



1365 Hamlet Ave Clearwater, FL 33756, (727) 442-7196

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**WORK ORDER INITIATION FORM  
for the CITY OF CLEARWATER**

**Date:** June 2020

**Consultant Project Number:** \_\_\_\_\_

**City Project Number:** 17-0028-UT

**City Plan Set Number:** 2020013

**1. PROJECT TITLE:**

**NE WRF MCC-1, DC1 & 2 Replacement**

**2. SCOPE OF SERVICES:**

The City of Clearwater (City) has requested McKim & Creed provide engineering design services for the replacement of the 2<sup>nd</sup> Anoxic Mixer motor control center (MCC-1) and the switchgear distribution centers (DC-1 and DC-2). The switchgear distribution centers DC-1 and DC-2 are more than 40 yrs. old and have reached the end of their life cycle. Many of the breakers are unused and parts replacement can only be done in the aftermarket segment. In addition, the room housing the DC-1 and DC-2 enclosures is susceptible to flooding. The City has asked McKim & Creed to provide a design for replacement of MCC-1, DC-1 and DC-2 and associated ATS that will incorporate mitigation for flooding, which could include installing the equipment in a separate building raised at least 2 ft above the 100-year flood level to be determined. As part of this design effort, the City has requested that a standby power capacity analysis be done for the equipment connected to DC-1 and DC-2 and its effect on the existing Caterpillar 750kW generator that supplies standby power to this system. This may include load shedding schemes. McKim & Creed will provide their findings in the form of a technical memorandum (TM).

MCC-1 is housed in an outdoor fiberglass enclosure and is showing signs of age. This Model 5 motor control center, first manufactured in 1992, has been replaced by the Model 6 (2009). Though parts are still obtainable, they will continue to be less available as time goes on. In addition, technological advances in MCC design, can be incorporated to help make operational and maintenance decisions more efficient. The MCC in its current location is exposed to heating from the sun even though it is in a vented fiberglass enclosure. In addition, insects from the outside have infested the MCC. The City has

requested this MCC be replaced in a new location, near DC-1 & DC-2. It will be housed in the same structure as DC-1 & DC-2.

Additionally, the City has asked for a review of the main building structure as it pertains to the blower building room and floor subsidence that is attached to it. Site inspections and soils bore testing will be part of a technical memorandum provided to the City with recommendations for possible remediation. Design will not be a part of this task.

Design and contract document preparation along with bid phase for the electrical and controls portion of this scope (including any new electrical building structure) are included in this Work Order. Construction Services, generator replacement and repairs to the existing structure may be part of a future work order.

**Task 1– Project Administration, Data Collection and Review:**

Task includes project setup, progress meetings and invoicing. Review Record Drawings; obtain operational data including O&M's, electrical and control drawings. Perform kick off meeting, and site visits as needed, that will include interviews with plant operational staff to discuss current operations, and to discuss potential system modifications. A health and safety plan will be prepared and submitted to the City Project Manager prior to EOR mobilizing to site. EOR will schedule meetings, send invites, prepare agendas, meeting notes, etc. for all meetings. EOR will prepare a schedule and review at each progress meeting.

QP-17 Forms shall be filed as record of Quality Assurance Review of the project documents and can be made available at any time. These forms will be included in the Project Catalog.

**Task 2– GEOTECH:**

McKim & Creed will hire the services of Driggers a Geotech firm to provide a test bore at the proposed location of the new electrical building and at the blower building near the area of structural failure. Costs will be passed through to the City at no additional fees. Sub-Contractor invoices will be submitted separately during normal invoicing period. Pile foundation is not anticipated, but if required, additional boring charges will be directed to the City.

**Task 3– Lead Paint & Asbestos Report:**

McKim & Creed will hire the services of OHC Engineering a testing firm to provide tests for lead and asbestos the location of the existing blower and electrical building. Costs will be passed through to the City at no additional fees. Sub-Contractor invoices will be submitted separately during normal invoicing period. If areas identified, removal or mitigation will be part of construction documents.

### **Preliminary Engineering/Basis of Design Report (BODR)**

A preliminary engineering report (or Basis of Design Report), including conceptual drawings, will be developed and reviewed consistent with Tasks 2, 3 and 4. The preliminary engineering report, although conceptual, will be advanced to an approximate 30% design. Once accepted by the City, the preliminary engineering report will form the basis of design for Task 5 – Design Services and will be the basis for advancing the accepted 30% design to 75%, 100% and ultimately Issue for Bid designs.

Items to be included in this effort are:

- Draft Technical Report
- Review Meeting with City Staff
- Final Technical Report

### **Task 4 – Control System Review and Modifications**

McKim & Creed will include in the design review and modifications of the new electrical distribution system, the addition of power monitoring (including sub-metering and trending) to be provided in SCADA. Construction documents will include the necessary drawings and specifications for contract documents. Existing process control functions for MCC will be reviewed and modified to be included or transferred to new motor control center. Discussion with staff on the possible use of “Smart” MCC technology will be part of kick off and initial site visits.

### **Task 5 – Standby Capacity Power Analysis of DC-1 & DC-2**

McKim & Creed shall perform a capacity analysis for the equipment connected to DC-1 & DC-2 and its effects on the Caterpillar 750kW generator that supplies standby power to this system. This analysis will identify the connected loads on the standby system and the ability to supply power using the existing 750kW standby generator and ascertain the present and future standby power requirements. Analysis will include fuel system requirements as well as possible connection alternatives. A summary of findings will be sent to the City for review.

A cost benefit analysis of differing Utility power cost-based fuel options (i.e. Natural Gas) will not be part of the capacity analysis. However, McKim & Creed can be prepared to discuss this option at a high conceptual level as part of the early progress meetings.

Items to be included in this effort are:

- Data collection
- Site Visits
- Draft Technical Report
- Review Meeting with City Staff

- Final Technical Report

Design work formulated from this report and meeting will be addressed as additional services to this work authorization if the City chooses to move forward with the recommendations.

#### **Task 6 – Structural Technical BODR**

This task will provide the City with a memorandum summarizing the findings and recommendations for the request to investigate the subsiding floor and cracked walls in the affected areas outlined in the scope above. Items to be included in this effort are:

- Data collection
- Site Visits
- Draft Technical Memorandum
- Review Meeting with City Staff
- Final Technical Memorandum

Design work formulated from this memo and meeting will be addressed as additional services to this work authorization; if the City chooses to move forward with the recommendations.

#### **Task 7 – Design Documents**

McKim & Creed shall provide 75%, 100%, Issue for Bid Documents, and Conformed set of drawings and technical specifications with an updated opinion of construction cost at each submittal including the following:

- Review meetings with City staff of the 75% and 100% submittals.
- Recommended construction-sequencing plan to keep critical equipment operational.
- Plans and specifications to adhere to NEC, NFPA 70 E and Florida Building Code.

Drawings to include but not be limited to:

- Site plan
- Structural Pad Drawings and Building Specification
- Single line diagrams
- Interconnect diagrams (If Smart MCC is chosen, a separate Network Diagram for the MCC will be included)
- Conduit/cable routing plan
- Switchgear and MCC plans and elevations
- Motor starter schematics
- Electrical details
- Provide Permit Drawings for City Building Department

#### **Task 8 – Bid Documents, Bidding Services & Project Catalog**

- Assist and attend the City in a Pre-Bid meeting. The City shall prepare an agenda.
- Provide Contractor design question responses and aid the City in the preparation of addenda. City will issue all addenda.

- Review bids received by the City and provide recommendation of award.
- Provide Conformed Documents to Contractor.
- Provide Project Catalog in electronic format of project documents to City of the following
  - Correspondence, meeting minutes, contract documents, change orders, field orders, RFIs, work change directives, addenda, additional drawings issued subsequent to the execution of the Contract, progress reports, shop drawing and progress submittals, regulatory correspondence and other project-related documents such as O&M manuals and warranty information, as available.

**Assumptions:**

- No changes to plant processes.
- Pilings not anticipated for new electrical building and are not included.
- Control modifications limited to Task 4.
- Interior painting of existing electrical room with minor patching as necessary.
- No Construction Services (To be part of a separate work order)

**3. PROJECT GOALS:**

Deliverables for the project will include:

- Draft and Final BODR in electronic PDF format of:
  - Standby Power Capacity Technical Report for Tasks 5;
  - Structural Report per Task 6
- Electronic 75%, 100%, drawing sets for City review
- Three (3) bound Sets of Permit Documents for Building Department
- Three (3) full sized 24"x36" Issue for Bid Signed and Sealed Bid Construction and Specification Documents, with Engineers Estimate of Probable Cost for City Record and Bid.
- One Full size 24"x36" Set Conformed Construction Documents to give to Contractor and electronic copy for City.
- Meeting minute coordination and review with City for kickoff, status and progress review meetings.
- Project Catalog to be submitted electronically CD/DVD ROM.

**4. BUDGET:**

See attachment "B"

This price includes all labor and expenses anticipated to be incurred by McKim & Creed, Inc. for the completion of these tasks in accordance with Professional Services Method "A" – Cost Times Multiplier Basis – Percentage of Completion by Task for a **fee not to exceed Two Hundred One Thousand Nine Hundred Ten dollars and fifty cents (\$201,910.50).**

**5. SCHEDULE:**

Project schedule will commence upon receipt of written authorization from the City. The project is to be completed within **258 calendar days from issuance of Work Order**. This includes 21 days of City review time including meeting with the City at each submittal. The project shall be phased as follows from the Notice to Proceed:

<b>Data Collection &amp; Review</b>	<b>30 calendar days</b>
<b>BODR</b>	<b>60 calendar days</b>
<b>City Review Completion and Meeting</b>	<b>81 calendar days</b>
<b>75% Design Documents</b>	<b>141 calendar days</b>
<b>City Review Completion and Meeting</b>	<b>162 calendar days</b>
<b>100% Design Documents</b>	<b>207 calendar days</b>
<b>City Review Completion and Meeting</b>	<b>228 calendar days</b>
<b>Issue For Bid</b>	<b>258 calendar days</b>

**6. STAFF ASSIGNMENT (City):**

David Ojeda– City Project Manager  
Jeremy J. Brown, PE – Utilities Engineering Manager  
Catherine Borden – NE WRF Chief Operator  
Jason Jennings – Wastewater Environmental Tech. Manager  
Richard G. Gardner, PE – Public Utilities Assistant Director  
Michael Gilliam - PU Infrastructure Maintenance Manager  
Kervin St. Aimie - PU Infrastructure Maintenance Assistant Manager  
Zeron Rance PU (Acting Utilities Electrical Supervisor)  
Michael Flannigan - Public Utilities Assistant Manager

**(Consultant)**

Mitch Chiavaroli, PE – Sr. Project Engineer – QA/QC  
Aubrey Haudricourt, PE – Sr. Project Engineer - Project Manager / Lead Engineer  
Mike Fadini, PE – Senior Engineer – I&C  
Emmett Anderson – Senior Engineer - Structural  
Laurel Smith, EI – Project Intern Engineer  
Suvath Seng, EI – Project Intern Engineer  
Josephine Garas - Designer

## **7. CORRESPONDENCE/REPORTING PROCEDURES:**

Engineer's project correspondence shall be directed to Aubrey Haudricourt, PE

All City project correspondence shall be directed to the City Project Manager, with copies to the Utilities Engineering Manager and Public Utilities Assistant Director.

Engineer shall provide a minimum of forty-eight (48) hours' notice to conducting fieldwork/site visits. Engineer shall provide a minimum of seven (7) days notification for site visits requiring the assistance of City personnel.

Engineer acknowledges that all City directives shall be provided by the City Project Manager.

A health and safety plan must be submitted to the City Project Manager prior to conducting any fieldwork/site visits.

In addition to the original copies delivered as stated in the scope of work, all project deliverables will be submitted in electronic format on CD or other City approved device prior to approval of final invoice.

## **8. INVOICING/FUNDING PROCEDURES:**

For work performed, invoices shall be submitted monthly to the:

**City of Clearwater, Engineering Department  
Attn. Veronica Josef, Senior Staff Assistant  
PO Box 4748  
Clearwater, Florida 33758-4748.**

Contingency services will be billed as incurred only after written authorization provided by the City to proceed with those services.

City Invoicing Code: **3277327-561300-M1906**

## **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. City Project, Purchase Order and Invoice Numbers 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.

- A. Review meeting with City Staff will be held within three (3) weeks of any submittal.
- B. Include estimated value of significant equipment being demolished and removed from service for accounting purposes.
- C. Include considerations for Flood Resilience and Sea Level Rise.

PREPARED BY:



Aubrey Haudricourt, PE  
Project Manager  
McKim & Creed, Inc.

7/9/20  
Date

APPROVED BY:

Tara Kivett, PE  
City Engineer  
City of Clearwater

Date





# CITY OF CLEARWATER ENGINEERING DEPARTMENT

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## WORK ORDER INITIATION FORM CITY DELIVERABLES

### 1. **FORMAT**

The design plans shall be compiled utilizing the following methods:

1. City of Clearwater CAD standards.
2. 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.

### 2. **DELIVERABLES**

The design plans shall be produced on bond material, 24" x 36" at a scale of 1" = 20' unless approved otherwise. Upon completion, the consultant shall deliver all drawing files in digital format with all project data in Autodesk Civil 3D file format. If not available Land Desktop files are still acceptable, however the City or Clearwater is currently phasing out Land Desktop.

NOTE: If approved deviation from Clearwater CAD standards are used the Consultant shall include all necessary information to aid in manipulating the drawings including either PCP, CTB file or pen schedule for plotting. The drawing file shall include only authorized fonts, shapes, line types or other attributes contained in the standard release of Autodesk, Inc. software. All block references and references contained within the drawing file shall be included. Please address any questions regarding format to Mr. Tom Mahony, at (727) 562 4762 or email address Tom.Mahony@myClearwater.com.

All electronic files (including CAD and Specification files) must be delivered upon completion of project or with 100% plan submittal to City of Clearwater.

**NE WRF MCC-1, DC1 & 2 Replacement  
City Project 17-0028-UT  
McKim & Creed, Inc.**

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**WORK ORDER INITIATION FORM  
PROJECT BUDGET**

<b>Task</b>	<b>Description</b>	<b>Sub-Consultant Services</b>	<b>Labor</b>	<b>Total</b>
Task 1	Project Administration, Data Collection and Review, Meetings		\$30,605.00	<b>\$30,605.00</b>
Task 2	Geotech	\$4,670.00		<b>\$4,670.00</b>
Task 3	Lead & asbestos testing	\$1,580.00		<b>\$1,580.00</b>
Task 4	Control System Review and Modifications		\$14,842.00	<b>\$14,842.00</b>
Task 5	Standby Capacity Power Analysis of DC-1 & DC-2		\$16,726.00	<b>\$16,726.00</b>
Task 6	Structural Analysis BODR		\$18,710.00	<b>\$18,710.00</b>
Task 7	Design Documents 75%,100%, IFB & Permitting		\$86,816.00	<b>\$86,816.00</b>
Task 8	Bidding Services and Project Catalog		\$9,606.00	<b>\$9,606.00</b>
<b>Sub-Total</b>				<b>\$183,555.00</b>
<b>Task 9</b>	10% Contingency			<b>\$18,355.50</b>
<b>Total</b>				<b>\$201,910.50</b>