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December 8, 2023

Ms. Niki Ensor
Utilities Director
City of Kingsport
620 West Industry Drive
Kingsport, TN 37660

Subject: Proposal for Professional Services for Replacement of the Kingsport Wastewater Treatment Plant Motor Control Center MCC-6

Dear Niki:

Background

The City of Kingsport (City/OWNER) owns and operates the City of Kingsport Wastewater Treatment Plant (WWTP). Much of the WWTP electrical equipment is reaching the end of its useful service life and should be programmed for replacement. In order to support renewal of the service life and improve operations and maintenance capabilities of the electrical distribution equipment, CDM Smith (ENGINEER) completed the Kingsport WWTP Electrical Evaluation Report in July 2016, which provides specific upgrade recommendations which can be phased over the next several years as funding becomes available. The next priority project to be completed is the replacement of MCC-6.

MCC-6

Motor control center MCC-6 is located in a dedicated building near the return activated sludge (RAS) pump station. Despite its age, MCC-6 is in fair condition due to the fact it is separated from the corrosive process areas it serves. However, the door to the building has been left open due to the heat buildup associated with the variable frequency drives in the room. Unfortunately, space is extremely limited, and it is unlikely adequate HVAC modifications can be made to accommodate the heat gains associated with the variable frequency drives. The added heat in the room can potentially lead to premature equipment failure for both the motor control center and variable frequency drives.

Existing MCC-6 has a single feeder and provides power to the RAS and WAS pumping stations. MCC-6 is past its useful design life and should be replaced. Since MCC-6 has a single feeder, failure of this MCC will cause loss of the RAS and WAS pumping stations.

To increase reliability, it's recommended MCC-6 be removed and replaced with two new main-tie-main motor control centers interlocked with kirk keys. There is insufficient space in the existing building for new motor control centers, and maintenance of plant operations would require the existing MCC-6 to remain online during replacement. A new air-conditioned building housing two





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motor control centers and VFDs is recommended for this area. New MCC-6A and MCC-6B will be fed from opposite sides of newly constructed SB-1 to increase reliability.

Scope of Services

Task 1 was completed in March 2023. Tasks 2 and 3 are included in this scope of work.

Professional engineering services associated with the replacement of MCC-6 and related equipment will be delivered according to the tasks, detailed as follows:

- Task 0 – Project Management
- Task 1 – Design Services (Complete)
- Task 2 – Bidding Services
- Task 3 – Limited General Services During Construction

Task 0 – Project Management

ENGINEER will conduct the following activities throughout the course of this assignment which is comprised of design services and other consulting services as requested by the OWNER. Costs for these services are included in Tasks 1-3.

Task 0.1: General Administration – The Engineer will provide project management to administer the production of work in accordance with the Work Authorization scope, budget, and schedule. The Engineer will provide monthly invoices with progress reports.

Task 0.2: Quality Assurance/Quality Control (QA/QC) – The ENGINEER's standard QA/QC processes will be applied to all relevant aspects of the work.

Task 1 – Design Services (Complete)

Task 1.1: Site Visit and Review of Existing Information – The ENGINEER will meet with OWNER staff at the WWTP to review the existing equipment installation, finalize project goals and objectives, define project constraints, and collect relevant field information required for final design. CDM Smith will also conduct the following activities as part of review of existing information and project initiation:

- Conduct internal design kick-off meeting
- Review as-built drawings/existing information
- Develop requests for additional information needed for design, as appropriate

Task 1.2: Final Design and Contract Documents – The ENGINEER will undertake the appropriate level of engineering to prepare the 30-percent, 90-percent, and 100-percent design of the project including equipment sizing and selection, reviewing feasible options for MOPO during construction, finalizing site layout, evaluation of technical alternatives, and other pertinent engineering considerations.



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The ENGINEER shall prepare construction documents for the above listed scope suitable for the receipt of bids for construction of the project. This scope assumes that the complete project will be included in one set of Contract Documents. Throughout final design, the ENGINEER will maintain regular contact with OWNER's staff to review the progress of design. Constructability and design reviews will be conducted at the 30- and 90-percent design completion stages by OWNER's staff. Opinions of Probable Construction Cost (OPCC) will be provided with the 30- and 90-percent deliverables. Final design and Contract Document services to be provided by the ENGINEER are described as follows:

Task 1.2.1: Prepare Construction Contract Drawings – Construction Contract Drawings will be prepared showing the scope, extent, and character of the work to be performed by the contractor. Drawings will include general, civil, architectural, structural, electrical, instrumentation, and HVAC drawings suitable for public bidding. A pre-engineered, precast concrete building will be designed to house the new motor control centers. The preliminary list of drawings follows.

Preliminary List of Drawings

Cover Sheet

- C-1 Site Plan – MCC-6 Electrical Building
- C-2 Miscellaneous Civil Details

- S-1 Electrical Enclosure Slab Plan, Sections and Details, Structural General Notes
- SD-1 Special Inspections

- A-1 Architectural Sheet Index, General Notes, Abbreviations, Symbols and Building Code Key Determinations
- A-2 MCC-6 Electrical Building - Building Floor Plan, Roof Plan, Exterior Elevations and Details

- H-1 HVAC Symbols and Abbreviations
- H-2 MCC-6 Electrical Building - Building HVAC Plan and Details

- E-1 Electrical Symbols and Abbreviations I
- E-2 Electrical Symbols and Abbreviations II
- E-3 MCC-6 Electrical Building - Electrical Site Plan
- E-4 MCC-6 Electrical Building - One Line Power Diagram
- E-5 MCC-6 Electrical Building - Control and Instrumentation Riser Diagrams
- E-6 MCC-6 Electrical Building - MCC Building Power, Control, Grounding and Lighting Plan
- E-7 MCC-6 Electrical Building - Existing Electrical Building Modification Plan
- E-8 MCC-6 Electrical Building - Panelboard and Lighting Fixture Schedule and Details
- ED-1 Electrical Details I
- ED-2 Electrical Details II

- I-1 Instrumentation Symbols and Legend
- I-2 MCC I/O P&ID



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Task 1.2.2: Prepare Technical Specifications – Technical specifications for the construction work will be prepared in general conformance with the fifty-division format of the Construction Specification Institute (CSI).

Task 1.2.3: Prepare General Conditions, Bidding, and Contract Documents – ENGINEER shall prepare Division 00 and Division 01 specifications including Contract agreement forms, invitation for bids, information for bidders, bid form, performance bonds, labor and material bonds, general conditions, and supplemental general conditions.

Task 1.2.4: Prepare Sequence of Construction – In consultation with the OWNER, the ENGINEER shall prepare a construction sequencing plan for the MCC replacement construction. The plans will include identification of scheduling constraints, construction completion milestones, and definition of construction constraints to minimize construction impacts on existing plant operations. The construction sequencing plan shall be included as part of the construction project manual or on the Drawings.

Task 1.2.5: Conduct Technical Reviews – Independent CDM Smith senior technical reviewers will make an evaluation of the design progress at the 30- and 90-percent completion stages. Progress drawings and specifications will be submitted to the OWNER prior to each design review, along with OPCCs. OWNER will review the progress drawings and specifications and will return written review comments within 2 weeks of receipt from ENGINEER. Based on the scope of this project, no formal review meetings are anticipated. Progress sets will be delivered electronically in PDF format.

Task 1.2.6: Complete Construction Documents – Following receipt of the 90-percent review comments, final design modifications will be incorporated in the 100% Construction Documents. The ENGINEER will be responsible for making copies of and distributing the 100% Construction Contract Documents. The ENGINEER will deliver 5 copies in addition to electronic documents in PDF format.

Task 1.2.7: Final Review – The ENGINEER will conduct a final discipline cross-checks and final quality review of the construction documents prior to bidding.

Task 1.2.8: Permitting – A local building permit and site development permit are expected to be required for this project since a new building will be constructed. It is assumed that Contractor will prepare and submit permit applications with fees to the local permitting agency. Permitting efforts are excluded from ENGINEER's scope of work.



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Additional Assumptions:

- A geotechnical investigation is required to confirm the suitability of shallow foundations for the new building. This investigation will include 2 borings to a depth of 30 feet. No rock coring is assumed.
- The new building is assumed to only require shallow foundations. Deep foundation design is not included in the ENGINEER's scope of work.

Task 2 – Bidding Assistance Services

The ENGINEER shall provide services during the Bidding Phase of the project. This scope budgets for one bid phase of a single contract. OWNER may authorize ENGINEER for rebidding if the need arises, via amendment. Bidding services to be provided by the ENGINEER will be limited to the following tasks:

Task 2.1: Bid Advertisement and Distribution of Documents – Assist the OWNER in advertising for and obtaining bids for construction. OWNER shall place advertisement for bids. ENGINEER will reproduce documents, distribute documents to bidders, and maintain plan holders list. Pre-qualification of bidders is excluded from ENGINEER's scope of work.

Task 2.2: Issue Addenda – Prepare up to 3 Addenda to clarify, correct, or change the Bidding Documents. ENGINEER shall distribute addenda to bidders.

Task 2.3: Review Subcontractors and Suppliers – Consult with the OWNER as to the acceptability of subcontractors, suppliers, and other persons or entities proposed by Contractor for those portions of the work for which such acceptability is required by the Bidding Documents.

Task 2.4: Bid Opening and Evaluation – ENGINEER will attend and participate in the Pre-Bid Meeting and Bid Opening. ENGINEER will also evaluate the bid results and CONTRACTOR qualifications and will provide a Recommendation of Award and Bid Tabulation.

It is assumed that no conformed documents will be required for this project based on the proposed scope of work. The Bidding Documents and bound Addenda (as applicable) shall serve as the Contract Documents.

Task 3 – Limited General Services (GS) During Construction

The ENGINEER shall provide limited engineering services during the construction phase. This Agreement includes provision of construction services for up to 16 months beginning from the construction contract Notice-to-Proceed (NTP) date and ending at Final Construction Completion. ENGINEER shall receive additional compensation for any additional construction services required due to an increase in this construction period duration (via further amendment to the Agreement). Construction Phase Services to be provided by the ENGINEER are as follows:



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Task 3.1: General Administration of Construction Contract – ENGINEER shall consult with and advise OWNER and act as OWNER’s representative as provided in the Standard General Conditions. The extent and limitations of the duties, responsibilities, and authority of the ENGINEER as assigned in said Standard General Conditions shall not be modified, except to the extent provided herein. All of OWNER’s instructions to Contractor will be issued through ENGINEER who shall have authority to act on behalf of OWNER in dealings with Contractor to the extent provided in this Agreement and said Standard General Conditions, except as otherwise provided in writing.

Task 3.2: Visits to Site and Observation of Construction – In connection with observations of the work of Contractor while in progress:

ENGINEER shall make visits to the site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress and quality of the various aspects of the Contractor’s work. Such visits and observations by ENGINEER are not intended to be exhaustive or to extend to every aspect of the work in progress, or to involve detailed inspections of the work beyond the responsibilities specifically assigned to ENGINEER in this Agreement and the Contract Documents, but rather are to be limited to spot checking, selective sampling, and similar methods of general observation of the work based on ENGINEER’s exercise of professional judgment. Based on information obtained during such visits and such observations, ENGINEER shall endeavor to determine in general if such work is proceeding in accordance with the Contract Documents, and ENGINEER shall keep OWNER informed of the progress of the work. The responsibilities of ENGINEER contained in this paragraph are expressly subject to the limitations set forth in the following paragraph and other express or general limitations in this Agreement and elsewhere.

The purpose of ENGINEER’s visits to the site will be to enable ENGINEER to better carry out the duties and responsibilities assigned to and undertaken by ENGINEER during the Construction Phase and, in addition, by the exercise of ENGINEER’s efforts as an experienced and qualified design professional, to provide for OWNER a greater degree of confidence that the completed work of Contractor will conform in general to the Contract Documents and that the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents has been implemented and preserved by Contractor. On the other hand, ENGINEER shall not, during such visits or as a result of such observations of Contractor’s work in progress, supervise, direct, or have control over Contractor’s work; nor shall ENGINEER have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected by Contractor, for safety precautions and programs incident to the work of Contractor, or for any failure of Contractor to comply with laws, rules, regulations, ordinances, codes, or orders applicable to Contractor’s furnishing and performing the work. Accordingly, ENGINEER neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor’s failure to furnish and perform its work in accordance with the Contract Documents.



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Task 3.3: Defective Work – During such visits and on the basis of such observations, ENGINEER shall have authority to disapprove of or reject Contractor’s work while it is in progress, if ENGINEER believes that such work will not produce a completed Project that conforms generally to the Contract Documents or that it will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents.

Task 3.4: Clarifications and Interpretations, Field Orders – ENGINEER shall issue necessary clarifications and interpretations of the Contract Documents, as appropriate to the orderly completion of the work. Such clarifications and interpretations will be consistent with the intent of and reasonably inferable from the Contract Documents. ENGINEER may issue Field Orders authorizing minor variations from the requirements of the Contract Documents.

Task 3.5: Change Orders and Work Change Directives – ENGINEER shall recommend Change Orders and Work Change Directives to OWNER as appropriate and shall prepare change Orders and Work Change Directives as required.

Task 3.6: Shop Drawings – ENGINEER shall review and approve (or take other appropriate action in respect of) Shop Drawings, Samples, Operations and Maintenance Manuals, and other data which Contractor is required to submit but only for conformance with the information given in the Contract Documents and compatibility with the design concept of the completed Project as a functioning whole as indicated in the Contract Documents. Such reviews and approvals or other action will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions and programs incident thereto. It is assumed that 150 submittals, including resubmittals will be reviewed.

Task 3.7: Substitutes – ENGINEER shall evaluate and determine the acceptability of substitute or or-equal materials and equipment proposed by Contractor. However, services in making revisions to Drawings and Specifications occasioned by the acceptance of substitute materials or equipment other than or-equal items and services after the award of the Construction Contract in evaluating and determining the acceptability of a substitute which is appropriate for the Project or an excessive number of substitutes will only be performed pursuant to an amendment to this Agreement for additional compensation.

Task 3.8: Disagreements between OWNER and Contractor – ENGINEER shall render the initial decisions on all claims of OWNER and Contractor relating to the acceptability of the work or the interpretation of the requirements of the technical and design related portions of the Contract Documents pertaining to the execution and progress of the work. In rendering such decisions, ENGINEER shall be fair and not show partiality to OWNER or Contractor and shall not be liable in connection with any decision rendered in good faith in such capacity. OWNER shall be responsible for interpretation of the requirements of Divisions 00 and 01 of the Contract Documents.



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Task 3.9: Applications for Payment – Based on ENGINEER’s on-site observations as an experienced and qualified design professional and on review of Applications for Payment and the accompanying data and schedules:

ENGINEER shall determine the amounts that ENGINEER recommends Contractor be paid. Such recommendations of payment will be in writing and will constitute ENGINEER’s representation to OWNER, based on such observations and review, that, to the best of ENGINEER’s knowledge, information and belief, the work has progressed to the point indicated, the quality of such work is generally in accordance with the contract Documents (subject to an evaluation of such work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and to any other qualifications stated in the recommendation), and the conditions precedent to Contractor’s being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER’s responsibility to observe the work. In the case of unit price work, ENGINEER’s recommendations of payment will include final determinations of quantities and classifications of such work (subject to any subsequent adjustments allowed by the Contract Documents). The responsibilities of ENGINEER contained in this paragraph are expressly subject to the limitations set forth in the following paragraph and other express or general limitations in this Agreement and elsewhere.

By recommending any payment, ENGINEER shall not thereby be deemed to have represented that on-site observations made by ENGINEER to check the quality or quantity of Contractor’s work as it is performed and furnished have been exhaustive, extended to every aspect of the work in progress, or have involved detailed inspections of the work beyond the responsibilities specifically assigned to ENGINEER in this Agreement and the Contract Documents. Neither ENGINEER’s review of Contractor’s work for the purposes of recommending payments nor ENGINEER’s recommendation of any payment (including final payment) will impose on ENGINEER responsibility to supervise, direct, or control such work or for the means, methods, techniques, sequences, or procedures of construction or safety precautions or programs incident thereto, or Contractor’s compliance with laws, rules, regulations, ordinances, codes, or orders applicable to Contractor’s furnishing and performing the work. It will also not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price or to determine that title to any of the work, materials, or equipment has passed to OWNER free and clear of any liens, claims, security interests, or encumbrances or that there may not be other matters at issue between OWNER and Contractor that might affect the amount that should be paid.

Task 3.10: Contractor’s Completion Documents – ENGINEER shall receive, review, and transmit to OWNER with written comments maintenance and operation instructions, schedules, guarantees, bonds, certificates, or other evidence of insurance required by the Contract Documents, certificates of inspection, tests and approvals, and marked-up Record Documents (including Shop Drawings, Samples, and other data approved as provided under Task 3.6 and marked-up record drawings)

which are to be assembled by Contractor in accordance with the Contract Documents to obtain final payment. ENGINEER's review of such documents will only be to determine generally that their content complies with the requirements of and, in the case of certificates of inspections, tests, and approvals, the results certified indicate compliance with, the Contract Documents.

Task 3.11: Substantial Completion – Following notice from Contractor that Contractor considers the entire work ready for its intended use, ENGINEER and OWNER, accompanied by Contractor, shall conduct an inspection to determine if the work is substantially complete. If, after considering any objections of OWNER, ENGINEER considers the work substantially complete ENGINEER shall deliver a certificate of Substantial Completion to OWNER and Contractor.

Task 3.12: Final Notice of Acceptability of the Work – ENGINEER shall conduct a final inspection to determine if the completed work of Contractor is acceptable so that ENGINEER may recommend, in writing, final payment to Contractor. Accompanying the recommendation for final payment, ENGINEER shall indicate that the work is acceptable (subject to the provisions of paragraph 3.10) to the best of ENGINEER's knowledge, information, and belief and based on the extent of the services performed and furnished by ENGINEER under this Agreement.

Task 3.13: Prepare Record Drawings - ENGINEER shall prepare one reproducible record drawing set based on information provided by the Contractor and reviewed as part of Task 3.10. Record Drawings shall also be delivered in electronic format as PDF files on CD.

Limitation of Responsibilities – ENGINEER shall not be responsible for the acts or omissions of any Contractor, or of any subcontractor, any supplier, or any other person or organization performing or furnishing any of the work. ENGINEER shall not be responsible for Contractor's failure to perform or furnish the work in accordance with the Contract Documents.

Resident Project Representative (RPR) services are excluded from the ENGINEER's scope.

Time of Completion

The following schedule is the anticipated time of completion for the amended scope of work:



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Task Description	Completion Date
Task 1 – Design Services (Complete)	March 2023
Task 2 – Bidding Services	December 2023
Task 3 – Limited General Services During Construction	June 2025 ⁽¹⁾

(1) Based on an 18-month construction duration

Payment and Compensation

The City of Kingsport shall compensate the ENGINEER for providing services set forth herein in accordance with the terms of the Agreement. Invoicing for the work shall be monthly on a lump sum percentage of work completed basis. A status report will accompany each progress invoice.

The project total upper limit shall not exceed \$519,475 without written amendment to this authorization. An estimated breakdown of cost by task is provided for informational purposes below.

Task Description	Task Budget
Task 1 – Design Services (Complete)	\$305,400
Task 2 – Bidding Services	\$24,850
Task 3 – Construction Phase Services	\$189,225
Project Total	\$519,475

CDM Smith looks forward to working with the City of Kingsport for the implementation of the MCC-6 replacement project. Please contact me with any questions or need for any additional information.

Sincerely,

Daniel Unger, PE, PMP
Client Service Leader
CDM Smith Inc.