Brown and Caldwell

WORK ORDER INITIATION FORM
for the CITY OF CLEARWATER

Date: 3/4/2016

Project Number: _____

City Project Number: 16-0007-UT

Plan Set Number: _____

1. PROJECT TITLE:

Marshall Street WRF Odor Control Evaluation and Design

2. SCOPE OF SERVICES:

Brown and Caldwell (BC) will evaluate two separate existing odor control systems located at the City of Clearwater's (City) Marshall Street WRF. The first odor system is a Zabox bio-trickling filter and is connected to the existing headworks of the WRF. This system is currently not operational and has not been in operation for over a year. The second system is a Quad two-stage odor control system which is connected to the biosolids building. This system is operational, but not performing to the City's satisfaction.

The evaluation will consider the existing infrastructure for rehabilitation or complete replacement. In addition, due the close proximity of the two existing systems, efficiencies in combined/common systems will be considered.

Preliminary design-level exhibits will be created for demonstrating the recommended improvements for site/civil and mechanical connections with the existing conditions. A summary of the evaluation and the preliminary level design will be provided to the City in a technical memorandum (TM).

In addition to the odor control system analysis, a desktop analysis of the four influent streams (which are piped to the headworks) to estimate the potential for upstream improvements to help reduce the hydrogen sulfide concentrations that accumulate at the Marshall Street WRF headworks. This evaluation will be supplemented by information provided by the City which includes OdaLogger data collected at locations recommended by BC and hydraulic data provided by the City for the four main contributing pipe systems. Following the evaluation and recommendations, BC will prepare 60%, 90% and final design documents and technical

specifications for the recommended improvements. BC will utilize the City's front end documents and will prepare bid form and measurement and payment criteria. It is estimated that both odor control systems will be replaced with two new odor systems. It is anticipated that a building permit will be needed from the City's building department. No additional permits are anticipated for this project.

I. PRE-DESIGN PHASE

1.1 Health and Safety Plan

1.2 Invoicing and Progress Reports

1.3 Project Coordination

1.4 Meetings

a. Kick-Off / Site Visit and Initial Evaluation. BC shall prepare for and lead a project kick-off meeting with Clearwater staff to review the goals and objectives of the project, to establish lines of communication between City staff and the BC project team, and to identify the operating data and other information needed by BC to begin work on the project. Additionally, BC will perform the evaluation of the Headworks facility. The City shall ventilate and provide gas monitoring of the headworks for entry by BC personnel.

b. TM Workshop

c. 60% Review Meeting

d. 90% Review Meeting

e. Final Review Meeting

II. DESIGN PHASE

2.1 Evaluation of two existing odor Control systems (headworks and solids handling). The first is connected to the Headworks HVAC and is an existing Zabocs odor control system. The second is connected to the solids handling building and is a Quad odor control system.

2.2 Evaluate existing HVAC infrastructure systems for both the headworks and solids handling building:

a. Ductwork

b. Air Change

c. Site Civil Layout

d. Structural Supports

e. Electrical/I&C

2.3 Review and evaluate the gas monitoring data as collected and provided by the City.

2.4 Evaluate code requirements per OSHA minimum criteria for both facilities.

2.5 Establish Design Criteria for odor control selection for both facilities:

a. Odor profile and expected gas concentrations for odor control selection

b. Combined system vs two separate systems

c. Structural evaluation of HVAC pipe supports and odor control footing foundation

d. Electrical evaluation of existing cable/conduit/cabinets not directly connected with the manufacturers odor control equipment
e. Instrumentation evaluation for odor control integration
f. Site/Civil evaluation of available space
g. New headworks air monitoring and reporting equipment

2.6 Engineers Opinion of Probable Construction Cost for rehabilitation and replacements shall be prepared for consideration.

2.7 Prepare a Draft TM including preliminary design exhibits

2.8 TM workshop shall be conducted with the City to review the Draft TM and discuss the City's comments and questions.

2.9 Prepare a Final TM which will incorporate final comments received by the City and resubmitted.

2.10 A separate desktop analysis of influent flows at the headworks to evaluate potential upstream remediation to reduce hydrogen sulfide concentrations will be performed and summarized in a letter report. The Desktop analysis will evaluate 4 separate wastewater streams that enter the headworks. The analysis will focus on the following:

a. Creation of a small scale hydrogen sulfide monitoring plan.
b. Analysis of hydraulic conditions utilizing existing model data as provided by the City.
c. Time of concentration and detention time analysis of the existing waste streams.
d. Hydrogen sulfide concentration analysis for both liquid and gas as measured by the City at location identified by BC.
e. Theoretical analysis of alternate chemical additions to determine potential improvements at the waste stream discharge at the headworks to predict hydrogen sulfide reduction.
f. Recommendations for next phase of evaluation based upon the desktop analysis.

III. FINAL DESIGN PHASE

Design deliverable shall be provided as identified in Attachment "A" City of Clearwater Deliverable Standards

3.1 60% Design

3.2 90% Design

3.3 Final Design,

3.4 Permitting. Prepare and submit signed and sealed drawings to the City Building Department for review and comment. One re-submittal shall be prepared and resubmitted to address received comments. Building department fees shall be paid directly by the City; reimbursement costs to BC are not included.

IV. BIDDING PHASE

4.1 Pre-Bid Meeting. The project engineer shall attend the pre-bid meeting and provide a project description to those in attendance. BC shall respond to technical questions and assist in preparing formal response to questions and a meeting summary. The City will provide an agenda and sign-in sheet and will responsible for issuing any formal response from the meeting.

4.2 Prepare Addendums. BC will respond up to three (3) addenda as requested by the City for written response. The City will be responsible for issuing addendums.

4.3 Review bid tabulations, verify apparent low bidder responsiveness, and Recommend Award. BC will prepare a recommendation letter to the City

3. PROJECT GOALS:

A. Draft Technical Memorandum – 3 Copies, PDF
B. Final Technical Memorandum – 3 Copies, PDF
C. 60% Documents – 11"x17" Drawings, 3 Copies, PDF
D. 90% Documents – 11"x17" Drawings, 3 Copies, PDF
E. Final Documents, Signed and Sealed – 11"x17" Drawings, 3 Copies, PDF and CAD
F. Building Depart Permit Review application Documents – 3 Copies, PDF

4. BUDGET:

See Attachment "B"

This price includes all labor and expenses anticipated to be incurred by Brown and Caldwell for the completion of these tasks in accordance with Professional Services Method "B" – Lump Sum – Percentage of Completion by Task for Phases 1, 2, and 4 and Method "A" – Cost Times Multiplier Basis for Phase 3 for a fee not to exceed One Hundred Seventy Eight Thousand, Eight Hundred and Forty Nine Dollars ($178,849).

5. SCHEDULE:

The project is to be completed 336 days from issuance of notice-to-proceed. The project deliverables are to be phased as follows:

Draft Technical Memorandum	60 calendar days
Final Technical Memorandum / Letter Report	21 calendar days
60% construction plans and permit applications	60 calendar days
90% construction plans	45 calendar days
Final construction documents	30 calendar days
Bidding Phase	120 calendar days

6. STAFF ASSIGNMENT (Consultant):

Todd Bosso, P.E. – Project Manager

Philip Wolstenholme – Technical Leader

Anand Mody, P.E. – Professional Engineer

Christian Aristizabal – Project Engineer

Ryan Abraheim, P.E. – Electrical Engineer

7. CORRESPONDENCE/REPORTING PROCEDURES:

Engineer's/Architect's project correspondence shall be directed to:
Todd Bosso, PE

All City project correspondence shall be directed to:
Lan-Anh Nguyen, PE with copies to others as may be appropriate.

8. INVOICING/FUNDING P R O C E D U R E S :

Invoices for work performed shall be submitted monthly to the City of Clearwater, Engineering Department, Attn.: Veronica Josef, Senior Staff Assistant, PO Box 4748, Clearwater, Florida 33758-4748.

City Invoicing Code: 0315-96615-561300-535-000-0000

9. INVOICING PROCEDURES

At a minimum, in addition to the invoice amount(s) the following information shall be provided on all invoices submitted on the Work Order:

A. Purchase Order Number and Contract Amount.
B. The time period (begin and end date) covered by the invoice.
C. A short narrative summary of activities completed in the time period.
D. Contract billing method – Lump Sum or Cost Times Multiplier.
E. If Lump Sum, the percent completion, amount due, previous amount earned and total earned to date for all tasks (direct costs, if any, shall be included in lump sum amount).
F. If Cost Times Multiplier, hours, hourly rates, names of individuals being billed, amount due, previous amount earned, total earned to date for each task and other direct costs (receipts will be required for any single item with a cost of $50 or greater or cumulative monthly expenses greater than $100).

G. If the Work Order is funded by multiple funding codes, an itemization of tasks and invoice amounts by funding code.

10. SPECIAL CONSIDERATIONS:

The consultant named above is required to comply with Section 119.0701, Florida Statutes (2013) where applicable.

1. The City will ventilate and provide H2S gas monitoring but cannot guarantee that gas levels will meet minimum OSHA criteria. Should minimum OSHA criteria not be achievable with ventilation, BC shall prepare an alternate entry plan to determine the appropriate equipment and staff necessary to perform the headworks evaluation. BC and City will review the alternate plan determine the appropriate actions to continue with the evaluation.
2. Existing CAD files (including survey and record drawings) will be provided by the City that are complete and accurate for the preparation of new design drawings associated with new improvements. New survey and subsurface utility services are not required.
3. The City will provide existing hydraulic model data of the gravity and force main systems entering the Marshall Street headworks for the desktop analysis. BC will not provide verification of the accuracy of this data nor altering the data for the purposes of this evaluation.
4. The City will utilize its equipment and staff for collecting the hydrogen sulfide data required for the desktop analysis. BC will coordinate with the City on the locations, durations and type of information required.

PREPARED BY:

Albert Perez, PE
Principal In Charge
Brown and Caldwell

4-4-16
Date

APPROVED BY:

Michael D. Quillen, PE
City Engineer
City of Clearwater

Date

WORK ORDER INITIATION FORM

CITY OF CLEARWATER DELIVERABLES STANDARDS

FORMAT:

The design plans shall be compiled utilizing one of the following standards:

City of Clearwater CAD standards or Consultant's CAD standards (please provide all supporting documents when utilizing Consultant's Standards).

DATUM:

Horizontal and Vertical datum shall be referenced to North American Vertical Datum of 1988 (vertical) and North American Datum of 1983/90 (horizontal). The unit of measurement shall be the United States Foot. Any deviation from this datum will not be accepted unless reviewed by City of Clearwater Engineering/Geographic Technology Division.

DELIVERABLES:

A minimum of two (2) signed and sealed Plans and Contract Documents (specifications book) labeled "ISSUED FOR BID" shall be provided at the onset of the bid phase, as well as electronic copies. Electronic plan copies in PDF and CAD and electronic contract documents in PDF and MS Word.

The design plans shall be produced on bond material, 24" x 36" at a scale of 1" = 20' unless approved otherwise. The consultant shall also deliver all digital files in CAD drawing format and PDF format together with all project data in AutoCAD Civil 3D file format. All references, such as other drawings attached, images and graphic files, custom fonts and shapes shall be included in hard copy and electronic copy.

Prior to the City Council award date, a minimum of two (2) copies of signed and sealed plans and contract documents (specifications book) labeled "CONFORMED" shall be provided. All revisions made during the bid phase shall be included in the plan sets and noted in the revision block or as a footnote. Copies of each Addendum shall be included at the front of the contract and all revisions made during the bid phase shall be incorporated into the Contract Documents.

Electronic copies of "CONFORMED" plans (PDF and CAD) and contract documents (PDF and MS Word) shall be provided prior to the City Council award date.

NOTES:

- If approved deviation from using Clearwater CAD standards, the consultant shall include all necessary information to aid in manipulating and printing/plotting the drawings. Please address any questions regarding file format to Mr. Tom Mahony, Geographic Technology Manager, at (727) 562-4762 or email address: tom.mahony@myclearwater.com.

Marshall Street WRF Odor Control Evaluation and Design
Brown and Caldwell

WORK ORDER INITIATION FORM
PROJECT BUDGET

Task	Description	Subconsultant Services	Labor	Total
1.0	Pre-Design			
1.1	Health and Safety Plan		$891	
1.2	Invoicing and Progress Reports		$11,375	
1.3	Project Coordination		$6,257	
1.4	Meetings		$21,684	
				$40,207
2.0	Design			
2.1	Evaluate Existing Systems		4,646	
2.2	Evaluate Existing Treatment Areas		6,680	
2.3	Design Criteria		7,488	
2.4	Conceptual Cost Opinion		4,817	
2.5	Draft TM		13,646	
2.6	Final TM		3,052	
2.7	Desktop Odor Analysis		12,812	
				$53,141
3.0	Final Design Plans and Specifications			
3.1	60 Percent		$20,895	
3.2	90 Percent		$35,848	
3.3	Final		$17,837	
3.4	Permitting		$1,905	
				$76,485
4.0	Bidding			
4.1	Pre-Bid Meeting		**$1,556**	
4.2	Prepare Addendums		**$2,891**	
4.3	Review Bid Tabulations and Recommendation		**$1,069**	
				$5,516
Subtotal, Labor and Subcontractors				**$175,349**
Other Direct Costs (prints, photocopies, postage, etc.) (Not applicable to lump sum Work Orders – Phase 3 Only)				$3,500
Contingency (10%)				N/A
Grand Total				$178,849

REVIEW PERIOD SUBMITTAL REQUIREMENTS

This list is intended as a guideline of the items to be completed at various levels of project completion. The specific list for each project shall be finalized in the work order.

30% Construction Plans

Requirements for the 30% submittal shall include the following:

a. Cover Sheet,
b. Legend and Abbreviations per City standards,
c. Key Sheet,
d. Demolition Plans indicating existing improvements, utilities, and topography, and identification of trees to be removed,
e. Preliminary layout of the proposed improvements, existing right-of-way and easements, subdivision, block, and lot number, and plat book and page for adjacent parcels,
f. Engineer's/Architect's preliminary opinion of probable construction cost, based on the 30 % submittal.

60% Construction Plans

In addition to the items in the 30% submittal, requirements for the 60% submittal shall include the following:

a. General Construction Notes related to best management practices, utilities, and other conditions relevant to the project,
b. Typical pavement sections shall indicate typical cross sectional slopes, median improvements, pavement requirements, right-of-way lines, sidewalks, curbs, gutters, and landscaped areas,
c. Grading, Paving, and Drainage detail sheets, including standard and nonstandard stormwater management structures, retaining walls, and related notes,
d. Erosion control and tree protection details, including best management practices applied to the project,
e. Existing private utilities, as available, such as gas, electrical, telephone, fiber optic, and cable TV,
f. Detailed Cross Sections,
g. Wetland Planting Plans and Details,
h. Utility Plan including utility relocation/adjustment details indicating utility conflicts, relocation design, proposed utility structures, and conflict manholes, design details, and specific profiles, if required,
i. Permit Applications,
j. Estimated construction quantities,
k. Engineer's/Architect's updated opinion of probable construction cost and duration based on the 60% design submittal, and
l. Engineer/Architect will review City's standard technical specifications and modify or supplement as necessary for the project.

90% Construction Plans

The 90% construction plans shall include the design items required for the construction of the project, including the special provisions and technical specifications. In addition to the items in the 60% submittal, requirements for the 90% submittal shall include the following:

a. Maintenance of Traffic Plan,
b. Structural plans, details, and calculations, including design and details of shallow foundations, pedestrian bridge abutments, retaining walls, structural reinforcing, tiebacks, and stability analyses for slopes and retaining walls,
c. Detailed construction quantities based upon 90% design,
d. Engineer's/Architect's updated opinion of probable construction cost and duration based on the 90% design submittal, and
e. Technical specifications and Special Provisions.

Final (100%) Construction Documents

The 100% submittal shall address the City's final review comments.

Engineering Projects prepared and/or submitted shall be reviewed and checked by a civil engineer registered in the state of Florida as the Engineer of Record. The Engineer of Record shall sign, seal and date the design calculations, technical specifications and contract drawings as required by Florida law.

See Attachment "A" – Deliverables – for specific labeling requirements.