

**INDIAN RIVER COUNTY UTILITIES DEPARTMENT**  
**WORK ORDER No. 4**  
**SCOPE OF SERVICES**  
**West Regional WWTP Structural Improvements Phase 1**

## Background

In March 2021, Indian River County Utilities Department (IRC) requested that Atkins (Consultant) provide technical services to design replacements for the bridges that cross the oxidation ditches at the West Regional Wastewater Treatment Plant (West WWTP). To determine the scope of services required, Atkins visited the West WWTP on March 8. During that site visit, it was determined that there were significant concerns regarding the structural integrity of both the anoxic ditches and associated bridges. This culminated in the recommendation to have Staff maintain 10 to 15 feet distance from the oxidation ditches. Due to structural concerns regarding the oxidation ditches, it was determined that the Scope of Services would be broken into two Phases as follows:

Phase 1: Evaluate the current structural integrity of the overall oxidation ditch structure and associated bridges. Perform visual condition assessment and make a record of defects observed during inspection, noting location and size of defects documented. Perform survey of the oxidation ditch under empty and full conditions to determine location and extent of any movement occurring in the walls, bridge and associated piping. Analyze the tanks based on available knowledge. Determine extent of repairs and/or replacements required. Provide options for addressing the issues that are identified and assist the County in determining the preferred alternative. Provide a rough order of magnitude engineer's estimated cost for structural repairs. These decisions will be affected by the intended use and service life expected from the renovated system.

Phase 2: Provide design and construction services to implement the structural repairs.

## Scope of Services

This Scope of Services is for technical services associated with West WWTP Structural Improvements Phase 1. The scope consists of structural evaluations and verification calculations that will result in generation of options for addressing the structural issues associated with the oxidation ditch and bridge. These options will include repair and upgrade options. These options will be presented at a workshop with IRC and a final decision on upgrading of the structures will be determined.

### **Task 01 Project Management**

a. General Project Administration

This task consists of overall management of the Project including contract administration, budget management, invoicing, monthly status reports, project scheduling, facilitating and coordinating meetings, and coordination with IRC and the Consultant's subconsultants.

**Task 02** Survey of Oxidation Ditch and Bridges

Oral history and initial visual observations suggest that there is significant movement of the walls of the basin. A survey will be performed to determine the extent of the any movement in the walls and/or bridges. The results of the survey will be used in Task 03 as part of the structural evaluation.

a. Survey Set-Up and Implementation

The survey will begin with the establishment of 72 Monitoring Targets on 27 different locations around the tank’s outside walls and crossing bridges to obtain horizontal and vertical positions. The Monitoring Targets will be established at bottom, middle, top of walls and along the 3 (three) crossing bridges on the top of the tank. The Monitoring Targets will be located 3 (three) times: full, empty, then full again.

b. High-Resolution Scan

The storage tank will be scanned utilizing a High-Resolution Laser Scanner to generate a 3-D model to capture existing the tank’s features for use in evaluating any movement and in facilitating the design of any recommended structural repairs. The scan will be conducted through the utilization of a combination of robotic total stations, first-order digital level with a bar-coded INVAR rod, Fixed Scanning Technology and RTK GPS.

c. Survey Details

A list of specific tasks and location of the Monitoring Targets associated with this survey are included in Exhibit B. The survey is anticipated to take up to 10 working days.

**Task 03** **Structural Component Evaluation and Data Collection**

a. Staff Interviews

The objective of the staff interviews is to determine what the goals and objectives are for this structure. Discussions will include a review of the structure’s historic and current function, IRC’s risk tolerance, future use(s), and long-term anticipated design life.

b. Review of Existing Records

Consultant will prepare a data request to obtain and review readily available information including as-built drawings of the ditches and history of any maintenance or upgrades associated with the structural components of the ditches, calculations, or past reports prepared for these structures.

c. Structural Inspection and Evaluation

Consultant will visit site to perform a non-destructive structural evaluation of oxidation ditch structure and associated bridge structures. The goal for inspection is to visually observe and document condition of the structures and record any defects observed during inspection. Photographs will be taken of defects observed during inspection for areas that can be safely accessed during time of inspection. The record of defects will be used as a baseline for comparison in the

future, to track changes in structure, increase in size or occurrence in defects, and identify areas requiring mitigation. Consultant will use survey of structure to identify location of defects observed.

As part of evaluation, calculations will be performed to check the original design capacity using available information provided to Consultant by the County and the tank manufacturer in addition to the results of the survey. These calculations will be used to formulate the technical memorandum outlined in Task 04 to determine if the structure still has remaining useful life or if it is no longer safe for operation.

A brief summary of field notes and initial findings will be submitted to the client at conclusion of Task 03.

**Task 04 Technical Memorandum and Workshop**

- a. The Consultant shall prepare a preliminary technical memorandum (TM) summarizing evaluations of the data collected and results of structural testing. The TM will include up to three (3) options for mitigating or upgrading the existing oxidation ditches and bridge structures, a comparison of the benefits and challenges of implementing each option, and a rough order of magnitude engineer’s estimated cost for each option.

This preliminary TM will be provided electronically one week prior to being presented in a Workshop format for IRC Staff. The Workshop will culminate in discussions with attendees that will result in a final recommendation for structural improvements at the West WWTP oxidation ditches. A summary of the Workshop discussions will be created and distributed to attendees within three (3) days of the Presentation.

- b. Final Evaluation and Recommendation TM

Following the Workshop, the TM will be updated to include review comments and to include the final recommendation(s). One (1) electronic copy and four (4) draft hard copies will be provided to IRC Staff.

**Deliverables**

Task	Deliverable
3	Preliminary Field Notes and Findings
4	Draft Structural Evaluation TM
4	Final Structural Evaluation TM

**Schedule**

The anticipated schedule shown below is based on the weeks after the formal issuance of the notice to proceed by the County:

Task	Duration from NTP
Project Kick-Off Meeting	2 weeks
Begin Survey Activities	4 weeks
Data Collection and Review	4 weeks
Structural Inspection and Evaluation	4 weeks
Draft Structural Evaluation TM	12 weeks
Workshop	14 weeks
Final Structural Evaluation TM	16 weeks

## Quality Control

Consultant will be responsible for the professional quality of all deliverables. This shall include an internal Quality Assurance Plan that, as a minimum, provides review of all deliverables and significant calculations by another qualified professional that was not responsible for preparing the deliverable or calculation.

## Assumptions

The following assumptions have been made in the development of this scope of work, schedule, and fee:

### General

- The Record Drawings, calculations, and information on any upgrades for both oxidation ditches are available and will be furnished to consultant.
- Attendees of the Workshop are designated as decision makers.
- Data requests will be addressed within five (5) calendar days.
- Workshop will be held at a location that meets Covid-19 social distancing requirements.
- Facilities or areas to be surveyed are readily accessible.
- The 3D model could have some obscured areas especially from the inside's scans due of obstructions and limited area to set up the scanner at the crossing bridges on top of the tank.

## Exclusions

The following items are excluded from this scope of work:

- Design or permit documents.
- Destructive inspection.
- Material testing or sampling.
- Inspections of enclosed areas.

## Compensation

Consultant proposes to perform the work described in Tasks 1 – 4 on a Fixed Fee basis with budgets between the sub-tasks and expenses being interchangeable as needed. The estimated total engineering fee including labor and expenses associated with the scope of work is not to exceed \$68,562.00 as summarized in the table below and presented in detail in Exhibit A.

Task No.	Description	Price
1	Project Management	\$ 6,040.00
2	Survey	\$19,814.00
3	Structural Component Evaluation and Data Collection	\$19,024.00
4	Technical Memorandum and Workshop	\$20,940.00
	Expenses	\$ 2,744.00
<b>Total Extended Price</b>		<b>\$68,562.00</b>

CONSULTANT: ATKINS

CLIENT: INDIAN RIVER COUNTY

SIGNED: 

SIGNED: \_\_\_\_\_

TYPED NAME: Chris Rader, PE, ENV SP

TYPED NAME: \_\_\_\_\_

TITLE: Senior Division Manager

TITLE: \_\_\_\_\_

DATE: 5/11/21

DATE: \_\_\_\_\_

## Exhibit A

### Atkins Cost Detail



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### Cost Proposal - Detail

IRC West WWTP Structural Imp Phase 1  
Indian River County

Task Order

Submittal Date:

Task#	Resource Category	Description	Rate	Unit	Qty	Extended Price
<b>1</b>	<b>Project Management</b>					
	<b>Labor</b>					
		Sr. Project Manager	220.00	Hr	24.0	5,280.00
		Project Manager	190.00	Hr	4.0	760.00
	<b>Labor Total</b>				<b>28</b>	<b>6,040.00</b>
<b>1</b>	<b>Project Management Total</b>					<b>6,040.00</b>
<b>2</b>	<b>Survey</b>					
	<b>Labor</b>					
		Sr. Project Manager	220.00	Hr	4.0	880.00
		Sr Geomaticist II	155.00	Hr	17.0	2,635.00
		Survey Technician	105.00	Hr	23.0	2,415.00
		Survey Two Person Crew	178.00	Hr	78.0	13,884.00
	<b>Labor Total</b>				<b>138</b>	<b>19,814.00</b>
<b>2</b>	<b>Survey Total</b>					<b>19,814.00</b>
<b>3</b>	<b>Structural Component Evaluation and Data Collection</b>					
	<b>Labor</b>					
		Sr. Project Manager	220.00	Hr	6.0	1,320.00
		Sr Engineer IV	220.00	Hr	14.0	3,080.00
		Sr Engineer III	203.00	Hr	48.0	9,744.00
		Sr Engineer I	136.00	Hr	16.0	2,176.00
		Sr Designer II	169.00	Hr	16.0	2,704.00
	<b>Labor Total</b>				<b>100</b>	<b>19,024.00</b>
<b>3</b>	<b>Structural Component Evaluation and Data Collection Total</b>					<b>19,024.00</b>



Member of the SNC-Lavalin Group

### Cost Proposal - Detail

IRC West WWTP Structural Imp Phase 1  
Indian River County

Task Order

Submittal Date: Apr-06-2021

Task#	Resource Category	Description	Rate	Unit	Qty	Extended Price
<b>4</b>	<b>Technical Memorandum and Workshop</b>					
	<b>Labor</b>					
		Sr. Project Manager	220.00	Hr	8.0	1,760.00
		Sr Engineer IV	220.00	Hr	20.0	4,400.00
		Sr Engineer III	203.00	Hr	24.0	4,872.00
		Sr Engineer I	136.00	Hr	48.0	6,528.00
		Sr Designer II	169.00	Hr	20.0	3,380.00
	<b>Labor Total</b>				<b>120</b>	<b>20,940.00</b>
<b>4</b>	<b>Technical Memorandum and Workshop Total</b>					<b>20,940.00</b>
<b>5</b>	<b>Expenses</b>					
	<b>ODCs</b>					<b>960.00</b>
		Mileage	1.0	-	200.0	200.00
		Car Rental	1.0	-	385.0	385.00
		Shipping & Postage	1.0	-	75.0	75.00
		Copies & Prints	1.0	-	300.0	300.00
	<b>ODCs</b>					<b>1,784.00</b>
		Supplies	1.0	-	1,084.0	1,084.00
		Mileage	1.0	-	700.0	700.00
	<b>Subcontract and Expenses Total</b>					<b>2,744.00</b>
<b>5</b>	<b>Expenses Total</b>					<b>2,744.00</b>
	<b>Total Extended Price</b>					<b>68,562.00</b>

## Exhibit B

### Detailed Survey Scope

**Indian River County Utilities**  
**Project**  
**West WWTP Oxidation Tank Monitoring Survey**

**Scope of Services - Surveying*****General***

The services for this project will include structural monitoring of a oxidation ditch (tank) walls at the Indian River County West Regional WWTF. Atkins will establish 72 Monitoring Points (MPs) on 27 different locations around the tank's outside walls and crossing bridges to obtain horizontal and vertical positions. The MPs will be established at bottom, middle, top of walls and along 3 (three) crossing bridges on the top of the tank. Approximate MP locations are shown at the end of this document. The MPs will be located 3 (three) times, first time when the tank is full, second time when the tank is empty and the third time when the tank is full again. The storage tank will be scanned utilizing a High-Resolution Laser Scanner to generate a 3D model to capture existing tank features to facilitate the design of any new improvements by the Engineers. Atkins surveyors will utilize a combination of robotic total stations, First-order digital level with a bar-coded INVAR rod, Fixed Scanning Technology and RTK GPS to collect information.

***Specific Survey Tasks***

1. Atkins will perform a high-order conventional geodetic survey to establish horizontal and vertical control points around the wastewater tank. The control points will be tied to the NAD 83 (2011 adjustment) of the Florida State Plane Coordinate System and NAVD 88 Elevations.
2. Establish MPs on the tank's outside wall and crossing bridges.
3. Located the MPs 3 (three) times.
4. Scan the tank when is empty from the top, standing at different locations on the crossing bridges to capture the tank's inside features and at ground level to capture the outside tank's features.
5. Once the monitoring work is completed, Atkins will remove the MPs from the tank's walls.
6. The survey deliverables will include 1" = 20' scale base file drawing in AutoCAD Civil 3D format with the MP locations, a registered point cloud on e57 format (3D model) and target deltas report.

***Limitations***

1. Facilities or areas to be surveyed are readily accessible.

2. The 3D model could have some obscured areas especially from the inside's scans due of obstructions and limited area to set up the scanner at the crossing bridges on top of the tank.
3. Extraction of existing features from the generated point cloud beyond what is described in this scope is not included.

**Figure 1**

