H&S will develop handouts and graphics to enhance the learning process and conduct hands-on training in the field for each class. Major support systems such as electrical and instrumentation and control will also be covered.

Task 3.5 Post Construction Services – Provide post construction services including warranty inspection/follow-up activities and an arc flash study. Services provided under this task are delineated as follows:

- Warranty Inspection/Follow-up Activities – Assist the City during the 2-year warranty period with notifying the General Contractor of any defects or warranty repairs requiring attention. H&S will then perform a detailed final warranty inspection of the work approximately 23 months after the date of Substantial Completion. A report detailing the findings will be provided, and H&S will notify the General Contractor of any warranty repairs necessary. 240 hours is allocated for this follow-up activity service.
- Arc Flash Study – Conduct an arc flash study in accordance with the methods and requirements described in the National Fire Protection Association Standard 70E (NFPA 70E) – Standard for Electrical Safety in the Workplace. The results of this study will be submitted to the City to be used by Plant Staff for compliance with the NFPA 70E Arc Flash Protection Requirements. The study will be performed by a local specialty subconsultant (Howard Engineering).

The arc flash study will include several components including:

- Data Collection: A field survey of the power distribution system will be conducted for the entire WWTP. Information and data to be collected includes:
 - Electrical utility service configuration
 - Power distribution system configuration
 - Ratings and settings for all protective devices
 - Ratings and settings for all power distribution equipment

The following electrical equipment will be included in the study:

- Motor control centers rated 480 VAC and above
 - Stand alone motor controllers and VFDs rated 480 VAC and above
 - Lighting and power panelboards
 - Low voltage switchboards
 - Switchgear rated 480 VAC and above
 - Equipment control panels that contain 480 VAC motor controls
- Arch Flash Hazard Analysis: Data collected will be entered into the arc flash evaluation software. H&S will use SKM Power Tools to perform the arc flash evaluation. The results of the study will yield the following information:
 - Arc flash boundaries
 - Arc flash incident energy (measured in cal/cm²)
 - Hazard/Risk category as defined in NFPA 70E.

The results of the arc flash analysis will be evaluated to identify the areas where the arc flash incident energy is excessively high (above 8 cal/cm²). The power distribution systems will be analyzed to determine if any system modifications (i.e. breaker setting modifications) can be made to reduce the arc flash incident energy for these high energy areas of the power distribution system.

- Incident Energy Evaluation and Report Development: An arc flash analysis report will be submitted to the City. The report will contain the following:
 - Single line diagrams illustrating arc flash information.
 - Recommended modifications to reduce arc flash energy for the areas of the power distribution system where the arc flash incident energy is excessively high.
 - Information from NFPA 70E pertaining to Hazard/Risk Categories and PPE requirement for each Hazard/Risk Category.
 - Arc flash hazard and shock hazard labels for all equipment included in the arc flash study.
- Training: Two (2), 90 minute arc flash training seminars will be conducted for Plant Staff. The seminars will cover the basics on NFPA 70E Arc Flash Protection Requirements and arc flash protection PPE as well as an explanation of the arc flash study results.
- Operations Assistance – H&S will provide a certified Grade IV Operator to assist City Operations Staff with the proper operation and maintenance of the new anaerobic digestion facilities following substantial completion of the construction project. It is anticipated that these services will be needed three (3) times per week over a six (6) month duration.

Task 3.6 Specialty Subconsultant Services – The following local specialty subconsultants will be utilized by H&S to perform the services previously delineated under Task 3:

- Chao & Associates – Provide structural shop drawing review services associated with the new Boiler Facility as required.
- John Bowman Architect – Provide architectural shop drawing review services associated with the new Boiler Facility as required.
- Bufford Goff & Associates – Provide HVAC shop drawing review services associated with the new Boiler Facility as required.
- Howard Engineering – Provide electrical shop drawing review services associated with the new Boiler Facility as required, and conduct an arc flash study for the new Boiler Facility and for the three (3) rehabilitated Digester Headhouses.
- ICA Engineering – Provide assistance with updating the existing anaerobic digester O&M manual.
- Construction Dynamics – Provide construction observation services under the supervision of H&S's Construction Manager.

- **Terracon** – Provide soil materials testing services during construction to monitor the performance of the work and determine compliance with requirements of the Contract Documents. Services as a minimum will include:
 - Observation and field testing of steel H-pile installation.
 - Observation of earthwork and backfilling operations and embankment construction.
 - Field density testing of in-place backfill.
 - Determination of standard and modified proctor requirements for section of acceptable compaction densities and moisture contents.
 - Field testing of concrete for consistency (i.e., slump), air content, and unit weight.
 - Collection, curing, and testing of concrete compression test specimens.
 - Special inspections services not performed by H&S such as field observation and testing of structural steel construction including weld testing.

Additional Services, Not Part of Scope of Work

Services that would be in addition to the previously delineated Scope of Work include:

- Engineering services beyond the original construction contract completion date. It is expressly understood that overruns of engineering costs (office and field services) beyond City approved time extensions may be reimbursed individually by the General Contractor as liquidated damages.
- Extended services related to default of General Contractor and/or subcontractors and subsequent efforts associated with Surety companies or their contractor/subcontractors.

City Responsibilities

The City shall provide H&S the following:

- The City shall authorize H&S to proceed in writing.
- The City shall give thorough consideration to all sketches, drawings, maps, and other documents submitted by H&S, and shall inform H&S promptly of any required decisions.
- The City shall make available all information it has on existing utilities and information available for the facilities. Specifically, the City shall provide H&S with as-built record drawings associated with the existing anaerobic digesters and associated headhouses.
- The City shall provide H&S access to the Metro WWTP site during normal business hours.

**Exhibit B
Compensation**

**Metropolitan Wastewater Treatment Plant
Anaerobic Digester Rehabilitation**

**City of Columbia, South Carolina
CIP SS7253**

BASIS OF COMPENSATION

The work to be performed for providing professional engineering services associated with the rehabilitation of the anaerobic digesters as previously delineated in Exhibit 1 – Scope of Services, will be billed on either a lump sum or a not-to-exceed cost ceiling basis classification. Table 1 provides a fee summary by task for each phase of the work. Table 2 summarizes the agreed upon 2013 hourly rates by employee classification. Funds can be transferred from one cost ceiling task to another within each individual phase at the discretion of H&S as long as the phase cost ceiling is not exceeded. However, an amendment will be required to increase the phase cost ceiling.

Project expenses for travel and reproduction are estimated and will be billed as a percentage of completion each month. Subconsultants employed by Hazen and Sawyer, will be billed to the City cost times a multiplier of 1.10.

COMPENSATION SCHEDULE

Table 1 summarizes the estimated cost for each project.

**Table 1
Fee Summary**

| Phase 1 - Detailed Design | | | | |
|---|--|--------------------|---------------------|--------------------|
| Task | Subtask Description | Lump Sum | Cost Ceiling | Total |
| 1.1 | Develop Detailed Drawings | \$1,029,913 | \$0 | \$1,029,913 |
| 1.2 | Develop Technical Specifications | \$93,500 | \$0 | \$93,500 |
| 1.3 | Develop Front-End Bidding Requirements | \$11,788 | \$0 | \$11,788 |
| 1.4 | Regulatory Coordination | \$43,772 | \$0 | \$43,772 |
| 1.5 | Quality Assurance / Quality Control | \$18,000 | \$0 | \$18,000 |
| 1.6 | Review Meetings | \$51,396 | \$0 | \$51,396 |
| 1.7 | Specialty Subconsultants | \$0 | \$219,000 | \$219,000 |
| | Expenses | \$12,010 | \$0 | \$12,010 |
| | Subtotal | \$1,260,379 | \$219,000 | \$1,479,379 |
| Phase 2 - Bid Phase Services | | | | |
| Task | Subtask Description | Lump Sum | Cost Ceiling | Total |
| 2.1 | Bidding Assistance | \$1,154 | \$0 | \$1,154 |
| 2.2 | Attend Pre-Bid Meeting | \$2,244 | \$0 | \$2,244 |
| 2.3 | Bid Documents Interpretation | \$21,200 | \$0 | \$21,200 |
| 2.4 | Attend Bid Opening | \$2,184 | \$0 | \$2,184 |
| 2.5 | Prepare Official Notices | \$624 | \$0 | \$624 |
| 2.6 | Conform Bid Documents | \$7,198 | \$0 | \$7,198 |
| | Expenses | \$4,700 | \$0 | \$4,700 |
| | Subtotal | \$39,304 | \$0 | \$39,304 |
| Phase 3 - Construction Management Services | | | | |
| Task | Subtask Description | Lump Sum | Cost Ceiling | Total |
| 3.1 | Office Construction Administration | \$0 | \$699,336 | \$699,336 |
| 3.2 | Field Construction Observation | \$0 | \$135,004 | \$135,004 |
| 3.3 | Facility Start-Up | \$0 | \$101,794 | \$101,794 |
| 3.4 | O&M Manual / Operator Training | \$0 | \$15,304 | \$15,304 |
| 3.5 | Post Construction Services | \$0 | \$117,656 | \$117,656 |
| 3.6 | Specialty Subconsultants | \$0 | \$591,500 | \$591,500 |
| | Expenses | \$67,200 | \$0 | \$67,200 |
| | Subtotal | \$67,200 | \$1,660,594 | \$1,727,794 |
| Totals | | | | |

HOURLY RATE SCHEDULE

Hazen and Sawyer shall be allowed to adjust employee hourly rates on annual basis starting in July 2014. Adjustments shall not exceed 3% per year. H&S will submit to the City, for approval, the proposed hourly rates. Approval of adjusted hourly rates by the City does not affect the total project cost ceiling for compensation under this Agreement.

**Table 2
Hazen and Sawyer
2013 Hourly Billing Rates**

| <u>Employee Classification</u> | <u>2013 Billing Rates</u> |
|--------------------------------|---------------------------|
| Vice President | \$218.00 |
| Senior Associate | \$180.00 |
| Associate | \$156.00 |
| Senior Principal Engineer | \$143.00 |
| Principal Engineer | \$123.00 |
| Engineer | \$113.00 |
| Assistant Engineer | \$101.00 |
| Senior Principal Designer | \$131.00 |
| Principal Designer | \$109.00 |
| Designer | \$88.00 |
| Administrative | \$62.00 |
| Intern | \$33.00 |

PROJECT TEAM

The following key project team members are assigned to perform the services required as delineated herein:

Hazen and Sawyer Project Team

| | |
|------------------------|-------------------------|
| Project Manager - | Jim Struve, P.E. |
| Technical Manager - | Mike Bullard, P.E. |
| Construction Manager - | Tony Greiner, P.E. |
| Mechanical Engineer - | Mike Parker, P.E. |
| Structural Engineer - | Adam Overbay, P.E. |
| Project Engineer - | Meredith Bridwell, P.E. |
| Project Engineer - | Hunter Long, E.I. |
| Electrical Engineer - | Bryan Lisk, P.E. |
| I&C Engineer - | Dang Cao, P.E. |
| Start-Up Operator - | Kim Hinson |

Subconsultants

- # Chao & Associates – Surveying, Structural
 - # 4D Engineering – Civil/Site Work, Permitting
 - # John Bowman Architect – Architectural
 - # Howard Engineering – Electrical
 - # Construction Dynamics – Constructability Review/Cost Estimating, Construction Observer
 - Bufford Goff & Associates – HVAC
 - * ICA Engineering –O&M Manual
 - * Terracon – Geotechnical Investigation, Materials Testing
 - * MR Systems – Instrumentation and Control Integrator
-
- # Denotes Columbia Protégé Firm
 - Denotes Columbia Small Business Firm
 - * Denotes Columbia Specialty Consulting Firm

**Exhibit C
Schedule**

**Metropolitan Wastewater Treatment Plant
Anaerobic Digester Rehabilitation**

**City of Columbia, South Carolina
CIP SS7253**

The schedule below summarizes the major milestones for detailed design, bidding, and construction for the rehabilitation of the anaerobic digesters. It is anticipated that eight (8) months will be required to prepare documents suitable for regulatory review, three (3) months each for regulatory approval and for bid phase services, and twenty-four (24) months for final construction completion.

| <u>Milestone Description</u> | <u>Tentative Date</u> |
|--|-----------------------|
| Engineering NTP | Nov 1, 2013 |
| Submit Documents for Regulatory Review | Jul 1, 2014 |
| Regulatory Approval | Oct 1, 2014 |
| Advertise Project | Oct 1, 2014 |
| Open Bids | Nov 15, 2014 |
| Construction NTP | Jan 1, 2015 |
| Substantial Completion | Nov 1, 2016 |
| Final Completion | Jan 1, 2017 |

**Exhibit D
Subconsultant Firm Information Records**

**Metropolitan Wastewater Treatment Plant
Anaerobic Digester Rehabilitation**

**City of Columbia, South Carolina
CIP SS7253**

The Engineer shall list all firms, including minority and female owned firms, providing subconsulting services under this Agreement. The list shall be submitted in the format provided below. Any proposed changes must be submitted in writing to the City, including the reason(s) for the proposed changes, prior to initiation of any action by the Engineer. Any invoices submitted for payment under this Agreement must include the dollar amount to be paid to each firm listed below for the invoice period.

| Firm Name and Address | Contact Name and Telephone Number | Group (MBE, FBE, SBE, Non M/F/SBE) | Services to be Provided | Dollar Value of Services |
|---|---------------------------------------|------------------------------------|--|--------------------------|
| 4D Engineering, LLC 305 North Lake Drive Lexington, SC 29072 | Charles Deep, PE (803) 917-2903 | MBE, SBE Protégé Firm | Civil/Site Work, Permitting | \$27,275 |
| Bufford Goff & Associates 1331 Elmwood Avenue Columbia, SC 29201 | Dan Reider, PE (803) 254-6302 | SBE Local Firm | HVAC | \$28,180 |
| Chao & Associates 7 Clusters Court Columbia, SC 29210 | Jimmy Chao, PE (803) 772-8420 | MBE, SBE Protégé Firm | Surveying, Structural | \$50,910 |
| Construction Dynamics, Inc. 6417 Fairfield Road Columbia, SC 29203 | Nate Spells, Sr (803) 754-3395 | MBE, SBE Protégé Firm | Constructability Review/Cost Estimating, Construction Observer | \$408,180 |
| ICA Engineering 501 Huger Street Columbia, SC 29201 | David Beaty (803) 254-5800 | Non M/F/SBE Local Firm | O&M Manual | \$20,000 |
| Howard Engineering 5 River Ridge Road Marietta, SC 29661 | Amy Howard, PE (864) 836-0440 | FBE Protégé Firm | Electrical | \$110,910 |
| John Bowman Architect, PA 2422 Devine Street Columbia, SC 29205 | John Bowman, AIA (803) 799-1084 | MBE, SBE Protégé Firm | Architectural | \$28,180 |
| MR Systems, Inc. 8045 Corporate Center Drive Suite 200 Charlotte, NC 28226 | Jason Poston (704) 612-0691 | Non M/F/SBE | Instrumentation and Control Integrator | \$15,450 |
| Terracon 521 Clemson Road Columbia, SC 29229 | Kevin Sohrabnia, PE (803) 741-9000 | Non M/F/SBE Local Firm | Geotechnical Investigation, Materials Testing | \$47,725 |