

**CITY OF PORTLAND  
AGREEMENT FOR PROFESSIONAL, TECHNICAL, OR EXPERT SERVICES**

**CONTRACT NUMBER** \_\_\_\_\_

**TITLE OF WORK PROJECT  
Columbia Boulevard Wastewater Treatment Plant  
Headworks Screening Improvements, Project No. E10805**

This Contract is between the City of Portland ("City," or "Bureau") and CDM Smith Inc., hereafter called Consultant. The City's Project Manager for this Contract is Christine Selker.

**Effective Date and Duration**

This Contract shall become effective on August 1, 2018. This Contract shall expire, unless otherwise terminated or extended, on July 31, 2023.

**Consideration**

- (a) City agrees to pay Consultant a sum not to exceed \$3,286,837 for accomplishment of the work.
- (b) Interim payments shall be made to Consultant according to the schedule identified in the STATEMENT OF THE WORK AND PAYMENT SCHEDULE.

**CONSULTANT DATA AND CERTIFICATION**

Name (print full legal name): CDM Smith Inc.

Address: 1220 SW Morrison Street, Suite 200, Portland, Oregon 97205

City of Portland Business Tax Registration Number: 135756

Citizenship:    Nonresident alien    ☐ Yes    ☒ No

Business Designation (check one):    ☐ Individual    ☐ Sole Proprietorship    ☐ Partnership    ☒ Corporation

☐ Limited Liability Co (LLC)    ☐ Estate/Trust    ☐ Public Service Corp.    ☐ Government/Nonprofit

Payment information will be reported to the IRS under the name and taxpayer I.D. number provided above. Information must be provided prior to Contract approval.

**TERMS AND CONDITIONS**

**1. Standard of Care**

Consultant shall perform all services under this Contract using that care, skill, and diligence that would ordinarily be used by similar professionals in this community in similar circumstances.

**2. Effect of Expiration**

Passage of the Contract expiration date shall not extinguish, prejudice, or limit either party's right to enforce this Contract with respect to any default or defect in performance that has not been corrected.

**3. Order of Precedence**

This Contract consists of these Terms and Conditions, the Statement of Work and Payment Schedule, and any exhibits that are attached. Any apparent or alleged conflict between these items will be resolved by using the following order of precedence:

a) these Terms and Conditions; b) Statement of Work and Payment Schedule; and c) any exhibits attached to the Contract.

**4. Early Termination of Contract**

(a) The City may terminate this Contract for convenience at any time for any reason deemed appropriate in its sole discretion. Termination is effective immediately upon notice of termination given by the City.

(b) Either party may terminate this Contract in the event of a material breach by the other party that is not cured. Before termination is permitted, the party seeking termination shall give the other party written notice of the breach, its intent to

terminate, and fifteen (15) calendar days to cure the breach. If the breach is not cured within 15 calendar days, the party seeking termination may terminate immediately by giving written notice that the Contract is terminated.

#### **5. Remedies and Payment on Early Termination**

- (a) If the City terminates pursuant to 4(a) above, the City shall pay the Consultant for work performed in accordance with the Contract prior to the termination date. No other costs or loss of anticipated profits shall be paid.
- (b) If the City terminates pursuant to 4(b) above, the City is entitled all remedies available at law or equity. In addition, Consultant shall pay the City all damages, costs, and sums incurred by the City as a result of the breach.
- (c) If the Consultant justifiably terminates the Contract pursuant to subsection 4(b), the Consultant's only remedy is payment for work prior to the termination. No other costs or loss of anticipated profits shall be paid.
- (d) If the City's termination under Section 4(b) was wrongful, the termination shall be automatically converted to one for convenience and the Consultant shall be paid as if the Contract was terminated under Section 4(a).
- (e) In the event of early termination, the Consultant's work product before the date of termination becomes property of the City.

#### **6. Assignment**

Consultant shall not subcontract, assign, or transfer any of the work scheduled under this agreement, without the prior written consent of the City. Notwithstanding City approval of a subconsultant, the Consultant shall remain obligated for full performance hereunder, and the City shall incur no obligation other than its obligations to the Consultant hereunder. The Consultant agrees that if subconsultants are employed in the performance of this Agreement, the Consultant and its subconsultants are subject to the requirements and sanctions of ORS Chapter 656, Workers' Compensation.

#### **7. Compliance with Applicable Law**

Consultant shall comply with all applicable federal, state, and local laws and regulations. Consultant agrees it currently is in compliance with all tax laws. Consultant shall comply with Title VI of the Civil Rights Act of 1964 and its corresponding regulations. In connection with its activities under this Contract, the Consultant shall comply with all applicable Grant Terms and conditions. This includes all terms and conditions contained in this Contract and, for a Contract involving a grant, the Grant Terms and Conditions.

#### **8. Indemnification for Property Damage and Personal Injury**

Consultant shall indemnify, defend, and hold harmless the City, its officers, agents, and employees, from all claims, losses, damages, and costs (including reasonable attorney fees) for personal injury and property damage arising out of the negligent acts, errors, or omissions or willful misconduct of the Consultant, its Subconsultants, suppliers, employees or agents in the performance of its services. Nothing in this paragraph requires the Consultant or its insurer to indemnify the City for claims of personal injury or property damage caused by the negligence of the City. This duty shall survive the expiration or termination of this Contract.

#### **9. Insurance**

Consultant shall obtain and maintain in full force at Consultant expense, throughout the duration of the Contract and any warranty or extension periods, the required insurance identified below. The City reserves the right to require additional insurance coverage as required by statutory or legal changes to the maximum liability that may be imposed on Oregon cities during the term of the Contract.

- (a) Workers' compensation insurance as required by ORS Chapter 656 and as it may be amended. Unless exempt under ORS Chapter 656, the Consultant and all subconsultants shall maintain coverage for all subject workers.

☒ Required and attached // ☐ Proof of exemption (i.e., completion of Workers' Compensation Insurance Statement)

- (b) General commercial liability (CGL) insurance covering bodily injury, personal injury, property damage, including coverage for independent consultant's protection (required if any work will be subcontracted), premises/operations, Contractual liability, products and completed operations, in per occurrence limit of not less than \$1,000,000, and aggregate limit of not less than \$2,000,000.

☒ Required and attached // ☐ Waived by Bureau Director or designee // ☐ Reduce by Bureau Director or designee

- (c) Automobile liability insurance with coverage of not less than \$1,000,000 each accident, and an umbrella or excess liability coverage of \$2,000,000. The insurance shall include coverage for any auto or all owned, scheduled, hired and non-owned auto. This coverage may be combined with the commercial general liability insurance policy.

☒ Required and attached // ☐ Waived by Bureau Director or designee // ☐ Reduce by Bureau Director or designee

- (d) Professional Liability and/or Errors & Omissions insurance to cover damages caused by negligent acts, errors or omissions related to the professional services, and performance of duties and responsibilities of the Consultant under this Contract in an amount with a combined single limit of not less than \$1,000,000 per occurrence and aggregate of \$3,000,000 for all claims per occurrence. In lieu of an occurrence based policy, Consultant may have claims-made policy in an amount not less than \$1,000,000 per claim and \$3,000,000 annual aggregate, if the Consultant obtains an extended reporting period or tail coverage for not less than three (3) years following the termination or expiration of the Contract or renews or maintains a policy annually for not less than three (3) years following the termination or expiration of the Contract.

☒ Required and attached // ☐ Waived by Bureau Director or designee // ☐ Reduce by Bureau Director or designee

Continuous Coverage; Notice of Cancellation: The Consultant agrees to maintain continuous, uninterrupted coverage for the duration of the Contract. There shall be no termination, cancellation, material change, potential exhaustion of aggregate limits or non-renewal of coverage without thirty (30) calendar days written notice from Consultant to the City. If the insurance is canceled or terminated prior to completion of the Contract, Consultant shall immediately notify the City and provide a new policy with the same terms. Any failure to comply with this clause shall constitute a material breach of Contract and shall be grounds for immediate termination of this Contract.

Additional Insured: The liability insurance coverages, except Professional Liability, Errors and Omissions, or Workers' Compensation, shall be without prejudice to coverage otherwise existing, and shall name the City of Portland and its bureaus/divisions, officers, agents and employees as Additional Insureds, with respect to the Consultant's activities to be performed, or products or services to be provided. Coverage shall be primary and non-contributory with any other insurance and self-insurance. Notwithstanding the naming of additional insureds, the insurance shall protect each additional insured in the same manner as though a separate policy had been issued to each, but nothing herein shall operate to increase the insurer's liability as set forth elsewhere in the policy beyond the amount or amounts for which the insurer would have been liable if only one person or interest had been named as insured.

Certificate(s) of Insurance: Consultant shall provide proof of insurance through acceptable certificate(s) of insurance, including additional insured endorsement form(s) and all other relevant endorsements, to the City prior to the award of the Contract if required by the procurement documents (e.g., request for proposal), or at execution of Contract and prior to any commencement of work or delivery of goods or services under the Contract. The Certificate(s) will specify all of the parties who are endorsed on the policy as Additional Insureds (or Loss Payees). Insurance coverages required under this Contract shall be obtained from insurance companies acceptable to the City of Portland. The Consultant shall pay for all deductibles and premium. The City reserves the right to require, at any time, complete, certified copies of required insurance policies, including endorsements evidencing the coverage the required.

Subconsultant(s): Upon request, Consultant shall provide evidence that any subconsultant, if any, performing work or providing goods or service under the Contract has the same types and amounts of coverages as required herein or that the subconsultant is included under Consultant's policy.

#### **10. Ownership of Work Product**

All work product produced by the Consultant under this Contract is the exclusive property of the City. "Work Product" includes, but is not limited to: research, reports, computer programs, manuals, drawings, recordings, photographs, artwork and any data or information in any form. The Consultant and the City intend that such Work Product shall be deemed "work made for hire" of which the City shall be deemed the author. If for any reason a Work Product is deemed not to be a "work made for hire," the Consultant hereby irrevocably assigns and transfers to the City all right, title and interest in such work product, whether arising from copyright, patent, trademark, trade secret, or any other state or federal intellectual property law or doctrines. Consultant shall obtain such interests and execute all documents necessary to fully vest such rights in the City. Consultant waives all rights relating to work product, including any rights arising under 17 USC 106A, or any other rights of authorship, identification or approval, restriction or limitation on use or subsequent modifications. If the Consultant is an architect, the Work Product is the property of the Consultant-Architect, and by execution of this Contract, the Consultant-Architect grants the City an exclusive and irrevocable license to use that Work Product.

Notwithstanding the above, all pre-existing trademarks, services marks, patents, copyrights, trade secrets, and other proprietary rights of Consultant are and will remain the exclusive property of Consultant.

#### **11. EEO Certification**

The Consultant must be certified prior to Contract execution, as Equal Employment Opportunity Affirmative Action Employers as prescribed by Chapter 5.33.076 of the Code of the City of Portland.

#### **12. Equal Benefits**

Consultant must certify prior to Contract execution, that they do not discriminate by policy or practice in the provision of employee benefits between employees with domestic partners and employees with spouses as prescribed by Chapter 5.33.077 of the Code of the City of Portland.

#### **13. Successors in Interest**

The provisions of this Contract shall be binding upon and shall inure to the benefit of the parties hereto, and their respective successors and approved assigns.

#### **14. Severability**

The parties agree that if any term or provision of this Contract is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Contract did not contain the particular term or provision held to be invalid.

**15. Waiver**

The failure of the City to enforce any provision of this Contract shall not constitute a waiver by the City of that or any other provision.

**16. Errors**

The Consultant shall promptly perform such additional services as may be necessary to correct errors in the services required by this Contract without undue delays and without additional cost.

**17. Governing Law/Venue**

The provisions of this Contract shall be interpreted, construed and enforced in accordance with, and governed by, the laws of the State of Oregon without reference to its conflict of laws provisions that might otherwise require the application of the law of any other jurisdiction. Any action or suits involving any question arising under this Contract must be brought in the appropriate court in Multnomah County Oregon.

**18. Amendments**

All changes to this Contract, including changes to the scope of work, Contract amount and D/M/W/ESB subcontracting commitments, must be made by written amendment and approved by the Chief Procurement Officer to be valid. Any amendment that increases the original Contract amount by more than 25% must be approved by the City Council to be valid.

**19. Business Tax Registration**

The Consultant shall obtain a City of Portland business tax registration number as required by PCC 7.02 prior to beginning work under this Contract.

**20. Prohibited Conduct**

The Consultant shall not hire any City employee who evaluated the proposals or authorized the award of this Contract for two years after the date the Contract was authorized without the express written permission of the City and provided the hiring is permitted by state law.

**21. Payment to Vendors and Subconsultants**

The Consultant shall timely pay all subconsultants and suppliers providing services or goods for this Contract.

**22. Access to Records**

The Consultant shall maintain all records relating to this Contract for three (3) years after final payment. The City may examine, audit and copy the Consultant's books, documents, papers, and records relating to this Contract at any time during this period upon reasonable notice. Copies of these records shall be made available upon request. Payment for the reasonable cost of requested copies shall be made by the City.

**23. Audits**

- (a) The City may conduct financial and performance audits of the billings and services specified in this Contract at any time in the course of the Contract and during the three (3) year period established by paragraph 22. Audits will be conducted in accordance with generally accepted auditing standards as promulgated in Government Auditing Standards by the Comptroller General of the United States Government Accountability Office.
- (b) If an audit discloses that payments to the Consultant exceed the amount to which the Consultant was entitled, the Consultant shall repay the amount of the excess to the City.

**24. Electronic Signatures**

The City and Consultant may conduct this transaction, including any Contract amendments, by electronic means, including the use of electronic signatures.

**25. Merger Clause**

This Contract encompasses the entire agreement of the parties, and supersedes all previous understandings and agreements between the parties, whether verbal or written.

**26. Dispute Resolution/Work Regardless of Disputes**

The parties shall participate in mediation to resolve disputes before conducting litigation. The mediation shall occur at a reasonable time after the conclusion of the Contract with a mediator jointly selected by the parties. Notwithstanding any dispute under this Contract, the Consultant shall continue to perform its work pending resolution of a dispute, and the City shall make payments as required by the Contract for undisputed portions of the work. In the event of litigation, no attorney fees are recoverable. No different dispute resolution paragraph(s) in this Contract or any attachment hereto shall supersede or take precedence over this provision.

**27. Progress Reports: ☒ Applicable / ☐ Not Applicable**

If applicable, the Consultant shall provide monthly progress reports to the Project Manager as described in the Statement of the Work and Payment Schedule.

**28. Consultant's Personnel: ☒ Applicable / ☐ Not Applicable**

If applicable, the Consultant shall assign the personnel listed in the Statement of the Work and Payment Schedule for the work required by the Contract and shall not change personnel without the prior written consent of the City, which shall not be unreasonably withheld.

### **29. Subconsultants**

The Consultant shall use the subconsultants identified in its proposals. The Consultant shall not change subconsultant's assignments without the prior written consent of the Chief Procurement Officer. The City will enforce all social equity Contracting and Disadvantaged, Minority, Women and Emerging Small Business (D/M/W/ESB) subcontracting commitments submitted by the Consultant in its proposals. Failure to use the identified D/M/W/ESB subconsultants without prior written consent is a material breach of Contract.

For Contracts valued \$50,000 or more, the Consultant shall submit a Monthly Subconsultant Payment and Utilization Report (MUR), made part of this Contract by reference, reporting ALL subconsultants employed in the performance of this agreement. Contact the PTE Contract Compliance Specialist for submission guidelines.

### **30. Third Party Beneficiaries**

There are no third-party beneficiaries to this Contract. Enforcement of this Contract is reserved to the parties.

### **31. Conflict of Interest**

Consultant hereby certifies that, if applicable, its Contract proposal is made in good faith without fraud, collusion or connection of any kind with any other proposer of the same request for proposals or other City procurement solicitation(s), that the Consultant as a proposer has competed solely on its own behalf without connection or obligation to, any undisclosed person or firm. Consultant certifies that it is not a City official/employee or a business with which a City official/employee is associated, and that to the best of its knowledge, Consultant, its employee(s), its officer(s) or its director(s) is not a City official/employee or a relative of any City official/employee who: i) has responsibility in making decisions or ability to influence decision-making on the Contract or project to which this Contract pertains; ii) has or will participate in evaluation or management of the Contract; or iii) has or will have financial benefits in the Contract. Consultant understands that should it elect to employ any former City official/employee during the term of the Contract then that the former City official/Consultant employee must comply with applicable government ethics and conflicts of interest provisions in ORS Chapter 244, including but not limited to ORS 244.040(5) and ORS 244.047, and the City's Charter, Codes and administrative rules, including lobbying prohibitions under Portland City Code Section 2.12.080.

### **32. Respectful Workplace Behavior**

The City of Portland is committed to a respectful work environment, free of harassment, discrimination and retaliation and other inappropriate conduct. Every individual has a right to work in a professional atmosphere where all individuals are treated with respect and dignity. The City's HR Rule 2.02 covers all employees with the City of Portland as well as consultants, vendors or consultants who provide services to the City of Portland. By signing this Contract/Agreement, the Consultant indicates compliance with all terms and conditions contained in this Contract including HR 2.02.

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## **STATEMENT OF THE WORK AND PAYMENT SCHEDULE**

### **SCOPE OF WORK**

#### **Project Objectives**

Provide predesign, design, bidding assistance, permitting assistance, construction and start-up support services for the removal and replacement of an operating Headworks Structure Screening system and associated equipment and processes, instrumentation and controls, and electrical panels and conduits. The project includes:

1. Computational Fluid Dynamics (CFD) modelling of headworks screening channels and channel approach recommendations for channel modifications to improve hydraulics and grit transport related to screenings and overall plant operation.
2. Recommendations for characterization of headworks influent and associated implementation.
3. Removal of existing five (5) headworks screens and associated appurtenances, electrical and control equipment.
4. Removal of existing screenings conveyor system, and associated appurtenances, electrical, and control equipment.

5. New screening system, including all required channel modifications and associated appurtenances, electrical and control.
6. New screenings washer/compactor system and associated electrical and controls.
7. New screenings conveyor system and associated electrical and control.
8. New electric or hydraulic actuators for Channel 3 Screen Effluent Gates (2).
9. Design space for possible future grinders.
10. Evaluation and recommendation of modifications to associated grit header system (to reduce plugging), improved and permanent maintenance access to header, and seismic supports.
11. Evaluate and determine air handling (HVAC) and odor control system fans, intake and ductwork modifications necessary to remove foul air from enclosed new equipment. Modifications for odor control, including rebalancing flow to preferentially pull flow from enclosed new equipment, new fans and/or modification of existing fans, shall be included in the design. HVAC and odor control design beyond this has not been included in the design. Meet all applicable codes.
12. Replacement of power and communication wiring as necessary for the items associated with the project.
13. Screening channel modifications as necessary, including modification of five (5) mud valves in channel flows, and related drain piping, to reduce plugging.
14. Structural modifications to accommodate new equipment.
15. Screening and grit channel modifications where feasible to address solids, grit and debris accumulation in the channels.
16. Six (6) new flowmeters downstream of the grit pumps to determine when pumps and piping beginning to plug.
17. Addition of lighting where needed for operation and maintenance of new equipment.
18. The Work does not include:
  - a. Screenings grinders, though design for space is included.
  - b. Modifications of grit basins.
  - c. Additional HVAC or odor control beyond the above required work.
  - d. Additional lighting beyond that needed for new equipment operation and maintenance
19. Drawings and Specifications to be prepared for Design-Bid-Build project delivery. Should it be determined by the City that a CM/GC delivery method is desired or needed, the Additional Design Items will be authorized by the City for the Consultant's Engineer ("Engineer") work in modifying documents.

### **Project Management Approach and Assumptions**

Project Management work and deliverables are included the Preliminary Design Phase (Task 1), the Design Phase (Task 2), the Bidding Phase (Task 4) and the Construction and Startup Support Phase (Task 5).

### **Approach**

The Project Management approach includes the following activities:

1. Utilize the City's Heron project management system (based on e-Builder Enterprise) for all project communications, invoices, document management, deliverable transmittal and review processes, and project execution. Emails, phone calls and other forms of communication will be used to facilitate project progress though any communications effecting scope, schedule or budget will be documented in Heron.
2. Develop and maintain a project schedule and budget utilizing the Work Breakdown Structure (WBS) developed during contract negotiations.
3. Manage and coordinate consultant resources and sub-consultants to provide quality assured deliverables within the approved project schedule and budget.
4. Meet with the City project team at a kickoff meeting to review and confirm project scope, schedule, and approach.
5. Prepare and submit monthly invoices for progress payments and monthly subcontractor payment and utilization reports.
6. Document and track project decisions and risks, and manage change commensurate with project risks.
7. Meet every two weeks with the City's Project Manager to review status of WBS activities and deliverables in progress, activities planned for the next three weeks, project risks, decisions, and pending/potential changes. Leads for activities in progress and activities planned for the next three weeks shall participate in the meeting in person or via teleconference.
8. Quality Control and Assurance during the entire project. Use independent reviewers in consultant's firm but not on project team.

### **Assumptions**

The following assumptions have been used in developing the budget for this scope of work:

- Distribution of deliverables to City reviewers using Heron software. Compilation, coordination, and vetting of City review comments.
- The City anticipates having the Consultant begin work immediately upon contract execution with submittal of final design and bidding deliverables to the City over a period of no longer than 30 months. Services during construction will be over a period of no longer than 30 months.

### **Deliverables**

The Engineer will provide the following deliverables under this task:

1. Project Schedule using the WBS developed during contract negotiations.
2. Project budget by WBS element.
3. Project three week look ahead schedule (every two weeks).
4. Methodology to be used for tracking and documenting project risks, issues, decisions, and change management.
5. Decisions, risks, issues and changes log (every two weeks), organized by categories.
6. Invoice, budget status report by WBS element, and Monthly Subcontractor Payment and utilization report by 15<sup>th</sup> of each month.
7. Project Kickoff Meeting Agenda and Summary Notes, including decisions/action items.
8. Consultant's internal Quality Control and Assurance log.

## **Task 1 Preliminary Design Phase and VE Review**

### **Objectives**

The objectives of the Preliminary Design Phase and VE Review Task are to develop the preliminary design for good decision making and value engineering to provide a firm basis for finalizing the design.

### **Approach**

The Preliminary Design Phase and VE Review Task approach includes the following activities:

1. Preliminary Design Phase Project Management items, including Kickoff Meeting, project setup, invoicing, reporting, tracking, monitoring and quality assurance/quality control.
2. Compile available information pertaining to the project including as-built drawings, the 2016 Facilities Plan, documents, and data. Identify key data gaps.
3. Perform grit sampling study to characterize headworks influent and grit system performance.
  - a) Conduct grit sampling and grit system performance characterization. The intent of this task is to characterize grit for the purposes of optimizing grit handling system upgrades and projecting future grit handling needs. Data from the grit sampling will be used in calibration of the CFD modeling and in the planning of system improvements.
  - b) Grit Characterization Meeting: Engineer shall organize and facilitate a one, three (3) hour site visit to identify and verify potential sampling locations with City staff and to establish a grit sampling plan. This activity shall consist of:
    - i. Coordination of grit sampling locations. Potential locations include:
      - i) Raw sewage sample – Pump discharge header, screen outlet channel or vortex grit influent channel
      - ii) Vortex grit outlet channel
      - iii) Grit pump discharge
      - iv) Grit washer overflows
      - v) Washed grit in Dumpster
      - vi) Misc. channel bottom deposit cores located where grit has accumulated
    - ii. Site walk to further familiarize Consultant with grit related facilities
  - c) Grit Sampling Plan and Implementation: Based on the results of the above sampling activity, the Consultant shall develop a sampling plan based on the locations shown above, to be reviewed by the City staff prior to implementation. Following collection of samples, Consultant shall conduct grit analyses. Effort based on three sampling events.
  - d) Draft Grit Characterization Technical Memorandum (Grit TM): Consultant shall summarize the grit sampling plan and analyses in a Draft Grit TM to be submitted for City review.
  - e) Draft Grit TM Review Meeting: Consultant shall organize and facilitate a two-hour Grit TM review meeting with City staff upon receipt of City's preliminary review comments for the draft. Consultant will hold the review meeting approximately one (1) week after receipt of City review comments. This will allow the Consultant to prepare and review responses prior to the meeting with the intent to focus on any issues requiring clarification.
  - f) Final Grit TM: Consultant shall finalize the Grit TM, incorporating City comments within the timeframe specified in Task No. 1.

QA/QC Activities: Perform internal QA/QC on draft and final TMs and submit



completed Quality Review Forms with each deliverable.

4. Evaluate and recommend HVAC and odor control modifications for new enclosed equipment, including new duct work, fans, and/or rebalancing flow to preferentially pull flow from the enclosed new equipment.
5. Recommend grit piping header modifications.
6. Inspect channel to determine as-built dimensions.
7. Perform structural assessment of Headworks building to accommodate new equipment and recommend necessary modifications.
8. Provide Technical Memoranda that include:
  - a) Identification and evaluation of alternative screening systems, screenings handling systems
  - b) Hydraulic analysis of proposed selected screening alternative using Computational Fluid Dynamics (CFD) modeling. The objective of the CFD modeling will be to investigate measures to prevent grit settling and improve flow distribution to the screens and grit tanks.
    - i. CFD evaluation will not begin until the screen selection is complete.
    - ii. Develop model of existing screening facility including the influent channel, screening channels, and grit channels:
      1. The CFD model will not include the screenings handling system nor the grit washer/classifier systems.
      2. The screens will be input into the CFD model by specifying the manufacturer provided headloss data.
      3. The upstream boundary will be the intersect of the pump discharge weir nappes and the receiving screening facility influent channel. Unless better information is provided, a fully-aerated nappe will be assumed. The downstream boundary will be the entrance throat to individual grit basins.
      4. Model will have grit particle size, shape, and specific gravity consistent with grit sampling study.
      5. Data needs for each flow condition modeled will be as follows:
        - a. Dimensional drawings of all relevant structural components within the model domain
        - b. Grit basin in-service
        - c. Pumps operating and screens in service
    - iii. Screen headloss and angle information, from manufacturer(s) Simulate existing conditions with new screen headloss to identify baseline conditions under different flow paths (i.e. different combinations of pump, screen, and grit basins in service) and flow conditions. Consultant to meet with City staff to recommend and determine the three (3) simulations that will provide the best information to identify problem areas and possible alternatives.
    - iv. Conference call meeting to discuss results of the existing conditions simulation.

- v. Simulate up to three (3) alternative operational or physical improvements (e.g., alternative pump, screen, or grit basin combinations in service; channel modifications) that reduce grit settling with two (2) flowrate scenarios to compare to baseline conditions (6 simulations). Complete the last of the six (6) simulations after the VE Workshop. This will allow for modelling of design changes based on the VE Workshop.
- vi. The CFD analysis will include grit settling calibrated with data obtained from the grit characterization study. The approach for modeling grit will be based on Meroney et al. (Meroney, R; Sheker, R. (2016) Removing Grit During Wastewater Treatment: CFD Analysis of HDVS Performance, *Water Environmental Research*, 88(5), 438-4488) with the following approach and key assumptions:
  - 1. The discrete phase model (DPM) will be used to model grit. The discrete particles introduced into the flow will be inert, non-reactive, and spherical. The model will release a set of representative particles which characterize a range of sizes within the total distribution weighted to correctly represent the desired mass, settling velocity and number distribution. Each set of particles will contain a limited number of sub-groups with average material properties which represent the diameters, settling velocities and mass based on the grit characterization study.
  - 2. The DPM model predicts the trajectory of a discrete phase particle by integrating the force balance on the particle. This force balance equates to the particle inertia with the forces acting on the particle where the force is a function of the particle density. Model calibration will be performed for the particle (grit) settling velocity by adjusting the particle density in the DPM model.
  - 3. Grit characterization will only be representative of the day of sampling runs. Since grit loading varies significantly depending on the timing of a high flow event, the CFD analysis will be limited to relative rather than absolute performance.
- vii. The accuracy of the CFD modeling will be assessed based on the available data, modeling parameters and other items used in the modeling.
- c) Analysis of potential change in energy use and hauling costs associated with improvements, to be included in the Basis of Design Report.
- 9. Analysis of construction sequencing, constructability, and most favorable delivery method is not included in the Preliminary Design scope of work, though recommendations on prequalifying or prepurchasing of equipment will be provided.
- 10. Establish facility design criteria and standards to be used for project predesign and design including:
  - a. Electrical and Instrumentation Design: BES Control System Design Guides.
  - b. Drafting Requirements: Utilize the City's established CADD standards available at <https://www.portlandoregon.gov/bes/article/521018>
  - c. Applicable building design code, occupancy rating, electrical classification, seismic design criteria (for new equipment reflect BES resiliency requirement of Oregon

Structural Specialty Code Risk Category IV - immediate occupancy), and permitting requirements.

- d. Generally accepted standards of practice for the design, construction, operation, and maintenance of municipal wastewater treatment facilities, as applicable to the CBWTP.
  - e. Best Practices Milestone Review Checklists 30/60/90 available at <ftp://ftp02.portlandoregon.gov/bes/E10805%20Headworks%20Screening%20Improvements/Best%20Practices%20Milestone%20Review%2030.60.90/>
11. Prepare draft individual basis of design technical memoranda by discipline, comprised of process mechanical, hydraulics (CFD modeling), structural, building mechanical/odor control, electrical and instrumentation and control (including one preliminary P&ID for each type of treatment unit for the City's review prior to proceeding with the 30% Design). Compile the final technical memoranda as sections or appendices of a Final Basis of Design Report.
  12. Conduct and facilitate predesign workshops with City staff to solicit focused City input on alternatives evaluations and decisions that are necessary for the development of the 30% Design Submittal. Workshops to include: Process Mechanical Draft TM, CFD Base Model TM, Structural Assessment & Recommendations Draft TM, Building Mechanical/Odor Control Draft TM, and Electrical and I&C Control Draft TM. Where possible, these workshops will be combined to provide an efficient use of the City's time.
  13. Prepare the 30% Design Submittal with identified deliverables below.
  14. Perform discipline-coordinated Quality Assurance/Quality Control (QA/QC), and constructability reviews on the 30% Design Submittal. Address the Consultant's internal QA/QC comments on the 30% Design Submittal (or identify unresolved review comments with the proposed method to be used to address these comments in the 60% Design Submittal) and submit the Final 30% Design Submittal to the City for review.
  15. Perform Value Engineering (VE) Review with deliverables defined below.

### **Assumptions**

The following assumptions have been used in developing the budget for this scope of work:

- City will provide utility locates as required for project design.
- City will provide Land Use Review, if required.
- City will perform PLC and SCADA Graphical User Interface Automation Programming.
- City will provide the City's Division 00 and Division 01 specifications to the Consultant for review and incorporation into the Final Bid Documents.
- The City will provide standard utility locations for design, and surveys required for project design and establish benchmarks and survey control monuments.
- City will provide electronic copies of available as-built drawings, plant Discharge Monitoring Reports, and other available documents and records as requested by the Engineer.
- City will provide meeting room space for the 3-day Value Engineering Workshop.
- City will provide grit for characterizing headworks influent, as requested by Engineer.

- For grit sampling, three flow proportioned sampling sets will be taken at the first five locations listed. The sixth would be miscellaneous grabs or cores when the headworks is taken down and inspected.
- Preliminary P&IDs for Technical Memoranda and/or Basis of Design Report shall include the process flow diagram with instruments/devices. Panel and PLC logic will not be included.

## **Deliverables**

The Engineer will provide the following deliverables under this task:

1. Project Schedule using the WBS developed during contract negotiations.
2. Project budget by WBS elements.
3. Project three-week look ahead schedule, every two weeks.
4. Methodology to be used for tracking and documenting project risks, issues, decisions and change management.
5. Decisions, risks, issues and changes log, every two weeks, organized by categories.
6. Invoices, budget status reports by WBS elements, and Monthly Subcontractor Payment and Utilization Report by the 15<sup>th</sup> of each month.
7. Consultant's internal Quality Control and Assurance Log.
8. Kickoff Meeting Agenda and Summary Notes, including decisions and action items.
9. Preliminary design workshop agenda, materials, and summary notes for each TM.
10. Draft sections of the 30% Design Submittal as recommended by the Consultant.
11. Checklist to be used for completeness of the 30% Design Submittal is BES 30% Best Practices for Milestone Reviews Check List included as a reference.
12. Recommendation for grit sampling location for characterization of headworks influent and other items within a Grit Sampling Plan. Perform grit sampling. In addition, a study memorandum, draft and final, will be prepared summarizing the sampling and characterization of grit.
13. Draft Basis of Design Report with Final Technical Memoranda that summarize technical criteria and assumptions used for the design and includes an evaluation of current and future CBWTP influent flow to the Headworks System, description of proposed operating procedures, as well as code interpretation and permit requirements for the project to verify that all applicable codes and standards have been included and all relevant design conditions have been met. Additionally, the Report shall include an initial evaluation of safety considerations for equipment access, facility access and egress, and daily maintenance considerations; and, an analysis of potential change in energy use and hauling costs associated with improvements. The Report shall also include:
  - Summary results of the headworks grit influent characterization study (with Grit Study as an appendix) with recommended upgrades.
  - Summary of the hydraulic analysis of proposed selected screening alternative, and recommended channel modifications, using CFD modeling. Conceptual level cost estimates for comparing alternatives.
  - Summary and recommendations for channel mud valve modifications, grit flowmeters.

- Summary of the structural assessment to accommodate new equipment, and recommended necessary modifications.
  - Summary of the analysis and recommendations for Building Mechanical (HVAC, plumbing, fire protection) and odor control modifications.
  - Summary of the electrical and instrumentation/control analysis and recommendations, including preliminary control descriptions.
14. Final Basis of Design Report that includes Final individual technical memoranda compiled as sections or appendices.
15. Inspect screen channels. Submit outage request and plan for entry. Hold meeting with City to review the entry plan prior to inspection. Enter channels (confined space entry) to verify as-built channel conditions. Provide all necessary equipment to do the verification, including safety equipment. Incorporate results as necessary into project data.
16. 30% Design Submittal and VE Review including, but not limited to, the following:
- a. A Drawing Index that reflects the total number of drawings anticipated for the completed project.
  - b. Title blocks and drawing layouts that allow verification of City standards.
  - c. General Symbols, Legends and Abbreviations that allow verification of City standards.
  - d. Design Data and Criteria (Process Schematic) established and depicted in an acceptable format.
  - e. Hydraulic profile, draft.
  - f. Site Plan and Vicinity Map that accurately depict the existing site features and boundaries (including topographical data, coordinate system, zoning, geotechnical boring locations, etc.).
  - g. Site and Utility Plans that accurately depict existing utilities (above and below ground), buildings, roadways, etc.
  - h. Utility plans that generally identify proposed interfaces with existing utilities and with actual routing and location of connection to existing utilities roughly shown.
  - i. Structural plans that establish seismic modifications required, as well as modifications to the existing influent channels if required, and seismic supports for all equipment and piping.
  - j. Mechanical Plans and Sections that depict location of key equipment and key piping alignments to verify clearances and general configurations. Plans will indicate proposed equipment maintenance features.
  - k. Recommendations that define the level of design for fire protection systems that will be included in the final drawings. Define whether the approach is to show details on the drawings or provide a performance specification.
  - l. Preliminary electrical one-line diagrams and site electrical plans. Identify available corridors for routing of electrical raceways and cable tray. Identify area classifications per National Electrical Code (NEC). Perform preliminary electrical load calculations, identify equipment to be demolished.

- m. Process and Instrumentation Diagrams (P&IDs) completed to a 90% level that depict the mechanical equipment, piping, instrumentation and control equipment interlocking.
- n. Preliminary Table of Contents for the Technical Specifications. Include draft copies of specialized specifications that originate from sources other than Consultant guide specifications or City Furnished Division 00 and 01 specifications. Include drafts of specification sections that define schedule constraints and work sequencing and phasing requirements to maintain plant operations during construction.
- o. Preliminary equipment list that allows basic verification of equipment name and loop number, equipment size, equipment power requirements and basic controls and operating strategies.
- p. Opinion of Probable Construction Cost (OPCC) in sufficient detail to provide the expected range of accuracy of an Association for the Advancement of Cost Engineering (AACE) International Class 3 estimate: -20% to +30%. The OPCC shall be submitted prior to VE Workshop.
- q. List of unresolved internal QA/QC comments on the 30% Design Submittal with the proposed approach to resolve each comment in the 60% Design Submittal.
- r. Value Engineering (VE) Review. A formal value engineering review will be conducted at the 30-percent design level to identify cost-saving measures that do not compromise project functionality or safety. The Consultant shall provide the following expert staff independent of the project team: a professional Value Engineering facilitator to lead the review and two team member's resumes (mechanical engineer and constructability engineer) for BES review. Allow two seats for BES-selected members. It is assumed that the BES-selected members will be active participants in the VE workshop and supportive of the brainstorming and development of individual VE alternative workbooks/deliverables.)
- s. VE workshop preparation. Establish goals and limits, collect data and develop basis of cost estimates. The value engineering team facilitator will schedule a project initiation phone meeting with the BES project manager, the Consultant project manager, and others as necessary to reconfirm the goals and study limits for this assignment.
- t. VE workshop. Conduct a 3-day in-house value engineering workshop that includes a brief presentation by BES and the Consultant project managers and field visit; identification of alternatives; screening and refining alternatives; detailed development of a short list of alternatives; and presentation of findings.
- u. VE Design Response. Within 1 week of the conclusion of the workshop, the VE team will prepare a written technical memorandum of its findings and recommendations. The Consultant design team will review the VE TM and, with the City project manager, prepare a design response. The design response technical memorandum will indicate which ideas are accepted with modification, or rejected. In cases where VE proposals are rejected, the Consultant will provide the reason for rejection.

## **Task 2 Design Phase**

### **Objectives**

The objectives of the Design Phase Task are to complete the design for preparation of biddable documents for the execution of the project.

### **Approach**

The Design Phase Task approach includes the following activities:

1. Conduct design workshops as needed with City staff to solicit City input into the development of the 60% Design Submittal and to clarify City review comments and issues as required.
2. Prepare the 60% Design Submittal as described below.
3. Perform discipline-coordinated QA/QC and constructability reviews on the 60% Design Submittal. Address the Consultant's internal QA/QC comments on the 60% Design Submittal (or identify unresolved review comments with the proposed method to be used to address these comments in the 90% Design Submittal) and submit the final 60% Design Submittal to the City for review.
4. Conduct design workshops as needed with City staff to receive City input into the development of the 90% Design Submittal.
5. Prepare the 90% Design Submittal as described below.
6. Perform discipline-coordinated QA/QC and constructability reviews on the 90% Design Submittal. Address and resolve Consultant's internal QA/QC comments on the 90% Design Submittal and submit the completed final 90% Design Submittal to the City for review.
7. Prepare sealed Final Design Submittal documents, calculations, and other documents required for a complete application for a Building Permit from the City of Portland Bureau of Development Services (BDS). City staff will submit the Building Permit application and pay permit and plan review fees directly to BDS.
8. Provide clarifications and changes to the Final Design Submittal documents as required to address plan review Check sheets issued by BDS and comments from BES.
9. Update the Final Design Submittal documents to incorporate and consolidate all changes made during the building permit plan review to provide the Final Project Bidding Document Submittal with deliverables defined below.
10. Additional Services: Prepare 60%, 90% and Final Design for replacement or upgrade of the grit cyclones and washers. The replacement effort is estimated to require eight (8) additional design drawings. Consultant will ONLY proceed with this work given written authorization for the additional services scope and budget.
11. Additional Services: Prepare 60%, 90% and Final Design for up to two additional headworks or grit system upgrades that may be identified as beneficial to the City in Task 1. Each additional item may require up to ten (10) additional drawings each, for a total of twenty (20) additional drawings. Consultant will ONLY proceed with this work given written authorization for the additional services scope and budget.
12. Design model will be prepared in 3D with the design documents utilizing 2D plans.

### **Assumptions**

The following assumptions have been used in developing the budget for this scope of work:

- Public involvement is not anticipated for this project. The Owner's Representative will provide updates to the Citizens Advisory Committee.
- City will perform PLC and SCADA Graphical User Interface Automation Programming.
- City will provide the City's Division 00 and Division 01 specifications to the Consultant for review and incorporation into the Final Bid Documents.

- City will submit the Final Project Bidding Documents to Oregon DEQ for review of plans and specifications as required by OAR 340-052.
- The City will provide standard utility locations for design, and surveys required for project design and establish benchmarks and survey control monuments.
- Additional Services for the replacement or upgrade of the grit cyclones and washers, and/or the two additional headworks or grit systems upgrades will not proceed without written authorization by the City.

## **Deliverables**

The Engineer will provide the following deliverables under this task:

1. Project three-week look ahead schedule, every two weeks.
2. Decisions, risks, issues and changes log, every two weeks, organized by categories.
3. Invoices, budget status reports by WBS elements, and Monthly Subcontractor Payment and Utilization Report by the 15<sup>th</sup> of each month.
4. Consultant's internal Quality Control and Assurance Log.
5. Design workshop agenda, materials, and summary notes.
6. Checklist to be used for completeness checking of the 60% and 90% Design Submittals are the BES 60% and 90% Best Practices for Milestone Reviews Check List included as a reference.
7. 60% Design Submittal including, but not limited to, the following:
  - a. Title Sheet, Drawing Index, Location and Vicinity Map essentially complete.
  - b. General Symbols, Legends and Abbreviations essentially complete.
  - c. Design Data and Criteria essentially complete.
  - d. Hydraulic Profile, complete.
  - e. Site Plan with proposed final location of structures, roadways and major site elements (i.e., fencing, gates, etc.) Include proposed contractor staging, storage, access and offsite corridors (traffic routing plans).
  - f. Plans and Profiles of pipelines with final proposed alignments (horizontal and vertical).
  - g. Details of pavement and trench sections, and other civil details, as applicable.
  - h. Structural plans, sections and details coordinated with other design disciplines. Seismic requirements, and piping supports, including dimensional information and structural member sizes.
  - i. Mechanical plans, sections and details with proposed final location of major equipment, piping and appurtenances. Minor piping partially complete however adequate corridors identified. Location of equipment maintenance features finalized.
  - j. Proposed final electrical one-line diagrams, motor control centers, distribution and lighting panel layouts.
  - k. Power plans, control diagrams and load and panel schedules adequately complete to review layout and design intent.
  - l. Proposed final lighting foot-candle calculations, lighting plans and schedules, if required.



- m. P&IDs developed to greater detail including revisions based on proposed final equipment selection and configuration.
  - n. Draft Specifications of Divisions 1 through 46 coordinated such that project specific information is included and non-pertinent information removed. First draft of construction sequence, milestones and constraints.
  - o. Equipment list that includes equipment number, equipment size, equipment power requirements, basic controls and operating strategies for all equipment anticipated on the project.
  - p. Instrument List.
  - q. Loop/Index List.
  - r. Typical loop drawing for each type of instrument or device connected to a PLC.
  - s. Draft PLC Input/Output list
  - t. Draft detailed control schematic, one drawing for each piece of equipment, or discrete switch or device.
  - u. Provide draft electrical studies using SKM Inc. software for Short Circuit Analysis, Protective Device Coordination, and Arc Flash Hazard Analysis, for new and modified loads under this project.
  - v. Final Basis of Design Technical Memorandum that summarizes technical criteria and assumptions used for the design and includes an evaluation of current and future CBWTP influent flow to the Headworks System, hydraulic evaluation of the proposed Headworks System, description of proposed operating procedures, as well as code interpretation and permit requirements for the project to verify that all applicable codes and standards have been included and all relevant design conditions have been met. The memorandum should also include an initial evaluation of safety considerations for equipment access, facility access and egress, and daily maintenance considerations.
  - w. Draft detailed process narrative describing the control and monitoring of the systems and component equipment and instruments.
  - x. Update to the Construction Cost Estimate (Opinion of Probable Construction Cost) in sufficient detail to provide the expected accuracy range of an AACE Class 2 estimate: - 15% to + 20%.
  - y. Responses to 30% City Design Review Comments
8. 90% Design Submittal including, but not limited to, the following:
- a. Title Sheet, Drawing Index, Location and Vicinity Map complete.
  - b. General Symbols, Legends and Abbreviations complete.
  - c. Design Data and Criteria complete.
  - d. Site Plan with final location of structures, contractor staging, storage, and access.
  - e. Details of pavement and trench sections, and other civil details.
  - f. Sedimentation and Erosion Control Plan and details.
  - g. Structural plans, sections and details coordinated with other design disciplines. Seismic requirements, piping supports and to include structural member sizes.

- h. Mechanical plans, sections and details with final location of major equipment, piping and appurtenances. All piping layouts essentially complete.
  - i. Final electrical one-line diagrams, motor control center, distribution and lighting panel layouts, final location of major electrical equipment, block and interconnection diagrams and electrical sections and details.
  - j. Final loop diagram for each instrument connected to a PLC.
  - k. Power plans, control diagrams load and panel schedules complete and coordinated with mechanical design.
  - l. Final lighting foot-candle calculations, lighting plans and schedules.
  - m. Final P&IDs developed to greater detail including revisions from previous comments and coordinated with final operational control strategies.
  - n. Final version of Specifications Divisions 1 through 46 incorporating comments from the 60% submittal review and reflecting full coordination with drawings. Include final construction sequence, milestones and constraints, measurement and payment, and proposed bid form.
  - o. Equipment list that includes equipment number, equipment size, equipment power requirements.
  - p. Final PLC Input/Output list, final detailed control schematic, one drawing for each piece of equipment, or discrete switch or device.
  - q. Final detailed process narrative describing the control and monitoring of the systems and component equipment and instruments.
  - r. Memorandum evaluating Construction Contract Time.
  - s. Responses to 60% City Design Review Comments.
  - t. Provide draft Electrical power system study, using SKM Inc. software, for Short Circuit Analysis, Arc Flash Analysis, and Protective Device Coordination Study. Include draft Template Arc Flash Labels in PDF Format. Include draft Protective Device Coordination Study report with draft Time-Current curves (TCC).
9. Final Design Document Submittal and Permitting Documents including, but not limited to, the following:
- a. Response to 90% City Design Review Comments.
  - b. Sealed project plans, specifications, structural calculations, and other reports and documents required for a complete Building Permit Application from BDS in Adobe Acrobat .pdf electronic format.
  - c. Design model in 3D with the design documents utilizing 2D plans.
  - d. Responses to BDS check sheets, including revised project plans, structural calculations, and other reports and documents, as required by BDS, to successfully complete the BDS Building Permit Application process. All submittals shall be in Adobe Acrobat .pdf electronic format.
  - e. Erosion and Sediment Control Plan (EPSCP). A 1200-C Permit is not anticipated to be needed for this project.
10. Project Bidding Documents Submittal including, but not limited to, the following:

- a. Sealed project plans and specifications in electronic format with, both Adobe Acrobat .pdf and AutoCAD/MS Word with no password protection.
- b. Construction Cost Estimate (Opinion of Probable Construction Cost) in sufficient detail to provide the expected accuracy range of an AACE International Class 1 estimate: -10% to +15%.

### **Task 3 Permitting Support**

#### **Objectives**

The Objectives of the Permitting Support Task are to provide the City with permitting support that allows the City to obtain the necessary permits for the construction and operation of the Project.

#### **Approach**

The Permitting Support Task approach includes the following activities:

1. Identify and acquire the permits and approvals required from the City of Portland Bureau of Development Services, State of Oregon, and other regulatory agencies for construction of the project.

#### **Assumptions**

The following assumptions have been used in developing the budget for this scope of work:

- Oregon DEQ Plan Review Approval: The City will submit the Final Project Bidding Documents to Oregon DEQ for review of plans and specifications as required by OAR 340-052.
- City of Portland Bureau of Development Services: The City will submit the reports, drawings, specifications, calculations and permit application materials prepared by the Consultant and required for Building Official review of the project compliance with applicable code requirements.
- Public involvement is not anticipated for this project. The Owner's Representative will provide updates to the Citizens Advisory Committee.
- Permitting fees are not included in the Consultant's budget.

#### **Deliverables**

The Engineer will provide the following deliverables under this task:

1. Information as needed by the City.

### **Task 4 Bidding Phase Support Services**

#### **Objectives**

The objectives of the Bidding Phase Support Services are to provide the City with support services during the bidding of the Project necessary for the construction and operation of the Project.

#### **Approach**

The City of Portland's Procurement Services Division will advertise the project, print and distribute bid documents, manage communications with prospective bidders, conduct the pre-bid conference, issue addenda, receive and evaluate bids, and award the construction contract. The City may consider pre-purchase or prequalification of equipment. In support of these efforts, perform the following tasks as requested by the City:

1. Attend the project pre-bid conference.

2. Provide responses to bidder's questions.
3. Prepare addenda to clarify and or modify the Final Project Bidding documents sealed by the design professional of record.
4. Provide support for equipment pre-purchase or prequalification.

## **Assumptions**

The following assumptions have been used in developing the budget for this scope of work:

- The City will provide maintain the list of plan holders and distribution of documents to bidders including the printing of Bid Documents.
- Evaluation of Bids will be performed by the City.
- Approximately 65 bidder questions at 2 hours each has been assumed.
- Three addenda have been assumed at approximately 55 hours each.
- Provide assistance with a specification for pre-purchase or prequalification of one item, for a maximum of four (4) hours of assistance.

## **Deliverables**

The Engineer will provide the following deliverables under this task:

1. Project three-week look ahead schedule, every two weeks.
2. Decisions, risks, issues and changes log, every two weeks, organized by categories.
3. Invoices, budget status reports by WBS elements, and Monthly Subcontractor Payment and Utilization Report by the 15<sup>th</sup> of each month.
4. Consultant's internal Quality Control and Assurance Log.
5. Responses to Bidder questions as requested by the City.
6. Addenda materials sealed by the design professional of record including revised plans and specifications as requested by the City to clarify the documents and to answer bidder questions.
7. Provide support for equipment pre-purchase or prequalification such as a technical specification for equipment procurement packages.

## **Task 5 Construction and Startup Phase Support Services**

### **Objectives**

The Objectives of the Construction and Startup Phase Support Services are to provide the City with the necessary engineering services that allows the Project to be constructed in a timely manner and to support the City with the services related to the startup and operation of the Project.

### **Approach**

The City of Portland's BES Construction Management Division will perform construction management and inspection of the construction work to ensure compliance with the plans and specifications. In support of these efforts, perform the following tasks as requested by the City:

1. Attend the preconstruction conference.
2. Perform the duties of the Registered Design Professional in Responsible Charge of the project as required by the Building Official and the Oregon Structural Specialty Code.

3. Review submittals for compliance with the plans, specifications and design intent.
4. Evaluate and respond to Requests for Information (RFI). Identify changes to design documents, if applicable.
5. Attend weekly construction progress meetings.
6. Prepare Design Clarifications to modify the contract documents sealed by the design professional of record.
7. Prepare cost estimates for Design Clarifications.
8. Evaluate Contractor change order requests, notices of change, and associated cost estimates.
9. Provide periodic construction observation.
10. Provide Final electrical studies.

The City of Portland's BES Wastewater Group staff will perform the Programmable Logic Controller (PLC) programming and Supervisory Control and Data Acquisition (SCADA) programming required for the new equipment.

The BES Project Manager and Operations Specialist(s) will perform the operator training required. Provide support to the City as requested to support the startup and operation of the new facilities in the context of the intended design or as modified during construction:

1. Visit the CBWTP site to observe system operation.
2. Participate in teleconferences, respond to email inquiries, evaluate operational data and procedures.
3. Provide recommendations for operational and other system changes to improve system performance.

### **Assumptions**

The following assumptions have been used in developing the budget for this scope of work:

- Public involvement is not anticipated for this project. The Owner's Representative will provide updates to the Citizens Advisory Committee.
- City will perform preparation of as-built drawings.
- City will perform PLC and SCADA Graphical User Interface Automation Programming.
- City will provide Construction Management and inspection services.
- City will provide standard BES control panel layouts and design drawings in Auto-CAD format for integration into electrical and controls design.
- Submittal review and handling hours are estimated based on 180 submittals (which includes resubmittals) at 8 hours each
- RFI response and handling hours are estimated based on 125 RFIs at 6 hours each
- Design Changes and review of Contractor's costs will be performed based on 10 Design Changes at 25 hours each.
- Up to 40 hours each for the project engineer and another Consultant staff to assist in monitoring, documenting, analyzing and problem solving during testing, startup, and commissioning of the facilities, for a total of 80. Also, task includes 140 hours of I&C lead for these activities.

- Process start-up, operational testing and commissioning and process performance testing includes the following Consultant hours:
  - Preoperational and component testing (Pre-installation Test Phase): 60 hours
  - System Acceptance Testing, without screenings (System Test Phase): 150 hours
  - Operational Testing (with screenings): 100 hours
  - Commissioning Witnessing and Testing: 50 hours
- Witness factory acceptance testing for screens and washer compactors: 40 hours; budget based on assumption that travel would be within United States.
- Provide final sealed electrical studies for Short Circuit Analysis, Protective Device Coordination, Arc Flash Hazard Analysis, including any arc flash labels to all impacted electrical equipment.

### **Deliverables**

The Engineer will provide the following deliverables under this task:

1. Project three-week look ahead schedule, every two weeks.
2. Decisions, risks, issues and changes log, every two weeks, organized by categories.
3. Invoices, budget status reports by WBS elements, and Monthly Subcontractor Payment and Utilization Report by the 15<sup>th</sup> of each month.
4. Consultant's internal Quality Control and Assurance Log.
5. Submittal review responses.
6. Review, stamp, and submit Deferred Submittals as required by the Building Official and the OSSC.
7. Design Changes sealed by the design professional of record including sketches, drawing revisions, specifications, supporting calculations, quantity takeoffs, and cost estimates for the work included in the design change.
8. Evaluations of Contractor Change Order Proposal requests including assessments of contractor entitlement to additional compensation based on the contract documents, proposed quantities, unit prices, production rates, and proposed change order total cost.
9. Field Observation Reports as required by the City of Portland Building Official.
10. Letters, reports, site visit summaries, and forms to the Building Official and other regulatory agencies as required for permit closeout.
11. Site Visit Summary Reports, and email responses, with recommendations to improve facility performance.
12. Memorandum on assistance with analyzing and problem solving during testing, startup and commissioning
13. Documentation of testing, commissioning and process startup.
14. Witness Operational Testing and Commissioning sign-off forms
15. Provide observation/resolution notes for each startup assistance visit:
  - a. Assist City staff in monitoring, documenting, analyzing and problem solving during testing, startup, and commissioning of the facilities.
  - b. Assist City staff with Instrumentation and Control process start-up

- c. Assist City staff with commissioning and process performance testing
16. Final sealed electrical study using SKM Inc. software for Short Circuit Analysis, Protective Device Coordination, Arc Flash Hazard Analysis, including arc flash labels in PDF format to be printed and installed by the Contractor on all impacted electrical equipment. Detailed report showing proper protective device settings, including time current curves in PDF format, for overload and short circuit conditions. Contractor to set all protective device settings per protective device coordination study report. Handover of final SKM model for record.

## **Optional Services Tasks**

### **Construction Manager/General Contractor (CM/GC) Design Coordination and Procurement Support (Optional Services Subtasks 2a, 2b, 2c and 4a)**

#### **Objective**

The City may choose to use Construction Manager/General Contractor (CM/GC) alternative contracting method if the OPCC at 30% design is above a certain dollar threshold. This optional task provides for additional services during the project design and construction phases to change the project procurement approach from design-bid-build to CM/GC.

#### **2a. Additions to Task 2, 60% Design Phase**

Consultant will provide the following services, if this optional services task is authorized by the City, during the 60% design phase.

#### **Approach**

1. The 60% design submittal will incorporate CM/GC Contractor's review comments on the 30% design submittal. Consultant's responses to comments will be provided to the City and discussions will be held to resolve any outstanding issues.
2. 60% Design Engineer's Opinion of Probable Construction Cost (OPCC)
  - a. Consultant shall coordinate with the City and the CM/GC's Estimator to develop a format and approach for development of the 60% Engineer's OPCC and the CM/GC's 60% Estimate in a format that enables equivalent line-item comparisons.
  - b. Consultant shall prepare a 60% OPCC based on the 60% Design Deliverable in the approved format.
  - c. Consultant shall review the CM/GC's 60% Estimate and prepare a memorandum comparing the Engineer's 60% OPCC and the CM/GC's 60% Estimate. The cost estimate level of accuracy shall be to AACEI Class 3.

3. Guaranteed Maximum Price (GMP) Proposal Request Plans and Specifications

Consultant shall coordinate with the CM/GC Contractor and the City to address 60% review comments and provide clarifications to the intent of the 60% deliverable plans and specifications to provide the City with an additional set of documents (GMP Proposal Request Plans and Specifications) suitable for requesting a proposal for a Guaranteed Maximum Price (GMP) from the CM/GC Contractor.

4. GMP Engineer's Opinion of Probable Construction Cost (OPCC)

- a. Consultant shall prepare a GMP OPCC based on the GMP Proposal Request Deliverable in the approved format.
- b. Consultant shall review the CM/GC's GMP Proposal and prepare a memorandum comparing the Engineer's GMP OPCC and the CM/GC's GMP Proposal Estimate. The cost estimate level of accuracy shall be to AACEI Class 2.

#### 5. GMP Negotiation Support

Consultant shall provide support services to the City in negotiating a GMP with the CM/GC.

### **Assumptions**

- City will include CM/GC Contractor in all Design workshops and meetings.
- Up to two telephone conference calls with the City and the CM/GC to discuss the format and approach to be used for OPCC/Estimate format and to discuss differences between the Engineer's 60% and GMP OPCCs, and the CM/GC's 60% Estimate and GMP Proposal.
- The Guaranteed Maximum Price (GMP) Proposal Request Plans and Specifications are assumed to take an additional 80 hours for the drawings (10 percent of the drawings requiring 4 hours each) and 12 hours for specifications.
- One workshop with the City and the CM/GC Contractor to collaborate on development of the GMP Proposal Request Plans and Specifications. The workshop will be 4 hours in duration, and will be attended by the Consultant's Project Manager, Project Engineer, Process Mechanical Engineer, Structural Engineer, and Electrical I&C Engineer. Other disciplines will join by conference call. The total time for preparation, meeting time and summary minutes development will be 52 hours.
- Consultant to attend two (2) negotiation sessions with the City and the CM/GC Contractor to negotiate the GMP. Each session will be 4 hours in duration, and will be attended by the Consultant's Project Manager, Project Engineer, Process Mechanical Engineer, Structural Engineer, and Electrical I&C Engineer. Other disciplines will join by conference call. The total time per session for preparation, meeting time and summary minutes development will be 52 hours.

### **Deliverables**

1. Responses to CM/GC Contractor's review comments on the 30% Design Submittal
2. Conference calls with City and CM/GC summary minutes (2)
3. OPCC/Estimate Format and Approach for Coordinating with CM/GC
4. Consultant's OPCC on the 60% Design Submittal in approved format
5. Consultant's Memorandum on review of CM/GC's 60% Estimate on comparison with Consultant's 60% OPCC
6. Response to CM/GC Contractor's review comments on the 60% Design Submittal
7. Workshop materials and summary minutes on development of the GMP Proposal Request Documents



8. Consultant's GMP Proposal Request Plans and Specifications based on resolution of CM/GC Contractor's review comments
9. Consultant's Opinion of Probable Construction Cost based on the GMP Proposal Request Plans and Specifications
10. Memorandum on review of CM/GC's GMP Proposal
11. Miscellaneous items in support of the City's negotiation of a GMP with the CM/GC (2) sessions

## **2b. Additions to Task 2, 90% Design Phase**

Consultant will provide the following services, if this optional services task is authorized by the City, during the 90% design phase.

### **Approach**

1. The 90% Design Submittal will incorporate CM/GC review comments on the 60% submittal as agreed to by the City, CM/GC Contractor and the Consultant.
2. The City will include the CM/GC Contractor in all Design workshops and meetings.
3. Up to one review workshop to address City and CM/GC review comments on 60% design deliverable prior to the start of the 90% design, and up to two additional workshops with the City and the CM/GC to collaborate on development of the 90% Design Deliverable.

### **Assumptions**

- CM/GC Contractor comments will be incorporated once the City, CM/GC Contractor and the Consultant all agree on the responses to the comments.
- The review workshops will be 4 hours in duration, and will be attended by the Consultant's Project Manager, Project Engineer, Process Mechanical Engineer, Structural Engineer, and Electrical I&C Engineer. Other disciplines will join by conference call. The total time per workshop for preparation, meeting time and summary minutes development will be 52 hours.

### **Deliverables**

1. Responses to 60% CM/GC Design Review Comments.
2. Workshop (3) summary minutes.

## **2c. Additions to Task 2, Final Design Phase**

Consultant will provide the following services, if this optional services task is authorized by the City, during the final design phase.

### **Approach**

The Final Design Submittal will incorporate CM/GC review comments on the 90% design submittal as agreed to by the City, CM/GC Contractor and Consultant. This will include all plans specifications and documents necessary for the CM/GC Contractor to create subcontracting bid packages. The following will also be included:

1. Opinion of Probable Construction Cost for design changes required by Permits that change the design or for other design changes that entitle the CM/GC to an increase in the GMP.
2. The opinion of probable construction cost will be to the AACEI Class 2 level of detail.

### **Assumptions**

- City will include CM/GC Contractor in all Design workshops and meetings.
- One meeting will be held to discuss and resolve City and CM/GC comments on the 90% submittal and to collaborate on development of the Final Design Submittal. The meeting will be 4 hours in duration, and will be attended by the Consultant's Project Manager, Project Engineer, Process Mechanical Engineer, Structural Engineer, and Electrical I&C Engineer. Other disciplines will join by conference call. The total time for preparation, meeting time and summary minutes development will be 52 hours.

### **Deliverables**

1. OPCC for project elements increasing the CM/GC GMP
2. Responses to 90% CM/GC Design Review Comments

### **4a. Additions to Task 4, Bidding Support Phase: CM/GC Equipment Procurement and Subcontract Buyout Support**

Consultant will provide the following services, if this optional services task is authorized by the City in lieu of Task 4, during the equipment procurement / subcontract buyout phase.

- Provide responses to bidder questions
- Prepare design clarification and correction materials for inclusion in addenda stamped and sealed per OSBEELS requirements

### **Assumptions**

1. The CM/GC Contractor will develop bidding packages from the Final Design Submittal plans and specifications. The Consultant will not be required to revise the Final Design Submittal documents to delineate subcontractor or equipment supplier scopes of work.
2. The CM/GC Contractor will issue up to three (3) Equipment Procurement Packages that will generate up to a total of 10 bidder questions requiring a response (at an average of 2 hours per response) from the Consultant with up to five (5) of these responses requiring preparation of Design Clarification materials to be issued in addenda by the CM/GC (at an average of 6 hours per Design Clarification).
3. The CM/GC Contractor (or the City for CM/GC self-performed work) will issue up to 10 Subcontract Procurement Packages that will generate up to a total of 50 bidder questions requiring a response (at an average of 2 hours per response) from the Consultant, with up to 15 of the responses requiring preparation of Design Clarification materials to be issued in addenda by the City or CM/GC (at an average of 6 hours per Design Clarification).
4. The CM/GC or the City's Procurement Division will advertise the packages, print and distribute bid documents, manage communications with prospective bidders, conduct the pre-bid conferences, issue addenda, receive and evaluate bids, and award the construction subcontracts and equipment supply contracts.

5. It is assumed that the entire Task 4 budget will be utilized in providing the scope of work under Subtask 4a if this Optional Subtask is authorized by the City and that the scope of work under Task 4 will be not be required.

### **Deliverables**

1. One copy of each Design Clarification in Adobe Acrobat pdf format for inclusion in the addenda as required; signed, sealed, and dated by the Engineer of Record per Oregon State Board of Engineering and Land Surveying (OSBEELS) requirements.
2. Wherever possible when a portion of a drawing requires clarification, an 8-1/2 x 11 sheet will be prepared and included with the addenda for clarification rather than re-issue of the entire drawing.

## **5a. Instrumentation and Controls Programming Support**

### **Objectives:**

The objectives of this Optional Services Design Phase Task are to support the City's programming efforts by furnishing flowcharts, logic diagrams, loop narratives, HMI screen graphics and testing plans. In addition, this task includes support for testing of the PLC control system.

### **Approach**

1. Prepare flow charts, logic diagrams, loop narratives, and other documents for the Owner's Staff to use in developing the programs for Programmable Logic Controllers (PLCs).
  - a. Develop flow charts for the project processes that will be constructed with every decision as an IF-THEN-ELSE construct.
  - b. Develop logic diagrams, and other documents for the City to use in developing the programs for Programmable Logic Controllers (PLCs).
  - c. Prepare written loop narratives as a brief document summarizing the details of a control or measurement loop, and the components in it. These will provide a means of recording at the design stage the decisions taken, and the reasons for those decisions, that will influence the final loop. will be provide with the following basic structure:
    - i. FUNCTION - Specify the vessel or flow stream monitored, and state why the loop is installed.
    - ii. CONTROLLER MODES AVAILABLE - State whether the loop must be made available for Auto, Cascade, Manual, etc. operation.
    - iii. CONTROLLER ALGORITHM - For P+I types - details of settings for calculations - details of the equations
    - iv. LOOP DESCRIPTION - Identify the process stream in more detail, with any peculiarities of material etc. Type of transmitter, and any special signal conditioning should be stated. Where a complex control algorithm is to be implemented, the Functional Specification for the control should also be defined here. Details of final control elements and their behavior.
    - v. ALARM FUNCTIONS - Specify alarm settings, and give a brief justification for having the alarm.

- vi. OPERATOR INFORMATION - List all information pertinent to the operation of the loop. This should include details of lining out procedures for control loops, and the significance of and recommended operator actions in the event of an alarm.
  - vii. COMPONENTS - List each component used, its function, and input and output ranges where appropriate. This provides a useful check that all components have compatible ranges.
  - viii. MAINTENANCE - Specify the precautions needed to allow maintenance on the loop - to include isolation and other actions. This should include any design features required to allow maintenance. Special consideration must be given to the effects of isolation on other related systems.
- 2. Develop testing plans for the PLC and HMI programming.
    - a. Test Plans will layout items to be tested, provide pass/fail criteria and requirements, testing procedures and approach, and testing forms and logs.
    - b. Support at startup to test software.

### **Assumptions**

- PLC and HMI programming is not included in the scope of work
- There will be one (1) typical flow chart for each process for a total of 12 flow charts
- There will be one (1) typical Loop narrative describing each instrument loop for a total of 60 loops
- There will be one (1) typical logic diagram for the bar screens and each process for a total of 12 logic diagrams
- Budget based on 40 hours of assistance to the City with startup and testing of PLC control system

### **Deliverables**

- 1. Flow charts, logic diagrams, loop narratives
- 2. Program Testing Plans for PLC and HMI programs

## **5b. Record Drawings -- Addition to Construction and Startup Phase Services**

### **Objective:**

Consultant will provide 2D and 3D records of as-built condition, if this optional services task is authorized by the City, during the Construction and Startup Phase.

### **Approach**

- 1. Take the construction Contractor's redline as-built markups of the bid drawings and create record drawings.
- 2. Create records in the Design model in 3D and the design documents utilizing 2D plans.

### **Assumptions**

- The construction Contractor or CM/GC Contractor will supply legible paper markups on 2D drawings consolidated into one set of marked up drawings that reflect the as-built construction of the project, not necessarily the actual supplied equipment.

- No field verification of the Contractor's marked up drawings will be performed by the Consultant.
- Assumed that 80 percent of the 188 drawings will require drafting at an average of 2 hours per drawing for a total of 300 hours plus an additional 40 hours for quality control.

### **Deliverables**

1. Record 3D models of as-built condition.
2. Record 2D drawing files and PDF of as-built condition.

End of Scope of Work

### **CONSULTANT PERSONNEL**

The Consultant shall assign the following personnel to do the work in the capacities designated:

<b>NAME</b>	<b>ROLE ON PROJECT</b>
Mike Hyland	Principal-in-Charge
Mark Ryan	Project Manager
Ed Fernbach	Project Engineer/Process Mechanical
Mike Blake	Constructability
Kevin McEvoy	Quality Assurance/Quality Control
Brett Harsha	Electrical/Instrumentation & Controls

### **SUBCONSULTANTS**

The Consultant shall assign the following subconsultants to perform work in the capacities designated:

<b>NAME</b>	<b>DMWESB CERTIFICATION TYPE</b>	<b>ROLE ON PROJECT</b>	<b>SUBCONTRACT AMOUNT</b>
Elcon Associates, Inc.	MBE	Electrical and Instrumentation & Controls	\$884,258
Cooper Zietz Engineers, Inc. dba Akana	DBE/MBE	Civil & Structural Engineering	\$233,533
Richwine Environmental, Inc.	None	Operations & Maintenance	\$86,893
Hamilton Risk+Value Consultants	None	Value Engineering	\$57,122
Blackdog	None	Grit Sampling and Analysis	\$11,391

The total subcontracting to D/M/W/ESB firms on this contract is estimated at \$1,117,791 or 34% of the Contract amount.

The City will enforce all social equity contracting and D/M/W/ESB subcontracting commitments submitted by Consultant in its Proposal. Consultant shall not add, eliminate, or replace any Subconsultant assignments without the prior written consent of the Chief Procurement Officer; failure to use the identified D/M/W/ESB Subconsultants without prior written consent is a material breach of contract. Any changes must be reported and submitted to the PTE Contract Compliance Specialist on the Subconsultant Change Request Form found on Procurement Services' website under Contractor Resources. All changes to this Contract, including changes to the D/M/W/ESB subcontracting commitments, must be made by written amendment and approved by the Chief Procurement Officer to be valid.

For contracts valued \$50,000 or more, the Consultant shall submit monthly subconsultant payment and utilization information electronically, reporting ALL Subconsultants employed in the performance of this Contract. More information on this process may be viewed on the City Procurement website at: <https://www.portlandoregon.gov/bfrs/75932>. Contact the PTE Contract Compliance Specialist for submission guidelines.

## **COMPENSATION**

The maximum that the Consultant can be paid on this Contract is \$3,286,837 (hereafter the “not to exceed” amount.). The “not to exceed” amount includes all payments to be made pursuant to this Contract, including reimbursable expenses, if any. Nothing in this Contract requires the City to pay for work that does not meet the Standard of Care or other requirements of the Contract. The actual amount to be paid Consultant may be less than that amount.

The Consultant is entitled to receive progress payments for its work pursuant to the Contract as provided in more detail below. The City will pay Consultant based on these invoices for acceptable work performed and approved until the “not to exceed” amount is reached. Thereafter, Consultant must complete work based on the Contract without additional compensation unless there is a change to the scope of work.

Any estimate of the hours necessary to perform the work is not binding on the City. The Consultant remains responsible if the estimate proves to be incorrect. Exceeding the number of estimated hours of work does not impose any liability on the City for additional payment.

If work is completed before the “not to exceed” amount is reached, the Consultant’s compensation will be based on the Consultant’s bills previously submitted for acceptable work performed and approved.

## **PAYMENT TERMS: Net 30 Days**

## **Hourly Rates**

The billing rates shall not exceed those set forth below:

<b>ROLE ON PROJECT</b>	<b>2018 Maximum Hourly Rate</b>
<b>CDM Smith Inc.</b>	
Principal-in-Charge	\$239.29
Project Manager	\$250.00
Quality Manager	\$250.00
Technical Advisor	\$245.09
TRC & Senior Reviewers	\$250.00
Project Engineer	\$250.00
Process Mechanical Lead	\$197.01
Building Mechanical Lead	\$146.13
Architect	\$180.61
Hydraulics Engineer	\$219.82
Hydraulics Modeling CFD Engineer	\$195.67
Odor Control Engineer	\$212.10
Constructability	\$216.99
Safety	\$169.01
MIB Design & CADD Coordinator	\$188.45
Engineers Grade 4	\$139.50
Engineers Grade 2/3	\$108.50
Scheduler	\$108.50
Cost Estimator	\$196.00
CADD	\$123.00
Contract Administrator	\$127.13
Admin Assistant/Word Processor	\$107.76
<b>Elcon Associates, Inc.</b>	
Project Manager	\$174.25
Senior Engineer	\$174.25
Engineer	\$140.68
Senior Designer	\$138.45
Designer	\$106.57
Tech Designer	\$106.57
CADD Operator	\$89.68
CADD Tech	\$81.21
Admin	\$91.34
<b>Akana</b>	
Senior Structural Engineer	\$210.57
Senior Reviewer	\$212.58
Structural/Civil Engineer	\$141.08
Junior Structural Engineer	\$100.42
Senior CADD	\$100.42
Junior CADD	\$83.61
Admin/Word Processor	\$71.27
<b>Hamilton Risk+Value Consultants</b>	
VE Leader	\$235.13
Project Admin	\$83.60
<b>Richwine Environmental, Inc.</b>	
Operations Consultant	\$195.70
<b>Blackdog</b>	
Grit Sampler	\$195.70

### **Standard Reimbursable Costs**

The following costs will be reimbursed without mark-up:

- **Out-of-Town Travel.** Travel (transportation, lodging, and per diem) of Contractor and/or experts when specified in the contract or requested by BES, directly attributed to specific tasks and when to a location outside a 100-mile radius of Contractor's project office. Travel costs will be reimbursed in accordance with the City's Travel Expense Guidelines, which are based on the General Services administration (GSA) per diem rates.
- **Photocopying /Reproduction Costs.** Reproduction of required drawings, reports, specifications, bidding documents, in excess of the number required as part of the contract excluding the cost of reproduction for Contractor's or sub's own use.

### **Subconsultant Costs**

Compensation for subconsultants shall be limited to the same restrictions imposed on the Consultant. The maximum markup on subconsultant services shall not exceed 5%.

### **Adjustment of Labor Rates Due to Inflation**

Annual adjustment of hourly rates will be considered upon written request from the Consultant. Approval of a request for rate increases is solely within the City's discretion and under no circumstances is the City obligated to approve such a request.

Rate increases are subject to the following limitations:

- No increases will be granted before the one-year anniversary of the Contract;
- No more than one increase shall be granted per Contract year;
- Rate increases may not exceed the preceding calendar year's Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) West Region Class Size A average inflation rate (as determined from the U.S. Bureau of Labor Statistics);
- Rate increases shall not be retroactive.

Other than the impact of inflation as described above, hourly rates may not be increased.

### **Progress Payments**

On or before the 15<sup>th</sup> of each month, the Consultant shall submit to the City's Project Manager an invoice for work performed by the Consultant during the preceding month. The invoice shall contain the City's Contract Number and set out all items for payment including, but not limited to: the name of the individual, labor category, direct labor rate, hours worked during the period, and tasks performed. The Consultant shall also attach photocopies of claimed reimbursable expenses, if applicable. The Consultant shall stamp and approve all subconsultant invoices and note on the subconsultant invoice what they are approving as "billable" under the Contract. The billing from the prime should clearly roll up labor and reimbursable costs for the prime and subconsultants – matching the subconsultant invoices. Prior to initial billing, the Consultant shall develop a billing format for approval by the City.

The City shall pay all amounts to which no dispute exists within 30 calendar days of receipt of the invoice. Payment of any bill, however, does not preclude the City from later determining that an error in payment was made and from withholding the disputed sum from the next progress payment until the dispute is resolved.



The Consultant shall make full payment to its subconsultants within 10 business days following receipt of any payment made by the City to Consultant.

**ACH Payments**

It is the City's policy to pay its Consultant invoices via electronic funds transfers through the automated clearing house (ACH) network. To initiate payment of invoices, Consultant shall execute the City's standard ACH Vendor Payment Authorization Agreement.

Upon verification of the data provided, the Payment Authorization Agreement will authorize the City to deposit payment for services rendered directly into Consultant accounts with financial institutions. All payments shall be in United States currency.

## WORKERS' COMPENSATION INSURANCE STATEMENT

### IF YOUR FIRM HAS CURRENT WORKERS' COMPENSATION INSURANCE, CONSULTANT MUST SIGN HERE:

I, undersigned, am authorized to act on behalf of entity designated below, and I hereby certify that this entity has current Workers' Compensation Insurance.

Consultant Signature: Neal P. Fland Date: 01-MAY-2018 Entity: CDM Smith Inc.

### IF YOUR FIRM DOES NOT HAVE CURRENT WORKERS' COMPENSATION INSURANCE, CONSULTANT MUST COMPLETE THE FOLLOWING INDEPENDENT CONSULTANT CERTIFICATION STATEMENT:

As an independent Consultant, I certify that I meet the following standards:

1. The individual or business entity providing labor or services is registered under ORS Chapter 701, if the individual or business entity provides labor or services for which such registration is required;
2. Federal and state income tax returns in the name of the business or a business Schedule C or form Schedule F as part of the personal income tax return were filed for the previous year if the individual or business entity performed labor or services as an independent Consultant in the previous year; and
3. The individual or business entity represents to the public that the labor or services are to be provided by an independently established business. Except when an individual or business entity files a Schedule F as part of the personal income tax returns and the individual or business entity performs farm labor or services that are reportable on Schedule C, an individual or business entity is considered to be engaged in an independently established business when four or more of the following circumstances exist. Consultant: check four or more of the following:
  - ☐ A. The labor or services are primarily carried out at a location that is separate from the residence of an individual who performs the labor or services, or are primarily carried out in a specific portion of the residence, which portion is set aside as the location of the business;
  - ☐ B. Commercial advertising or business cards as is customary in operating similar businesses are purchased for the business, or the individual or business entity has a trade association membership;
  - ☐ C. Telephone listing and service are used for the business that is separate from the personal residence listing and service used by an individual who performs the labor or services;
  - ☐ D. Labor or services are performed only pursuant to written Contracts;
  - ☐ E. Labor or services are performed for two or more different persons within a period of one year; or
  - ☐ F. The individual or business entity assumes financial responsibility for defective workmanship or for service not provided as evidenced by the ownership of performance bonds, warranties, errors and omission insurance or liability insurance relating to the labor or services to be provided.

\_\_\_\_\_  
Consultant Signature

\_\_\_\_\_  
Date

### FOR CITY USE ONLY

**PROJECT MANAGER-COMPLETE ONLY IF CONSULTANT DOES NOT HAVE WORKER'S COMPENSATION INSURANCE**  
ORS 670.600 Independent Consultant standards. As used in various provisions of ORS Chapters 316, 656, 657, and 701, an individual or business entity that performs labor or services for remuneration shall be considered to perform the labor or services as an "independent consultant" if the standards of this section are met. The Contracted work meets the following standards:

1. The individual or business entity providing the labor or services is free from direction and control over the means and manner of providing the labor or services, subject only to the right of the person for whom the labor or services are provided to specify the desired results;
2. The individual or business entity providing labor or services is responsible for obtaining all assumed business registrations or professional occupation licenses required by state law or local government ordinances for the individual or business entity to conduct the business;
3. The individual or business entity providing labor or services furnishes the tools or equipment necessary for performance of the Contracted labor or services;
4. The individual or business entity providing labor or services has the authority to hire and fire employees to perform the labor or services;
5. Payment for the labor or services is made upon completion of the performance of specific portions of the project or is made on the basis of an annual or periodic retainer.

\_\_\_\_\_  
City Project Manager Signature

\_\_\_\_\_  
Date

**CONSULTANT SIGNATURE:**

This Contract may be signed in two (2) or more counterparts, each of which shall be deemed an original, and which, when taken together, shall constitute one and the same Agreement.

The parties agree the City and Consultant may conduct this transaction, including any Contract amendments, by electronic means, including the use of electronic signatures.

I, the undersigned, agree to perform work outlined in this Contract in accordance to the STANDARD CONTRACT PROVISIONS, the terms and conditions, made part of this Contract by reference, and the STATEMENT OF THE WORK made part of this Contract by reference; hereby certify under penalty of perjury that I/my business am not/is not in violation of any Oregon tax laws; hereby certify that my business is certified as an Equal Employment Opportunity Affirmative Action Employer and is in compliance with the Equal Benefits Program as prescribed by Chapters 5.33.076 and 5.33.077 of Code of the City of Portland; and hereby certify I am an independent consultant as defined in ORS 670.600.

**CDM Smith Inc.**

By: Michael P. Hyland Date: 01-MAY-2018

Name: Michael P. Hyland

Title: Associate / CSL

**CONTRACT NUMBER:** \_\_\_\_\_

**CONTRACT TITLE:** \_\_\_\_\_

**CITY OF PORTLAND SIGNATURES:**

By: \_\_\_\_\_  
Elected Official

Date: \_\_\_\_\_

Approved:

By: \_\_\_\_\_  
Office of City Auditor

Date: \_\_\_\_\_

Approved as to Form:

By: \_\_\_\_\_  
Office of City Attorney

Date: \_\_\_\_\_



# CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)  
05/01/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Aon Risk Services Northeast, Inc. Boston MA Office One Federal Street Boston MA 02110 USA	<b>CONTACT NAME:</b>	
	<b>PHONE (A/C. No. Ext):</b> (866) 283-7122	<b>FAX (A/C. No.):</b> (800) 363-0105
	<b>E-MAIL ADDRESS:</b>	
	<b>INSURER(S) AFFORDING COVERAGE</b>	<b>NAIC #</b>
<b>INSURED</b> CDM Smith Inc. 75 State Street, Suite 701 Boston MA 02109 USA	<b>INSURER A:</b> National Union Fire Ins Co of Pittsburgh	19445
	<b>INSURER B:</b> New Hampshire Insurance Company	23841
	<b>INSURER C:</b> American Home Assurance Co.	19380
	<b>INSURER D:</b> Illinois National Insurance Co	23817
	<b>INSURER E:</b> Lloyd's Syndicate No. 2623	AA1128623
	<b>INSURER F:</b>	

Holder Identifier :

**COVERAGES****CERTIFICATE NUMBER:** 570071014627**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. **Limits shown are as requested**

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input checked="" type="checkbox"/> LOC OTHER:			GL3629894	01/01/2018	01/01/2019	EACH OCCURRENCE \$2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$300,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$2,000,000 GENERAL AGGREGATE \$4,000,000 PRODUCTS - COMP/OP AGG \$4,000,000
A	<b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			CA 1921822 AOS CA 1921821 MA	01/01/2018	01/01/2019	COMBINED SINGLE LIMIT (Ea accident) \$2,000,000 BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
	<b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE <b>DED</b> <input type="checkbox"/> <b>RETENTION</b>						EACH OCCURRENCE AGGREGATE
B	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	N/A	WC014649625 AOS WC014649626 AK,AZ,VA	01/01/2018	01/01/2019	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE-EA EMPLOYEE \$1,000,000 E.L. DISEASE-POLICY LIMIT \$1,000,000
E	Archit&Eng Prof			PSDEF1800033 Professional/Claims Made	01/01/2018	01/01/2019	Each Claim \$3,000,000 Aggregate \$3,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

City of Portland and its bureaus/divisions, officers, agents and employees are included as Additional Insured in accordance with the policy provisions of the General Liability and Automobile Liability policy. General Liability and Automobile Liability evidenced herein is Primary and Non-Contributory to other insurance available to an Additional Insured, but only in accordance with the policy's provisions.

**CERTIFICATE HOLDER****CANCELLATION**

City of Portland Attention: Chris Selker 5001 N Columbia Blvd Portland OR 97203 USA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE  <i>Aon Risk Services Northeast, Inc.</i>

Certificate No : 570071014627



# ADDITIONAL REMARKS SCHEDULE

Page \_ of \_

AGENCY Aon Risk Services Northeast, Inc.		NAMED INSURED CDM Smith Inc.	
POLICY NUMBER See Certificate Number: 570071014627			
CARRIER See Certificate Number: 570071014627	NAIC CODE	EFFECTIVE DATE:	

## ADDITIONAL REMARKS

**THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,**  
**FORM NUMBER:** ACORD 25 **FORM TITLE:** Certificate of Liability Insurance

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER	
INSURER	
INSURER	
INSURER	

**ADDITIONAL POLICIES** If a policy below does not include limit information, refer to the corresponding policy on the ACORD certificate form for policy limits.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
	WORKERS COMPENSATION							
C		N/A		WC014649627 CA	01/01/2018	01/01/2019		
D		N/A		WC014649628 FL	01/01/2018	01/01/2019		
B		N/A		WC014649629 IL, KY, NC, NH, UT, VT	01/01/2018	01/01/2019		
B		N/A		WC014649630 MA, ND, OH, WA, WI, WY	01/01/2018	01/01/2019		
B		N/A		WC014649631 NJ, PA	01/01/2018	01/01/2019		