

CONSULTANT WORK ORDER

Date:	12/15/21
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1. PROJECT INFORMATION:

Project Title:	NEWRF Clarifier Splitter Boxes Rehab	
City Project Number:	21-0017-UT	
City Plan Set Number:	2021021	
Consultant Project Number:	TBD	

2. SCOPE OF SERVICES:

Black & Veatch (ENGINEER) will support the City of Clearwater (City) by providing engineering services for the rehabilitation of the two clarifier splitter boxes (north and south) at the City's Northeast Water Reclamation Facility (NEWRF). The services to be provided will generally include an evaluation of options for replacement of the sluice gates for the eight clarifiers, estimation of quantity of concrete repair needed, and development of design plans and technical specifications for concrete repairs and new sluice gates. A Technical Memorandum will also be provided to memorialize the evaluation process and resulting information.

Project Understanding and Background

The NEWRF is a 13.5 mgd-permitted wastewater treatment plant located at 3290 SR 580 in Safety Harbor, Florida and is owned and operated by the City. The NEWRF contains eight 75-foot diameter secondary clarifiers divided into two trains (north and south; four clarifiers at each location). Wastewater is distributed to the northern four secondary clarifiers (Clarifiers Nos. 1 through 4) and the southern four secondary clarifiers (Clarifiers Nos. 5 through 8) through a channel and splitter box at each location. At the splitter box there are sluice gates that control the flow from the splitter box to each clarifier. The southern channel, splitter box, and four secondary clarifiers were constructed in 1988. The northern channel, splitter box, and four secondary clarifiers were estimated to be constructed in the 1950s.

During 2021, the concrete at the splitter box gate for the influent to Clarifier No. 6 experienced cracking and sloughing. Two ENGINEER professionals joined the City and conducted a site visit on September 17, 2021 to observe the issues. Observations from the site visit included:

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- The four sluice gates on the southern splitter box were badly corroded.
- The gates appeared to be older cast iron sluice gates which rely on support from the vertical face of the splitter box wall to open and close.
- Concrete failure and cracking were observed around the sluice gates. Specifically, the concrete supporting the gate actuator for the flow to Clarifier No. 6 had cracked and large pieces were separated from the wall.
- Cracking of the concrete supporting the gate actuator for the flow to Clarifier No. 8.
- A small amount of cracking in the concrete supporting the gate actuator for the flow going to Clarifier No. 7.
- No visible cracking was observed in the concrete supporting the gate actuator for the flow going to Clarifier No. 5.
- Additional cracking in the influent channel flowing to the southern splitter box.

In December 2021, NEWRF staff experienced a failure with the gate to Clarifier No. 2 (one of the northern four clarifiers) leaving the gate in the closed position with no way to open it, cutting off flow to that clarifier. The reason is unknown as to why the gate became stuck in that position.

To help the City solve the issues they are experiencing at the NEWRF splitter boxes and provide more reliability at these areas of the plant, specific services to be performed by ENGINEER under this scope are described below.

I. PRE-DESIGN PHASE:

Task 1: Project Kickoff and Data Collection

Kickoff Meeting

ENGINEER will lead the project Kickoff Meeting, including development and distribution of agenda and meeting minutes. Discussions at the Kickoff Meeting will include roles and responsibilities, scope, schedule, deliverables, budget, quality plan, assumptions, and confirmation of the City's goals for the project. The Kickoff Meeting will be conducted virtually and attended by 3 ENGINEER professionals.

Data Collection

ENGINEER will review available information and September 17, 2021 site visit field notes and then will develop and submit a formal data request to the City for any additional information that would be useful in the evaluation and design. ENGINEER will review data as it is received and will organize it in the document filing system, ProjectWise. ENGINEER will maintain an organized log of data requested and received to facilitate tracking of the data requested.

II. DESIGN PHASE:

Task 2: Rehab Evaluation and Design

Sluice Gate Evaluation

ENGINEER will perform an evaluation of the sluice gates utilized at the City's Marshall St. Water Reclamation Facility (MSWRF), the sluice gates utilized at the NEWRF northern and southern secondary clarifiers, and alternative gates available from manufacturers such as Fontaine Gate, Whipps, and RW Gate. A summary of this evaluation will be included in the Technical Memorandum (described below).

Site Visit

ENGINEER will perform two half-day site visits to observe the concrete cracks within the influent channels and splitter boxes, as indicated in Figure 1 (mark-up of the NEWRF 1988 record drawings). The highlighted areas indicate the project's extents (green for northern area, yellow for southern area).

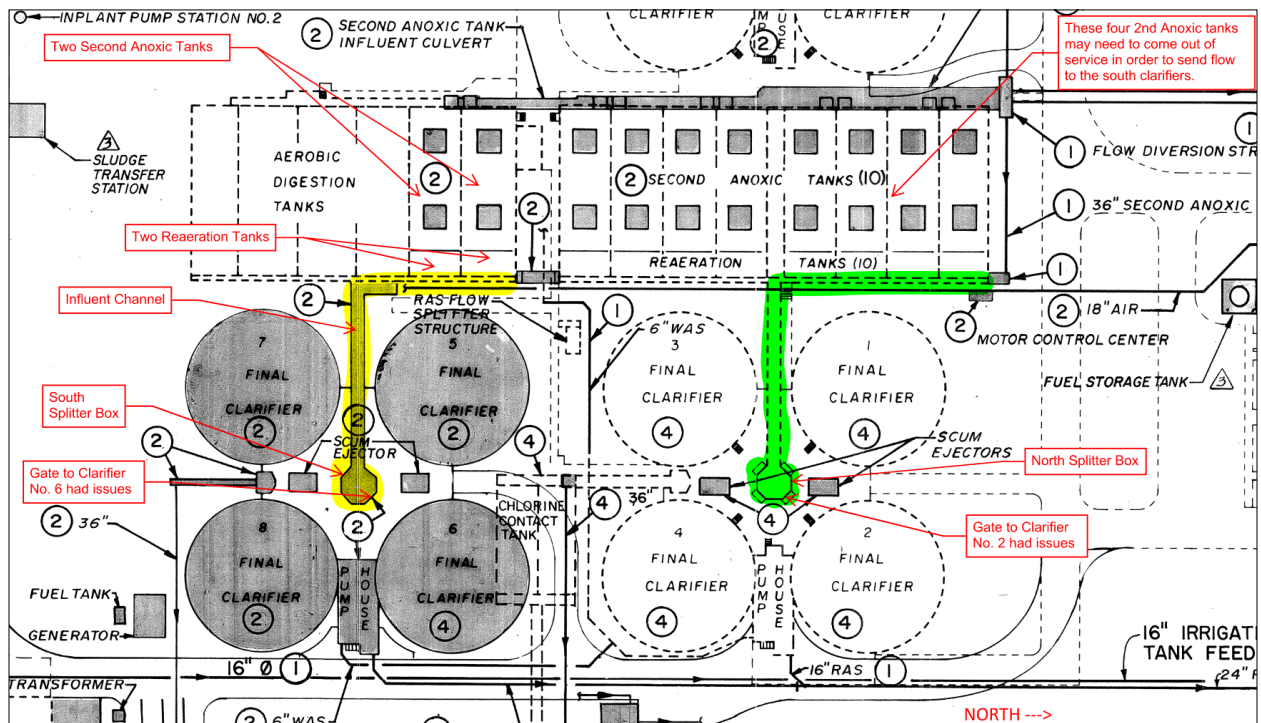


Figure 1. Northeast WRF Extents of Project

ENGINEER will take photographs, record the estimated crack quantities (e.g. linear feet) and locations, and gather any other information about the existing facilities that are related to this evaluation and design. While out of service, vacated of contents, and pressure cleaned is preferred, these four zones (influent channel and splitter box of each zone – northern and southern) may be in operation at the time of the site visit so in any case, ENGINEER will observe and quantify cracks to the extent safely and feasibly visible.

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ENGINEER will prepare a safety plan prior to arriving on site. Two ENGINEER professionals will perform each site visit. A summary of the site visits will be included in the Technical Memorandum (described below).

Estimation of Crack Quantities

Building upon information gathered during the site visits and performing a desktop analysis, ENGINEER will quantify the crack occurrences within the influent channels and splitter boxes that are shown in Figure 1, back to the isolation gates for both the northern and southern region. If any of the structures are in operation at the time of quantification, ENGINEER will assume a visible crack spans the entire vertical depth of the structure on which it is found. ENGINEER will quantify the total length of crack repair. The estimated crack quantities will be included in the Technical Memorandum (described below).

Permitting

This project is not expected to require a Florida Department of Environmental Protection (FDEP) or City/ County Building Department permit as these activities could be considered routine maintenance rather than new construction.

Technical Memorandum

In lieu of a Preliminary Design Report or a 30% design submittal, ENGINEER will prepare a brief Technical Memorandum to present the findings and conclusions that result from the sluice gate evaluation, site visits, and estimation of crack quantities. Included in the Technical Memorandum will be ENGINEER's recommendation on the sluice gate model to be installed at the eight secondary clarifiers (four north, four south), assuming that the two splitter boxes are dimensionally similar and the structural configuration allows the same model to be used in both locations. If during the design phase that is found to not be the case, ENGINEER will recommend the sluice gate model for the northern four clarifiers and a different model for the southern four clarifiers. It is anticipated that all eight gates will be the same type of gate, perhaps only varying because of dimensional differences. The Technical Memorandum will also discuss the estimated quantities of cracks to be repaired by pressure injection of epoxy and the concrete repair in the splitter box that has spalled or is cracked to the extent that it is no longer structurally sound and should be removed and replaced. A significant amount of concrete repair work (excluding pressure injection of cracks) is not anticipated to be required. A table of contents list of anticipated technical specifications and one concept drawing will also be included in the Technical Memorandum.

Following preparation of the Draft Technical Memorandum, an internal technical quality review will occur as well as an editorial review for proofreading and formatting. ENGINEER will then submit the Draft Technical Memorandum (in MS Word format) to the City for

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review and comment. ENGINEER will meet with the City, address the City's comments, and then submit a Final Technical Memorandum (in PDF format) with the Comment Summary Form (in Word format).

Detailed Design Documents

ENGINEER will develop drawings and technical specifications for the:

- Replacement of the eight sluice gates and gate mounts located in the northern and southern splitter boxes
- Concrete repairs design
- Epoxy pressure injection of cracks, and
- Protective coatings to be applied to the interior of the splitter boxes and the adjacent influent channels back to the reaeration basins.

Specifications will be prepared utilizing ENGINEER's technical specifications and drawings will be prepared using ENGINEER's CAD standards. ENGINEER will provide the City with a list (or example files) of the standards used. ENGINEER's standard details will be used unless there is an existing City standard detail that is similar then that one will be used and modified by ENGINEER as needed. It is assumed that the City will provide the front-end specifications.

ENGINEER will submit the drawings and specifications (in PDF and Word format, respectively) to the City for review and comment at the 60% and 90% design milestones. Given the small scope of this project, ENGINEER will submit 60%, 90%, and 100% (Final, Signed and Sealed) drawings and specifications. ENGINEER will meet with the City and address the City's comments for the 60% and 90% design documents, and the 100% is not budgeted to have a round of City comments. Construction documents will be prepared to support the selection of a single construction contractor on a competitive bid basis. It is understood that the City prefers for the equipment and materials to be included in the Contractor's package and to not be purchased directly by the City. It is assumed that the City will prepare the bid packages and advertise for bid.

The following is the anticipated list of drawings for this project:

	<u>Sheet</u>	<u>Discipline</u>	<u>Title</u>
1	G-01	General	Cover Sheet & Index
2	G-02	General	Legends & Abbreviations
3	C-01	Civil	General Notes & Site Plan
4	S-01	Structural	Demolition & Splitter Box Rehabilitation
5	S-02	Structural	Concrete Repairs - North
6	S-03	Structural	Concrete Repairs - South
7	M-01	Mechanical	Sluice Gates Replacement

ENGINEER will prepare the Engineer's OPCC for the upgrades outlined this scope and will submit the OPCCs within two weeks after the 60% and 90% design deliverables are submitted. The 60% OPCC will be Association for the Advancement of Cost Engineering International (AACEI) Class 4, the 90% OPCC will be AACEI Class 3.

Internal quality reviews for the design are included in this task.

III. FINAL DESIGN PHASE:

Refer to Task 2.

IV. BIDDING PHASE:

Task 3: Bid Phase Services

It is assumed that the City will advertise the project for bid. ENGINEER will provide bidding assistance services which include:

- Attendance of the pre-bid meeting (led by City)
- Site visit coordination with City
- Respond to questions from bidders
- Prepare content for up to 4 addenda for issuance by City's Procurement
- Prepare Construction Issue documents incorporating any changes made during bidding through addenda. Two half size hard copies of the drawings and two hard copies of the technical specifications will be provided for the City's use. Electronic files in PDF format will also be submitted.
- Prepare the bid tabulation
- Perform bid evaluations
- Check references
- Provide a recommendation letter for the selected bidder

V. CONSTRUCTION PHASE:

Not applicable.

Task 4: Project Management and Administration

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ENGINEER will perform general administrative duties associated with the project including project set-up, resource management, Quality Assurance/Quality Control Plan development, work progress monitoring, scheduling, budget monitoring and controlling, general correspondence, office administration, invoicing, and monthly progress reports submitted with invoices.

ENGINEER will maintain an accurate project documentation, filing, and project cost accounting system throughout the project.

ENGINEER will maintain continuous control over the quality of all its work efforts. This will include oversight and review of work products by the lead technical engineer, estimators, project manager, and other staff. The time for quality reviews is included in their respective Tasks 1 through 4 budgets. This task covers project management and administration-related activities for the entire Work Order.

3. PROJECT GOALS:

The primary goals of this project are to assist the City in repairing the sluice gates, splitter boxes, and influent channels associated with the eight secondary clarifiers at the NEWRF.

Task 1 Deliverables: Kickoff Meeting agenda and minutes, data tracker log.

Task 2 Deliverables: Technical Memorandum (Draft and Final), 30%, 90%, 100% design drawings and technical specifications, 30% and 90% OPCCs.

Task 3 Deliverables: Responses to bidders' questions, information for up to 2 addenda, bid tabulation, recommendation letter.

Task 4 Deliverables: Construction Issue documents (electronic and hard copies), Preconstruction Conference meeting minutes, field notes for site visit observations, submittal responses and tracker list, responses for RFIs, progress meeting minutes, record drawings, comments on pay applications.

Task 5 Deliverables: Project schedule, monthly progress reports.

4. FEES:

See Attachment "A".

This price includes all labor and expenses anticipated to be incurred by Black & Veatch for the completion of these tasks in accordance with Professional Services Method "A" – Hourly Rate, for a fee not to exceed Two Hundred One Thousand, Five Hundred Twenty-Four Dollars (\$201,524.00).

No permit costs are anticipated or included for this project.

5. SCHEDULE:

The design phase of the project is to be completed in 5 months from issuance of notice-to-proceed (NTP). The bid phase duration may vary. The project deliverables are to be phased as follows:

Task	Deliverable/ Milestone	Weeks Following NTP
	Notice to Proceed (NTP)	
1	Project Kickoff Meeting	2
2	Draft Technical Memorandum	8
2	City Review + Comment Review Meeting (2 weeks)	10
2	Final Technical Memorandum	12
2	60% Drawings and Technical Specifications	12
2	City Review + Comment Review Meeting (2 weeks)	12
2	90% Drawings and Technical Specifications	16
2	City Review + Comment Review Meeting (2 weeks)	18
2	100% Drawings and Technical Specifications	22
3	Bid Advertisement	Depends on City Procurement's Schedule
5	Project Schedule (Gantt Chart)	2
5	Monthly Progress Reports	Monthly

6. STAFF ASSIGNMENT:

The City's staff assignments to this project include:

Jordan Hicks, P.E.	Project Manager
Richard Gardner, P.E.	Public Utilities Director
Michael Flanigan	Public Utilities Assistant Director
Jeremy Brown, P.E.	Engineering Manager, Utilities
Cathy Borden	NEWRF Chief Water Plant Operator
Glenn Daniel	Public Utilities WWCS, WD, WP Manager
Kervin St. Aimie	Public Utilities Assistant Maintenance Manager
Michael Gilliam	Public Utilities Infrastructure Maintenance Manager
TBD	Public Utilities WET Manager
TBD	Public Utilities Assistant Manager

The ENGINEER's staff assignments to this project include:

Rafael E. Frias III, P.E.	Associate Vice President
Andy Westfall, P.E., ENV SP	Client Services Director
Rebecca Oliva, P.E., BCEE, ENV SP, PMP	Project Manager
Brad Vanlandingham, P.E.	Structural Lead Engineer
Zachary Smierciak, E.I.	Staff Engineer

7. CORRESPONDENCE/REPORTING PROCEDURES:

Consultant's project correspondence shall be directed to:
Rebecca Oliva with copies to Brad Vanlandingham and Zach Smierciak.

All City project correspondence shall be directed to:
Jordan Hicks with copies to Richard Gardner, Michael Flanigan, and Jeremy Brown.

8. INVOICING/FUNDING PROCEDURES:

City Invoicing Code: 3217321-530100-96215

For work performed, invoices shall be submitted monthly to:

**ATTN: Stephanie Sansom, Division Controller
CITY OF CLEARWATER, ENGINEERING DEPARTMENT
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.

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:

1. Purchase Order, Project and Invoice Numbers and Contract Amount.
2. The time period (begin and end date) covered by the invoice.
3. A short narrative summary of activities completed in the time period.
4. Contract billing method – Lump Sum or Hourly Rate.
5. 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).

6. If Hourly Rate, hours, hourly rates, names of individuals being billed, amount due, previous amount earned, the percent completion, 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).
7. If the Work Order is funded by multiple funding codes, an itemization of tasks and invoice amounts by funding code.

10. CONSIDERATIONS:

Consultant acknowledges the following:

1. The Consultant named above is required to comply with Section 119.0701, Florida Statutes, where applicable.
2. All City directives shall be provided by the City Project Manager.
3. "Alternate equals" shall not be approved until City Project Manager agrees.
4. All submittals must be accompanied by evidence each has been internally checked for QA/QC before providing to City.
5. Consultants/Contractors are not permitted to use City-owned equipment (i.e. sampling equipment, etc.).
6. Documents posted on City website must be ADA accessible.

11. ADDITIONAL CONSIDERATIONS:

All work orders should include considerations for the following:

1. Sea Level Rise and Flood Resilience, as applicable.
2. Submittal of a Critical Path Method (CPM) Schedule(s).
3. Submittal of a Project Catalog with the following items, as appropriate:
 - a. Data requests, assumptions, critical correspondence, meeting agenda, sign-in sheets, meeting minutes, document comment-response log(s), technical memorandum/reports, addenda, progress reports, regulatory correspondence, and other project-related documents.
 - b. If construction project, also include design plans, conformed plans, change orders, field orders, RFIs, work change directives, addenda, progress reports, shop drawing and progress submittals, as-builts, record drawings, and other project-related documents such as O&M manuals and warranty information.
 - c. At the conclusion of the project, ENGINEER will combine this information into a Project Catalog and submit to the City for review and comment.
4. Arc Flash labeling requirements:
 - a. All electrical designs and construction shall adhere to NFPA 70 E "Standard for Electrical Safety in the Workplace".

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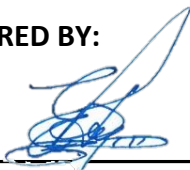
- b. Updated calculations of Fault and Arc Flash, and provisions for new or updated Arc Flash equipment labeling shall be included in the contract documents.

12. SPECIAL CONSIDERATIONS:

1. The weather/ season may impact the suitability of the construction to take place. The City communicated that the dry season of December - January is preferred.
2. ENGINEER consulted with a sluice gate vendor and they indicated that they post a 3 to 4-week lead time for submittals and 18 to 20 weeks for fabrication and delivery following submittal approval.
3. The amount of time to procure the gates will drive the duration of the construction.
4. The duration of the bid phase is to be determined by City Procurement.

13. SIGNATURES:

PREPARED BY:



Rafael E. Frias III, P.E.
Associate Vice President
Black & Veatch

12/21/2021

Date

APPROVED BY:

Tara Kivett, P.E.
City Engineer
City of Clearwater

Date

ATTACHMENT "A"**CONSULTANT WORK ORDER – PROJECT FEES TABLE**

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PROJECT FEES TABLE

Task*	Description	Subconsultant Services	Labor	Total
	Pre-Design & Design			
1	Project Kickoff and Data Collection	\$0	\$4,944	\$4,944
2	Rehab Evaluation and Design	\$0	\$145,188	\$145,188
4	Project Management and Administration	\$0	\$11,576	\$11,576
Pre-Design & Design Total:				\$161,708
3	Bid Phase Services			
	Bid Phase Services	\$0	\$19,696	\$19,696
Bid Phase Services Total:				\$19,696
SUBTOTAL, LABOR AND SUB-CONTRACTORS:				\$181,404
6	Other Direct Costs (prints, photocopies, postage, etc.) (Not applicable to lump sum Work Orders)			\$1,800
	Permit Fees			\$0
	SUBTOTAL, WITHOUT CONTINGENCY:			\$183,204
7	Contingency (10%)			\$18,320
GRAND TOTAL:				\$201,524

*Task V is not included in this Work Order but is reserved for Construction Phase Services, if needed in the future.

ATTACHMENT "B"

CONSULTANT WORK ORDER – CITY DELIVERABLES NEWRF Clarifier Splitter Box Upgrades

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CONSULTANT WORK ORDER CITY DELIVERABLES

1. FORMAT:

The design plans shall be compiled utilizing the following methods:

1. ENGINEER CAD standards, which has been approved by the City PM.
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 will be produced at 22" x 34" for true half-size if printed on 11" x 17" size paper. Upon completion the consultant shall deliver all drawing files in digital format with all project data in Autodesk Civil 3D file format.

NOTE: If approved deviation from Clearwater CAD standards are used the ENGINEER 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.