TMUA PROJECT NO. WPC 26-4,

FY '26 SOUTHSLOPE CAPITAL EQUIPMENT REPLACEMENTS

ATTENDANCE AT PRE-BID CONFERENCE IS MANDATORY

PREPARED BY:
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CITY OF TULSA

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TECHNICAL SPECIFICATIONS

PROJECT SPECIFICATIONS

FOR

TULSA METROPOLITAN UTILITY AUTHORITY

PROJECT NO. WPC 26-4

FY'26 SOUTHSLOPE CAPITAL EQUIPMENT REPLACEMENTS

TULSA, OKLAHOMA

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200 INTRODUCTION

200.1 Project work shall include all equipment, labor, materials, hardware, cable, terminations, and incidentals necessary to remove existing equipment that is to be replaced, install the new equipment, and place the new equipment in fully operational, functional and warrantable service. All equipment to be supplied shall be brand new current year model and not used, remanufactured, or discontinued items.

200.2 Contractor shall field verify all elevations and dimensions of existing piping, valves, and equipment to be removed or demolished, and for replacement and/or modification. Contractor's work shall be based on field measurements and shall include field adjustments and additions for the proper installation of equipment. The contractor shall take note of all objects in the vicinity of equipment being installed to ensure that there are no issues with interference. It is the responsibility of the contractor to make modifications necessary to adjacent objects such as pipe supports and similar items to install the new equipment unless such objects are not reasonably visible during the site visit. It is the responsibility of the contractor to review all field conditions and take necessary field measurements prior to ordering equipment. The Authority will make available the information it has pertaining to the existing equipment.

200.3 The Authority's contact people are:

Southside Wastewater Treatment Plant	Samuel H. Ray, P.E. – Senior Engineer 5300 S. Elwood Avenue Tulsa, OK 74107 918-591-4482
Southside Wastewater Treatment Plant	Josh Fisher – Plant Superintendent 5300 S. Elwood Avenue Tulsa, OK 74107 918-591-4450
Water Pollution Control	Cindy Cantero – Section Manager 175 E. 2nd Street, Suite 1300 Tulsa, OK 74103 918-596-9870

201 QUALIFICATION REQUIREMENTS

201.1 Only contractors holding a valid pre-qualification certificate from the Tulsa Metropolitan Utility Authority in Classification A (General) or Classification D (Utility Construction), are eligible to bid on this project. No additional qualification information is required to be submitted.

201.2 Only contractors that attend the mandatory pre-bid meeting will be allowed to bid on this project.

202 SUMMARY OF BID ITEMS

The Basis of Award shall be determined by the Total Base Bid. Any proposal submitted incomplete shall be considered non-responsive.

Bid Item No.	Specification No.	General Description
1	214.99	Mobilization Bid Item – Not to exceed 5% of Base Bid Items not including the Mobilization Bid Item.
2	214.02	All materials, labor, equipment, and supervision required for removal and replacement of one (1) roof-mounted make-up air unit at the Southside Wastewater Treatment Plant (SSWWTP) Bar Screen Room, per these specifications.
3	214.03	All materials, labor, equipment, and supervision required for removal and replacement of one (1) roof-mounted make-up air unit at the Cherry Creek Lift Station (CCLS) Bar Screen Room, per these specifications.
4	214.04	All materials, labor, equipment, and supervision required for removal and replacement of one (1) sludge transfer pump, STP01, at the Southside Wastewater Treatment Plant (SSWWTP) Digester 3&4 Basement, per these specifications.
5	214.05	All materials, labor, equipment, and supervision required for removal and replacement of one (1) sludge transfer pump, STP02, at the Southside Wastewater Treatment Plant (SSWWTP) Digester 3&4 Basement, per these specifications.
6	214.98	Extra Work Allowance – $11,300.00 Lump Sum Allowance for various mechanical, electrical, plumbing, or unforeseen circumstances work not identified in the bid items.

7	214.01	ADDITIVE ALTERNATE #1: All materials, labor, equipment, and supervision required for replacement of the scum pit hatches at the at the Southside Wastewater Treatment Plant (SSWWTP) Primary Clarifiers 1&2 Building, per these specifications.

203 GENERAL CONTRACTOR RESPONSIBILITIES

The cost of items in this Section and other Sections of these specifications shall be equitably included in Section 202 Bid items.

203.1 Prior to disposal of any material or equipment that is City of Tulsa property and removed as part of the contract work, Contractor shall contact the Authority and explicitly offer to the Authority first right to claim and retain such materials or equipment as City of Tulsa property. Contractor shall be responsible for the disposal of all such equipment and materials not claimed by the Authority.

203.2 Contractor shall field verify all elevations and dimensions of existing piping, valves, and equipment to be demolished. Contractor work shall be based on field measurements and shall include field adjustments and additions for the proper installation of equipment. The contractor shall take note of all objects in the vicinity of equipment being installed to ensure that there are no issues with interference. It is the responsibility of the contractor to make modifications necessary to adjacent objects such as pipe supports and similar to install the new equipment unless such objects are not reasonably visible during the site visit. It is the responsibility of the contractor to review all field conditions and take necessary field measurements prior to ordering equipment. The Authority will make available the information it has pertaining to the existing equipment.

203.3 Contractor will coordinate, provide, and bear the cost of all items below:

- 203.3.1 Equipment, materials, tools.
- 203.3.2 Labor, supervision, coordination.
- 203.3.3 Procedures for continual operation of the wastewater facilities.
- 203.3.4 Flow stoppage, plugging, bypass pumping, sump pumping.
- 203.3.5 Rigging, lifting, material handling, illuminating.
- 203.3.6 Vacuum truck service and disposal of grit, sludge, sediment.
- 203.3.7 Trash service and disposal of debris.
- 203.3.8 Methods to prevent debris from going into drains.
- 203.3.9 Delivery, unloading, storage, and security of equipment and materials.
- 203.3.10 Protection of equipment and materials from damage.
- 203.3.11 Protection of water coils and water piping from freeze damage.
- 203.3.12 Procedures to prevent damage to underground pipes or utilities.
- 203.3.13 Paint, coatings, and other measures to protect new equipment

and materials from corrosion.

203.3.14 Electrical wires, cable, conduit, terminations, and other incidental items.

203.3.15 Hardware, brackets, clamps, hangers, supports, equipment bases, and other incidental items.

203.3.16 Modifications or replacement of concrete bases to accommodate the new equipment.

203.3.17 Modifications to any previously-installed facility equipment and structures.

203.3.18 Modifications or adaption needed to allow new equipment to properly fit with any previously-installed facility equipment and structures.

203.3.19 Modifications due to new code requirements.

203.3.20 Modifications due to new industry standards.

203.3.21 Modifications due to lack of availability of certain equipment or materials.

203.3.22 Fees, permits, inspections.

203.4 Before Starting Work for each Bid Item, Contractor will do all of the following:

203.4.1 Submit Documents for Review to the Engineer as per the Submittal Requirements.

203.4.2 Verify the Documents for Review have been checked and accepted by the Engineer as per paragraph GC-5 of the General Conditions of Contract.

203.4.3 Field-verify all necessary dimensions.

203.4.4 Field-verify the conditions of facility equipment and structures.

203.4.5 Verify that the capacity, performance, and dimensions of the new equipment will allow for proper operation of the Complete System.

203.4.6 Verify that clearances between any new equipment and any previously-installed facility equipment and structures are reasonable, safe, and allow for proper operation of the Complete System.

203.4.7 Coordinate with the Engineer for approval of any modifications to facility equipment and structures.

203.4.8 Verify the availability of the equipment and materials the Contractor plans to use.

203.5 During and after installation of new equipment, Contractor will do all of the following:

203.5.1 Install new equipment per manufacturer's instructions.

203.5.2 Verify the new equipment is installed correctly.

203.5.3 Test the newly installed equipment under actual operating conditions.

203.6 For purposes of draining of storage or conveyance structures, the contractor will do all of the following

203.6.1 Coordinate with the Engineer. If conditions permit, the plant operations crew will attempt to drain the structure using installed facility equipment such as valves and built-in pumps. If conditions permit, the plant operations crew will attempt to provide general wash-down. The contractor will provide any needed pump or vaccum service to maintain drained condition.

203.6.2 Provide any needed pumping or vaccum service if installed facility equipment is not functional or not fully functional.

203.6.3 Provide any needed pumping or vaccum service to remove and dispose of grit, sediment, sludge, or bulk debris.

204 SUBMITTALS

All submittals shall be accompanied by a transmittal letter or cover letter that includes the project name and number, the contract specification number under which the equipment is being supplied, the Equipment ID number of the equipment being referenced, and the submittal revision number as appropriate.

204.1 Contractor shall submit, for each bid item, the manufacturer's instructions and recommendations for installation, for subsequent testing of the units, and for ensuring they are in proper operation. These instructions shall be part of these specifications and binding on the contractor.

204.2 Contractor shall include, for each bid item, a work plan acceptable to the Engineer describing the duration and sequence of work. Plan shall be approved prior to commencement of work. All work requiring flow stoppage or removing equipment from service must be scheduled at least 48 hours in advance with Plant Superintendent. When flow stoppage is required for equipment installation, contractor shall have all necessary materials at the installation site prior to any flow stoppage, and shall proceed with installation of equipment to minimize downtime.

204.3 Contractor shall, within 15 days of issuance of Work Order, submit three (3)

copies of the following items for review and approval - one (1) copy to be returned to Contractor following review, two (2) copies to be retained by Authority:

204.3.1 Product Data and Information: Submit catalog data including rating and descriptive literature of all components and systems for approval by Authority. This shall include items required by 204.

204.3.2 Itemized list with manufacturer's part numbers, part descriptions and schedule of values (unit prices) for the equipment proposed for each location.

204.3.3 Shop Drawings: Submit the following shop drawings for approval by Authority:

204.3.3.1 Bill of materials including manufacturers' name and catalog number

204.3.3.2 Outline drawing showing dimensions, arrangement, and Identification of components and nameplate schedule for all units

204.3.3.3 Individual schematic control diagrams for each unit

204.3.4 Manufacturer's training, reports and certifications requirements: Manufacturer's certification that the equipment is suitable and will perform within specification and manufacturer's design operating parameters for the locations and conditions herein specified. Manufacturer's services shall also include site visits prior to construction, during installation and for start-up, as necessary for a detailed start up report and Manufacturer's certification of proper installation. Submit Manufactures start-up reports and certification of proper installation when they become available and included copies in the final O & Ms. Start-up report should include pertinent start up details, equipment description, project information and complete initial set points and initial operational readings and date. Submit training agenda, handouts, presentation slides and Speaker resume for acceptance prior to scheduling training. Provide two separate training days as coordinated with the Plant to accommodate both day and night shifts, to be a minimum of 4 hours minimum per training day.

204.3.5 Safety Plan: This submittal will be checked for general conformance with Section 207 Safety requirements and applicable OSHA and local regulations. Notwithstanding, it is the Contractor's responsibility

to ensure that the plan is comprehensive and in full conformance with all applicable OSHA, federal, state and local regulations.

204.3.6 Work Plan (reference Section 204.2): Submit for approval by Authority, the work plan for each bid item clearly showing the work task sequencing plan and time requirements, including downtime durations. This shall include items required by Section 203.

204.3.7 Submit for approval by Authority, plans and specifications for any concrete pad, support, piping, or other construction modifications from original installation.

204.3.8 Warranty Tracking Log: This record shall be maintained by the contractor and shall be provided as a Monthly Meeting handout and at project completion in the end-of-project submittal.

204.4 Operation and Maintenance Manuals:

204.4.1 Contractor shall furnish to the Engineer two (2) hard copies of an Operation and Maintenance (O & M) Manual for each piece of equipment and associated control systems furnished and installed.

204.4.2 Contractor shall furnish to the Engineer one (1) electronic copy of each O & M manual on a USB Flash Drive. Files shall be in searchable PDF format and shall include all printed material in the hard copies. Use a folder and file naming system that identifies the pertinent equipment or area of work.

204.4.3 Prior to the work reaching 80 percent completion, Contractor shall submit to the Engineer for approval two (2) copies of the manual with all specified material. Submittal of the approval copies shall be made with the partial payment request for the specified completion. Within 30 days after the Engineer's approval of the two-copy submittal, Contractor shall furnish to the Engineer the remaining hard copies of the manual and the soft copy. Contractor shall submit any missing material for the manual prior to requesting certification of substantial completion.

204.4.4 Format and Contents: Each O & M manual shall include the following:

204.4.4.1 One copy of a completed **EQUIPMENT NAMEPLATE AND SUMMARY DATA** form.

204.4.4.2 One copy of the equipment Start-Up report and Manufacturer's certification of proper installation.

204.4.4.3 One copy of the Manufacturer's operating and

maintenance instructions. Operating instructions include equipment start-up, normal operation, shutdown, emergency operation and troubleshooting. Maintenance instructions include equipment installation, calibration and adjustment, preventive and repair maintenance, troubleshooting, parts list and recommended spare parts.

204.4.4.4 List of electrical relay settings and control and alarm contact settings.

204.4.4.5 Electrical interconnection wiring diagram for equipment furnished including all control and lighting systems.

204.4.4.6 Record drawings showing as-built schematic control diagrams for each unit and one-line diagrams.

204.4.4.7 Cross-references where required between the appropriate sections of the Contractor's O & M manual and the manufacturers' manuals.

204.5. Equipment Nameplate Information – Contractor shall, upon startup of each piece of equipment, complete the form, titled **EQUIPMENT NAMEPLATE AND SUMMARY DATA**, found at the end of this section, and shall include the completed form in the front of that equipment's respective O & M manual. The form shall be included with each O & M manual copy submitted. Equipment ID nameplate requirements are found in the specification section of each bid item of these specifications.

204.6 Submittals shall be sent to the following address:

Samuel H. Ray, P.E.
City of Tulsa Water and Sewer Department
Southside Wastewater Treatment Plant
5300 S. Elwood Ave., Tulsa, OK 74107
918-591-4482
sray@cityoftulsa.org

EQUIPMENT NAMEPLATE AND SUMMARY DATA

Equipment Number: _____

Description (Include size): _____

Project #: _____

Spec. #: _____

Vendor: _____

Manufacturer: _____

Model #: _____

***Item or Drawing #** _____

***Serial #**: _____

Purchase Price: $ _____

Date Placed in Service (for 1-yr Warranty): _____

Manufacturer's Warranty Period and End Date: _____

Parts / Associated Details: _____

_____

_____

_____

Maintenance Schedule

(May be an attached sheet from O & M Manual; do not use "See O & M Manual")

✓ Initial: _____

✓ Weekly: _____

✓ Monthly: _____

✓ Semi-Annual: _____

✓ Annual: _____

Applicable Motor Information: N.A. (Circle if not applicable)

Vendor: _____

Manufacturer: _____

Model #: _____

Item #: _____

Serial #: _____

Frame: _____ Insul. Class: _____

Volts/Hz/Amps: _____

HP / RPM / SF: _____

Manufacturer's Warranty Period and End Date: _____

***Item or Drawing #** may not be unique. For example, it may be the same for a group of same size valves or gates, each one having this same number that is unique to the group. The **Serial #** should be listed only when unique to this individual piece of equipment, otherwise it is N.A.

205 MONTHLY PROGRESS REPORTS AND PROGRESS MEETINGS

205.1 The Contractor shall submit monthly written project progress reports detailing the project's progress to date, problems encountered or anticipated which impact project schedule, and plans for the next two weeks' work.

205.2 Project progress reports shall be due as agreed upon during pre-work meeting.

205.3 Monthly progress meetings shall be scheduled on a weekday mutually agreeable to the Authority and the Contractor and shall be specified at the pre-work conference. The Contractor shall run the Monthly Meetings for the duration of the project and provide a meeting agenda including work completed, work planned, project, updated project schedule and other pertinent project status information.

205.4 The contractor shall submit a work progress and planned completion schedule for each bid item at the monthly progress meeting. The pre-work conference will constitute the first monthly progress meeting.

205.5 The Contractor shall maintain, update and submit an Equipment Log at each monthly meeting that lists each piece of equipment by Equipment ID number and lists Startup Date, Warranty Start Date and O & M Manual Submittal Date, among other project details. The spread sheet document shall be a shared document and submitted to the City at the end of the project for City's future use. A sample Equipment log is available upon request.

206 SECURITY

206.1 Each project site where work is to be performed under this Contract is a secured site. The Contractor shall be responsible for security as described in this section.

206.2 Site Access: The Contractor shall respect all existing security measures at each project site, and shall implement the following measures to apply to all work performed under this Contract. Coordination for Plant access and City of Tulsa security pass access will be required.

206.2.1 Work at Southside Wastewater Treatment Plant and at Cherry Creek Lift Station shall be restricted to the hours defined by TMUA GC-19 unless otherwise authorized by the Plant Superintendent.

206.3 Common Requirements:

206.3.1 Identification Badges: An Identification Badge, issued by the City of Tulsa Security Office, is required for the following people or any other person as directed by City of Tulsa Security, Plant Superintendent, or WPC Manager:

206.3.1.1 The driver of each vehicle that will be entering the facility multiple times or on a regular basis.

206.3.1.2 Sub-contractors and foremen that will be supervising other workers.

206.3.1.3 The Identification Badge also functions as an Access Card to allow access through the front gate of the facility. Six months is the maximum time that an Access Card is active.

206.3.2 Contractor will coordinate with the Engineer to request Identification Badges. Application for an Identification Badge will require a background investigation. Each person that is applying for an Identification Badge will need to complete the following two (2) forms:

206.3.2.1 City of Tulsa Access Card / Identification Card Request Form

206.3.2.2 City of Tulsa Security, Background and Prescreen Investigation Form

206.3.2.3 A current soft copy of the forms can be obtained from the Engineer.

206.3.3 The Contractor will send the completed forms as required. Approved individuals will coordinate with the City of Tulsa Security Office to complete the process and obtain their Identification Badge.

206.3.4 The Contractor will coordinate with the Engineer to request reactivation of Access Cards. Reactivation may require re-application and additional background investigation.

206.4 Contractor and Authority acknowledge that Contractor shall not solely be responsible for all secured access to the site, that City personnel will have access and will be performing their regular duties pertaining to the operation and maintenance of the site facilities, and that security at the site shall require the cooperation of all persons authorized to access the site for the performance of their work. To the extent the Contractor is responsible for and has control of secured access, Contractor shall restrict site access to only persons essential to the performance or inspection of the work being performed under this Contract.

206.5 Contractor shall provide Engineer twenty-four (24) hours advance notification of any delivery of equipment or materials to the site, and shall make arrangements with Engineer to provide for inspection of such delivery.

206.6 Any observation by the Contractor of activity at or associated with the project site that Contractor observes and considers to be unusual or suspicious in nature, or that poses a threat to the integrity or welfare of the project site or associated facilities, shall be duly noted at the time of the observation. Any such observation shall be immediately reported to the Engineer.

206.7 No statement pertaining to security in these Specifications shall constitute a contract between Contractor and Authority for the performance of security services.

207 SAFETY

207.1 Contractor shall be responsible for performing all work under this contract in a safe manner and in compliance with all applicable local, state, and federal safety and health regulations. All of the following requirements shall apply:

207.2 Contractor shall submit a site safety plan prior to start of work. Contractor's attention is directed to safety regulations applicable to the work under this contract, which include but are not limited to the following:

207.2.1 OSHA Standards 29CFR1910.147, the control of hazardous energy (Lockout/Tagout)

207.2.2 Fire Prevention and Protection: The Contractor shall take all necessary measures to prevent fire, and shall provide satisfactory firefighting means at the location of work.

207.2.3 Condition of Equipment and Materials: All equipment, tools, and appliances, and materials used in connection with the project shall be handled and operated only when they are in safe operating condition and in accordance with a standard safety procedure.

207.2.4 Confined Space Entry: Contractor shall determine if any work areas in this contract are considered permit spaces for entry, as defined in OSHA regulations, and shall perform all work so determined in accordance with all applicable state and federal labor, safety, and health regulations.

207.2.5 Combustible - Explosive Atmospheres: Contractor shall determine if any work areas in this contract are considered combustible and explosive spaces for entry, as defined in OSHA regulations, and shall perform all work and employ equipment in accordance with all applicable state and federal labor, safety, and health regulations.

208 PROTECTION OF PROPERTY

208.1 The protection of City, State and Government equipment, fences, gates, signs, and other City property is of prime importance, and if damaged, destroyed or removed, they shall be repaired or replaced and paid for by the Contractor. Disturbance to this property must first be approved by the agency which controls it.

208.2 No valve or other control on any utility main or building service line shall be operated for any purpose by the Contractor.

208.3 At places where the Contractor's operations are adjacent to, or crossing, the plane of railway, telegraph, telephone, electric, and gas lines, or water lines, sanitary sewers, and storm sewers, damage to which might result in expense, loss or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made. Contractor shall notify the Notification Center of Oklahoma One-Call System, Inc., of any excavation or demolition prior to the commencement of such work. Notification shall be made no sooner than then (10) days nor later than forty-eight (48) hours prior to start of work, excluding Saturdays, Sundays, and legal holidays.

208.4 The Authority has attempted to locate all storm sewers, culverts, buried telephone or electrical conduits, sanitary sewers, water mains, and gas mains that might interfere with the construction of this project. The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner and duplication or rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

208.5 It shall be the responsibility of the contractor to follow all rules and regulations set forth by the Oklahoma Department of Environmental Quality with regard to storm water runoff associated with construction activities involving the disturbance of land. The contractor shall review the regulations and determine if a DEQ storm water discharge permit is required. If a permit is required, it is the responsibility of the contractor to apply for and obtain the permit prior to disturbance of soil. If a permit is not required, the contractor shall still take all necessary action to comply with DEQ rules.

208.6 In the event the contractor in any way fails to comply with the requirement of protecting, repairing, and restoring of any utility or utility service, the Engineer may, upon forty-eight (48) hours notice, proceed to protect, repair, rebuild or otherwise restore such utility or utility service as may be deemed necessary, and the cost thereof will be deducted from any money due or which may become due the contractor pursuant to the terms of this contract.

209 PROTECTION OF MATERIALS

209.1 All materials and equipment delivered to the work site shall be adequately housed and protected against damage or deterioration as required by the equipment manufacturer. The Contractor shall keep storage yards in good order, arrange materials neatly, and protect them from damage.

210 REFERENCES TO OTHER SPECIFICATIONS

210.1 Where a referenced American Society for Testing Materials (ASTM), National Electric Code (NEC), National Electrical Manufacturers Association (NEMA), American National Standards Institute (ANSI), Institute of Electrical and Electronics Engineers (IEEE), or other agency designated specification is specified for a material, component, or device, that designated specification shall be the current revision, either tentative or adopted. If a referenced specification is in disagreement with these specifications, the Tulsa Metropolitan Utility Authority specifications shall govern.

211 CLEAN-UP

211.1 Immediately upon completion of the work at each site in the contract, the Contractor shall remove all excess materials, equipment, tools, and debris, and restore the site to a condition and in a manner satisfactory to the Engineer.

212 PLACING WORK IN SERVICE

212.1 If desired by the Authority, portions of the work may be returned to service when completed, and the Contractor shall give prior access to the work for this purpose, but such use and operation shall not constitute an acceptance of the work. Any such return to service shall comply with Section GC-38 of the General Conditions of these Contract Documents and Specifications.

212.2 Warranty: All equipment and work shall have a one (1) year factory warranty from date of acceptance, which shall include all materials and labor.

213 PAYMENT

213.1 Contractor will refer to Paragraph GC-29 of the General Conditions of Contract regarding partial payments. The Engineer will withhold the following percentage of the dollar amount for each Bid Item:

- 5% for Documents for Record, Start-up Service (if required), Training Service (if required), and Final Acceptance of the Work including Equipment Identification Tags.
- 5% retainage, then, subsequently 2.5% as required by Paragraph GC-29 of the General Conditions of Contract.

END OF SECTION

214.01 ADDITIVE ALTERNATE #1: All materials, labor, equipment, and supervision required for removal and replacement of four (4) access hatches that together form a system covering one (1) scum pit at the Southside Wastewater Treatment Plant (SSWWTP) Primary Clarifiers 1&2 West Pump House per these specifications.

214.01.01 The project located at the City of Tulsa's Southside Wastewater Treatment Plant consists of removing and replacing the existing access hatches covering a primary scum pit. The project includes the correct and complete installation of new access hatches and support framing as specified herein. All work shall be performed in conformance with the manufacturer's instructions and recommendations for installation, for subsequent testing of the new units and for verification of satisfactory performance

214.01.02 Existing access hatches to be replaced are shown on the accompanying WPC 26-4 drawings designated as Sheet Numbers 3, 4 and 5.

214.01.03 Contractor shall be knowledgeable about and shall field verify all elevations and dimensions of existing concrete pit walls, slabs, curbs, paving, pipes and equipment that in any way bears on the removal of the existing equipment and installation of the new equipment. Work shall be based on field measurements. The Authority will make available the information it has pertaining to the existing equipment.

214.01.04 Project work shall include all materials, equipment, labor, and supervision, necessary to complete the project as specified herein, including but not limited to, any and all crane work, rigging, delivery, staging and complete installation of components to fully operational and warrantable condition.

214.01.05 Contractor shall submit a written work plan acceptable to the Engineer describing the sequence and duration of work. Work plan shall be reviewed and approved by the Engineer prior to commencement of work. All work requiring flow stoppage or equipment removed from service must be scheduled 48 hours in advance with Plant Superintendent.

A. To accommodate Contractor's work, the scum pit may be taken out of service by City Staff for a maximum of twelve (12) contiguous hours followed by at least seventy-two (72) contiguous hours in regular service.
B. All unneeded equipment and debris from any work shall become the responsibility of the contractor and shall be removed from the site and disposed of properly.

214.01.06 Equipment, parts and materials shall meet the following requirements:

PARAMETER	VALUE
Equipment Description	Four (4) Access Hatches with integral fall protection grates
Manufacturer	EJ Group, Inc. or Halliday Products, Inc.
Model	Aluminum Access Hatch with Integral Safety Grate System
Style	(1) Double Cover with Double Grate and (2) Single Cover with Single Grate
Mounting	Top-Mounted
Clear Openings	As shown on drawings, Sheet Number 5
Load Rating for Cover	300 pounds per square foot (psf) live load
Cover Material	¼-inch thick aluminum raised-pattern diamond plate
Load Rating for Safety Grate	300 pounds per square foot (psf) live load
Safety Grate Material	6061-T6 aluminum
Hinges on Covers	316 stainless steel hinge pins and hardware
Hold Open for Covers	Each cover shall include a feature, such as a latching strut, that automatically engages to hold the cover open when the cover is fully opened.
Hold Open for Safety Grate	Each safety grate shall include a feature that locks the safety grate in the upright position when the safety grate is fully opened.
Lift Handle on Covers	Each cover shall include a permanently mounted exterior handle made from stainless steel. Each handle shall be centered on the width and positioned within 5 inches of the free edge of the cover. The handle may be pre-fabricated, or the handle may be custom fabricated from a 3/8-inch diameter, 8-inch wide, 3-inch tall, stainless steel, square U-bolt, with stainless steel washers and nuts.
Security Options	None. The covers shall not include any security options. The cover shall not have any type of lock, slam lock, catch, or padlock clip. The cover shall be held shut by gravity.
Lift Assist	None

214.01.07 Tagging: Contractor shall supply equipment tags. Tags shall show the City of Tulsa's Equipment ID number for the scum pit hatch as listed below. Install tags in plainly visible locations where they shall be viewable and readable from eye level.

Equipment ID Plates: All equipment tagged on the drawings, except for buried or submerged equipment, shall be provided with an Equipment ID Plate bearing the equipment tag number identified on the drawings. Equipment ID Plates shall be rectangular 3 1/2 inches wide by 3/4 inch tall by 1/16 inch thick laminated Blue/White, impact acrylic such as Rowmark

Ultra-Mattes #322512 or equivalent. Lettering shall be one line of text with centered, white, capitalized block letters 1/4 inch high and engraved to a depth of 0.012 inches. Equipment ID Plates must follow the Equipment ID scheme as illustrated below. Equipment ID Plates shall be attached with permanent adhesive.

XXXX-XXXX-XXXXX

Equipment ID Tag Number: S030-PCL1-OCC01

214.01.08 Testing: The equipment shall be installed in conformance with the manufacturer's recommendations that are submitted with the shop drawings. After completion of the installation, the equipment shall be tested by the contractor under normal operating conditions. An Authorized Manufacturer's Representative shall perform onsite verification of installation and operation.

END OF SECTION

214.02 All materials, labor, equipment and supervision required for removal and replacement of one (1) Make-Up Air Unit at the Southside Wastewater Treatment Plant (SSWWTP) Bar Screen Room Truck Bay per these specifications.

214.02.01 The project located at the City of Tulsa's Southside Wastewater Treatment Plant consists of removing and replacing one roof-mounted make-up air unit. The project includes the correct and complete installation of new components specified herein in conformance with the manufacturer's instructions and recommendations for installation, for subsequent testing of the new unit and for verification of satisfactory performance.

214.02.02 Existing make-up air unit to be replaced is shown on the accompanying WPC 26-4 drawings designated as Sheet Numbers 3 and 6.

214.02.03 Contractor shall be knowledgeable about and shall field verify all elevations and dimensions of existing ductwork and equipment that in any way bears on the removal of the existing equipment and installation of the new equipment. Work shall be based on field measurements. The Authority will make available the information it has pertaining to the existing equipment.

214.02.04 Project work shall include all materials, equipment, labor and supervision necessary to complete the project as specified herein, including but not limited to, any and all crane work, rigging, delivery, staging and complete installation of components to fully operational and warrantable condition.

214.02.05 Contractor shall submit a written work plan acceptable to the Engineer describing the sequence and duration of work. Work plan shall be reviewed and approved by the Engineer prior to commencement of work. All work requiring equipment to be removed from service must be scheduled 48 hours in advance with the Plant Superintendent.

A. Contractor shall prepare the affected system for disassembly.

B. All demolished equipment and debris from any work shall become the responsibility of the contractor and shall be removed from the site and disposed of properly.

214.02.06 Equipment and parts included shall be one (1) indirect-fired make-up air unit meeting the following performance requirements:

PARAMETER	VALUE
Air Flow	4,320 cfm
ESP	0.35 inches of w.c.

Output	292,600 BTU/hr
Fuel Type	Natural Gas
Temperature Rise	90 deg F
Burner Material	304 Stainless Steel
Heat Exchanger Material	304 Stainless Steel
Motor Electrical Service	460V 3-phase 60Hz
Motor Power	3 hp, minimum
Motor Speed	1750 rpm
Fan Type	D.W.D.I. Forward Curved
Control Package	100% Outside Air
Heating Control	Discharge Control

214.02.07 Acceptable manufacturers are the following: Engineered Air, Titan Air LLLP, RuppAir Management Systems and Greenheck Fan Corporation. Make-up air unit shall be supplied and installed with the following features:

A. Intake air filter section complete with two (2) sets of 2-inch washable aluminum mesh filters, one (1) installed set and one (1) spare set. Provide filter access through a hinged side panel.

B. Overhung 45-degree angled outside air intake hood with aluminum bird screen.

C. Neoprene vibration isolators at mounting points of motors and fans.

D. TEFC premium efficiency heavy-duty motor with permanently lubricated sealed ball bearings meeting Class 1, Division 2 specifications.

E. Spark-free wheel.

F. Low-leak discharge damper with electronic actuator.

G. Flat curb kit for a built-up roof on concrete structure as recommended and supplied by manufacturer.

H. Casing insulation for entire unit with 1-inch thickness and 1.5 lb/ft^3 density.

I. Factory-applied Heresite or approved equal coating to protect susceptible components from Hydrogen Sulfide and Sulfuric Acid corrosion.

J. Standard controls mounted in a sealed housing to prevent exposure to corrosive gases and vapors.

K. Purge cycle.

L. Low-temperature safety.

M. Inlet Ductstat (Warm OA Heat Disabled).

N. Remote wall-mounted control panel with the following:

1) Fan On/Off switch – for master control of unit
2) Fan On indicator light – green
3) Fan Fault indicator light - amber
4) Heater On indicator light – green
5) Heater Fault indicator light – amber
6) Clogged Filter indicator light - amber

O. Low gas pressure switch.

P. Door interlocked unit disconnect with fuses.

Q. Two (2) EF interlocks.

R. Duct-mounted smoke detector.

S. Dampers fail-safe to open.

214.02.08 Contractor shall replace all ductwork between the new make-up air unit and the roof penetration. New exterior ductwork shall be weatherproof and of aluminum construction.

214.02.09 All new electrical components will be connected to existing electrical service. Contractor shall remove and replace all electrical power and control wiring from the new make-up air unit back to the supply panel and to the remote control panel. The contractor shall review the existing electrical service and components for compatibility with the new makeup air unit. If there is an electrical incompatibility, the contractor shall bring it to the attention of the Engineer. Engineer may issue a proposal request to the contractor to make the changes necessary to accommodate the new equipment. It is the responsibility of the contractor to relocate any necessary electrical wiring and components to install the new unit.

214.02.10 Makeup air unit shall be mounted on the roof positioned as recommended by the manufacturer. Contractor shall supply all necessary mounting hardware. Supports shall be aluminum or 316 stainless steel, and fasteners shall be 316 stainless steel. Any necessary modifications to roofing, including but not limited to, cutting, patching, replacing, welding, seaming and flashing shall be performed by a qualified roofing contractor with at least

five (5) years of experience installing the given roof type.

214.02.11 Makeup air unit shall be connected to existing gas service. It is the responsibility of the contractor to reroute gas piping as necessary to install the new unit.

214.02.12 No cutting, drilling or welding of the new equipment or any part thereof as delivered from the manufacturer, for the purpose of adapting or modifying said unit to facilitate its installation, will be permitted without written prior approval by the authority.

214.02.13 All make-up air units, material, and equipment to be salvaged shall be removed carefully to prevent damage, and then delivered to an area designated by the Plant Superintendent on site. The contractor shall dispose of all parts of the existing equipment deemed unnecessary to the facility. The Plant Superintendent shall specify which parts of the existing equipment are to be salvaged.

214.02.14 Contractor shall use caution to avoid damage to existing power cables. These cables shall be reused in new equipment installation. Contractor shall be responsible for any damage to existing electrical equipment or power cables.

214.02.15 Each make-up air unit shall have a permanently affixed manufacturer's nameplate containing the model number and serial number for future identification.

214.02.16 Tagging: Contractor shall supply equipment tags. Tags shall show the City of Tulsa's Equipment ID number for each make-up air unit as listed below. Install tags in plainly visible locations where they shall be viewable and readable from eye level.

Equipment ID Plates: All equipment tagged on the drawings, except for buried or submerged equipment, shall be provided with an Equipment ID Plate bearing the equipment tag number identified on the drawings. Equipment ID Plates shall be rectangular 3 1/2 inches wide by 3/4 inch tall by 1/16 inch thick laminated Blue/White, impact acrylic such as Rowmark Ultra-Mattes #322512 or equivalent. Lettering shall be one line of text with centered, white, capitalized block letters 1/4 inch high and engraved to a depth of 0.012 inches. Equipment ID Plates must follow the Equipment ID

scheme as illustrated below. Equipment ID Plates shall be attached with permanent adhesive.

Equipment ID Tag Number: S010-BRS1-AHU01

214.02.17 Testing: The equipment shall be installed in conformance with the manufacturer's recommendations that are submitted with the shop drawings. After completion of the installation, the equipment shall be tested by the contractor under normal operating conditions. An Authorized Manufacturer's Representative shall perform onsite verification at Start-Up.

END OF SECTION

214.03 All materials, labor, equipment and supervision required for removal and replacement of one (1) Make-Up Air Unit at the Cherry Creek Lift Station (CCLS) Bar Screen Room per these specifications.

214.03.01 The project located at the City of Tulsa's Cherry Creek Lift Station consists of removing and replacing one roof-mounted make-up air unit. The project includes the correct and complete installation of new components specified herein in conformance with the manufacturer's instructions and recommendations for installation, for subsequent testing of the new unit and for verification of satisfactory performance.

214.03.02 Existing make-up air unit to be replaced is shown on the accompanying WPC 26-4 drawings designated as Sheet Numbers 3 and 7.

214.03.03 Contractor shall be knowledgeable about and shall field verify all elevations and dimensions of existing ductwork and equipment that in any way bears on the removal of the existing equipment and installation of the new equipment. Work shall be based on field measurements. The Authority will make available the information it has pertaining to the existing equipment.

214.03.04 Project work shall include all materials, equipment, labor and supervision necessary to complete the project as specified herein, including but not limited to, any and all crane work, rigging, delivery, staging and complete installation of components to fully operational and warrantable condition.

214.03.05 Contractor shall submit a written work plan acceptable to the Engineer describing the sequence and duration of work. Work plan shall be reviewed and approved by the Engineer prior to commencement of work. All work requiring equipment to be removed from service must be scheduled 48 hours in advance with the Plant Superintendent.

A. Contractor shall prepare the affected system for disassembly.
B. All demolished equipment and debris from any work shall become the responsibility of the contractor and shall be removed from the site and disposed of properly.

214.03.06 Equipment and parts included shall be one (1) indirect-fired make-up air unit meeting the following performance requirements:

PARAMETER	VALUE
Air Flow	9,700 cfm
ESP	0.60 inches of w.c.

Output	544,760 BTU/hr
Fuel Type	Natural Gas
Temperature Rise	90 deg F
Burner Material	304 Stainless Steel
Heat Exchanger Material	304 Stainless Steel
Motor Electrical Service	460V 3-phase 60Hz
Motor Power	7.5 hp, minimum
Motor Speed	1750 rpm
Fan Type	D.W.D.I. Forward Curved
Control Package	100% Outside Air
Heating Control	Discharge Control

214.03.07 Acceptable manufacturers are the following: Engineered Air, Titan Air LLLP, RuppAir Management Systems and Greenheck Fan Corporation. Make-up air unit shall be supplied and installed with the following features:

A. Intake air filter section complete with two (2) sets of 2-inch washable aluminum mesh filters, one (1) installed set and one (1) spare set. Provide filter access through a hinged side panel.

B. Overhung 45-degree angled outside air intake hood with aluminum bird screen.

C. Neoprene vibration isolators at mounting points of motors and fans.

D. TEFC premium efficiency heavy-duty motor with permanently lubricated sealed ball bearings meeting Class 1, Division 2 specifications.

E. Spark-free wheel.

F. Low-leak discharge damper with electronic actuator.

G. Flat curb kit for a membrane roof on concrete structure as recommended and supplied by manufacturer.

H. Casing insulation for entire unit with 1-inch thickness and 1.5 lb/ft^3 density.

I. Factory-applied Heresite or approved equal coating to protect susceptible components from Hydrogen Sulfide and Sulfuric Acid corrosion.

J. Standard controls mounted in a sealed housing to prevent exposure to corrosive gases and vapors.

K. Purge cycle.

L. Low-temperature safety.

M. Inlet Ductstat (Warm OA Heat Disabled).

N. Remote wall-mounted control panel with the following:

1) Fan On/Off switch – for master control of unit
2) Fan On indicator light – green
3) Fan Fault indicator light - amber
4) Heater On indicator light – green
5) Heater Fault indicator light - amber
6) Clogged Filter indicator light - amber

O. Low gas pressure switch.

P. Door interlocked unit disconnect with fuses.

Q. Two (2) EF interlocks.

R. Duct-mounted smoke detector.

S. Dampers fail-safe to open.

214.03.08 Contractor shall replace all ductwork between the new make-up air unit and the straight run of existing ductwork indicated for reuse. New exterior ductwork shall be weatherproof and of aluminum construction.

214.03.09 All new electrical components will be connected to existing electrical service. Contractor shall remove and replace all electrical power and control wiring from the new make-up air unit back to the supply panel and to the remote control panel. The contractor shall review the existing electrical service and components for compatibility with the new makeup air unit. If there is an electrical incompatibility, the contractor shall bring it to the attention of the Engineer. Engineer may issue a proposal request to the contractor to make the changes necessary to accommodate the new equipment. It is the responsibility of the contractor to relocate any necessary electrical wiring and components to install the new unit.

214.03.10 Makeup air unit shall be mounted on the roof positioned as recommended by the manufacturer. Contractor shall supply all necessary mounting hardware. Supports shall be aluminum or 316 stainless steel, and fasteners shall be 316 stainless steel. Any necessary modifications to roofing, including but not limited to, cutting, patching, replacing, welding, seaming and flashing shall be performed by a qualified roofing contractor with at least

five (5) years of experience installing the given roof type.

214.03.11 Makeup air unit shall be connected to existing gas service. It is the responsibility of the contractor to reroute gas piping as necessary to install the new unit.

214.03.12 No cutting, drilling or welding of the new equipment or any part thereof as delivered from the manufacturer, for the purpose of adapting or modifying said unit to facilitate its installation, will be permitted without written prior approval by the authority.

214.03.13 All make-up air units, material, and equipment to be salvaged shall be removed carefully to prevent damage, and then delivered to an area designated by the Plant Superintendent on site. The contractor shall dispose of all parts of the existing equipment deemed unnecessary to the facility. The Plant Superintendent shall specify which parts of the existing equipment are to be salvaged.

214.03.14 Contractor shall use caution to avoid damage to existing power cables. These cables shall be reused in new equipment installation. Contractor shall be responsible for any damage to existing electrical equipment or power cables.

214.03.15 Each make-up air unit shall have a permanently affixed manufacturer's nameplate containing the model number and serial number for future identification.

214.03.16 Tagging: Contractor shall supply equipment tags. Tags shall show the City of Tulsa's Equipment ID number for each make-up air unit as listed below. Install tags in plainly visible locations where they shall be viewable and readable from eye level.

Equipment ID Plates: All equipment tagged on the drawings, except for buried submerged equipment, shall be provided with an Equipment ID Plate bearing the equipment tag number identified on the drawings. Equipment ID Plates shall be rectangular 3 1/2 inches wide by 3/4 inch tall by 1/16 inch thick laminated Blue/White, impact acrylic such as Rowmark Ultra-Mattes #322512 or equivalent. Lettering shall be one line of text with centered, white, capitalized block letters 1/4 inch high and engraved to a depth of 0.012 inches. Equipment ID Plates must follow the Equipment ID scheme as

illustrated below. Equipment ID Plates shall be attached with permanent adhesive.

Equipment ID Tag Number: S104-LFT1-AHU03

214.03.17 Testing: The equipment shall be installed in conformance with the manufacturer's recommendations that are submitted with the shop drawings. After completion of the installation, the equipment shall be tested by the contractor under normal operating conditions. An Authorized Manufacturer's Representative shall perform onsite verification at Start-Up.

END OF SECTION

214.04 All materials, labor, equipment and supervision required for removal and replacement of one (1) Progressing Cavity Sludge Transfer Pump, STP01, at the Southside Wastewater Treatment Plant (SSWWTP) Digester 3&4 Basement per these specifications.

214.04.01 The project located at the City of Tulsa's Southside Wastewater Treatment Plant consists of removing and replacing one progressing cavity pump along with its associated pipe, fittings, valves, pump base, pipe supports and appurtenances in the existing Digester 3&4 Basement. The project includes the correct and complete installation of new components specified herein in conformance with the manufacturer's instructions and recommendations for installation, for subsequent testing of the new pump and for verification of satisfactory performance.

214.04.02 The pump to be replaced is identified as STP01 and is shown on the accompanying WPC 26-4 drawings designated as Sheet Numbers 3, 8 and 9.

214.04.03 The isolation plug valves associated with this pump shall be replaced with new valves where shown on the drawings. Refer to drawings for new valve requirements. Where new connections are made to existing pipe and fittings, use new bolt sets and new gaskets. Refer to drawings for new pipe requirements.

214.04.04 Electrical power and control wiring leading to the new pump shall be replaced from the pump connection back to the motor control center and to the local control switch. Add a local disconnect heavy-duty safety switch as shown and noted on the drawings. Replace the flexible conduit from the motor to the existing rigid conduit. Remove and delete the solenoid valve from the seal water supply system. Add a seal water pressure detector inline and set to shut off pump when seal water pressure drops below 5 psi.

214.04.05 Contractor shall be knowledgeable about and shall field verify all elevations and dimensions of existing pump bases, piping, conduit, valves and equipment that in any way, directly or indirectly, relate to the removal of existing equipment or installation of new equipment. Work shall be based on field measurements. The Authority will make available the information it has pertaining to the existing equipment.

214.04.06 Project work shall include all materials, equipment, labor, and supervision necessary to complete the project as specified herein including, but not limited to, any and all crane work, rigging, delivery, staging and complete installation of components to fully operational and warrantable condition. All

work requiring flow stoppage or equipment removed from service shall be scheduled 48 hours in advance with Plant Superintendent. Contractor shall have on hand the valves, temporary pumps and any other necessary materials and equipment at the installation site prior to flow stoppage. It is the contractor's responsibility to prepare the affected system and any related systems for disassembly. This includes closing of upstream/downstream valves and pumping down any reservoirs necessary. One sludge transfer pump, STP02, shall remain in service continuously during STP01 replacement work.

214.04.07 The pumping unit shall be of the self-priming, positive displacement, progressing cavity type. Equipment and parts shall include one (1) SEEPEX Series BN, identified as The Seepex Option below, or one (1) MOYNO Series 2000, identified as The Moyno Option below. For both The Seepex Option and The Moyno Option pump shall meet the following requirements:

PARAMETER	VALUE
Application	Transfer of Digested Sludge
Solids Content	6%, maximum
Rated Differential Pressure	30 psi
Capacity at Rated Differential Pressure	300 gpm
Maximum Differential Pressure	60 psi
Minimum Capacity at Maximum Rated Differential Pressure	270 gpm
Minimum NPSH Available at Pump Shaft Center Line at Rated Head	Flooded Suction
Maximum Pump Operating Speed at Rated Conditions	300 rpm
Maximum Motor Speed	1200 rpm
Minimum Motor Nameplate Rating	20 hp
Electrical Service	480 Volt, 60 Hz, 3-Phase
Motor	Severe-Duty, Premium Efficiency, TEFC
Nominal Size of Connections	6 inches or 8 inches

For The Seepex Option, specifically, pump shall meet the requirements listed in the following table:

PARAMETER	VALUE
Manufacturer	SEEPEX, Inc.
Model	Series BN 130-6L

Rotor Material	Duktil Chromium Nitride Coated Tool Steel
Rotor Assembly	Two-piece with Smart Conveying Technology, SCT
Stator Material	Buna N
Stator Assembly	Two-piece with Smart Conveying Technology, SCT
Pump Body	Carbon Steel
Shaft Sealing	Single Internal Mechanical, Two-Part
Drive	Right-Angle Gear Motor
Minimum Service Factor	1.5
Thrust Load Capability	150% of Actual
Bearings	Oil-Lubricated
Run Dry Protection	Required with Sensor Sleeve, Thermistor and Controller

For The Moyno Option, specifically, pump shall meet the requirements listed in the following table:

PARAMETER	VALUE
Manufacturer	MOYNO (by NOV, L.P.)
Model	2000 Series – 1H115G1CDQ3ARA
Rotor Material	Duktil Chromium Nitride Coated Tool Steel
Stator Material	Buna N
Casing	Cast Iron
Shaft Sealing	Braided Teflon and Graphite
Drive	V-Belt and Pulleys
Bearings	Grease-Lubricated

214.04.08 The pump, along with associated drive appurtenances, shall be mounted on common fabricated steel base plates.

214.04.09 Over Pressure Protection: The pump unit shall be supplied with a silicone-filled isolation ring with a dual mounted gauge and single point pressure switch. The pressure ranges for the switch and gauge shall be selected for each specified service. The isolation ring shall be mounted between ANSI flanges, shall be sized according to the discharge pipe as shown on the plans, and shall be constructed with a carbon steel body and fittings with a Buna sleeve. The switch shall be SPDT, NEMA 4.

214.04.10 No cutting, drilling or welding of the new pumps or part thereof as delivered from the manufacturer, for the purpose of adapting or modifying said unit to

facilitate its installation, will be permitted without written prior approval by the Authority.

214.04.11 The existing concrete pad my be reused if its size matches the new pump manufacturer's recommendations. Otherwise, the contractor shall provide a new concrete pad for the pump that will accommodate the new equipment's footprint size. Any new concrete pad shall be constructed with 4,500 psi normal weight concrete, reinforced with ASTM A615 #4 bars at 6 inches on-center each way and anchored with (8)-#4 dowels into existing floor slab with Hilti HIT-HY 200 injection adhesive with 4 ½ inches embedment. Notify the Engineer at least 48 hours before planned concrete placement by calling 918-405-4907. A City of Tulsa Senior Engineer will inspect and observe concrete placement.

214.04.12 All piping, pipe supports and hangers, valves and fittings shall be installed to tie into the existing piping system. When attaching piping to pump, care shall be taken to align pipe so that stresses are not transmitted to or imposed upon such connections. All pipe supports, existing or new, shall be secured to surrounding structure by mechanical means.

214.04.13 Pumping units shall be furnished complete with all accessories and appurtenances specified or otherwise required for proper operation. All parts shall be installed and adjusted by the contractor. The manufacturer shall furnish necessary drawings and detailed installation, operation and maintenance instructions for all components. It shall be the contractor's responsibility to handle, store, and install all parts, including belts and sheaves, as required and in accordance with the manufacturer's written recommendations.

214.04.14 Painting: All sludge transfer suction and discharge piping that is modified through the course of this work shall be painted. Coordinate with Plant Superintendent for confirm color selection and signage prior to any piping work. Process identification and flow arrow shall be painted on pipe.

214.04.15 Tagging: Contractor shall supply equipment tags. Tags shall show the City of Tulsa's Equipment ID number for the sludge transfer pump as listed below. Install tags in plainly visible locations where they shall be viewable and readable from eye level.

Equipment ID Plates: All equipment tagged on the drawings, except for buried submerged equipment, shall be provided with an Equipment ID Plate bearing the equipment tag number identified on the drawings. Equipment ID Plates shall be rectangular 3 1/2 inches wide by 3/4 inch tall by 1/16 inch

thick laminated Blue/White, impact acrylic such as Rowmark Ultra-Mattes #322512 or equivalent. Lettering shall be one line of text with centered, white, capitalized block letters 1/4 inch high and engraved to a depth of 0.012 inches. Equipment ID Plates must follow the Equipment ID scheme as illustrated below. Equipment ID Plates shall be attached with permanent adhesive.

Equipment ID Tag Number: S080-DIG3-STP01

214.04.16 Testing: The sludge transfer pump, electrical disconnects, conduit and all associated new equipment and/or appurtenances shall be installed in strict conformance with the manufacturer's recommendations, which are to be submitted with the shop drawings. After completion of the installation, the equipment shall be tested by the Contractor under normal operating conditions to achieve the flow specified. The test shall be conducted under the supervision of the manufacturer's technical representative and in the presence of the Owner's representative. Three (3) copies of test results shall be submitted to the Engineer. The equipment manufacturer shall furnish the services of a factory field representative to inspect the installation, initial lubrication, testing and start up of the equipment.

214.04.17 Operation and Maintenance: The manufacturer shall provide information to the Owner's representative regarding the operation and maintenance of the equipment.

214.04.18 Spare Parts: With The Seepex Option provide the following spare parts: (1) set of stator halves, (1) rotor, (2) sets of universal joint assemblies and (2) mechanical seals. With The Moyno Option provide the following spare parts: (1) stator, (1) rotor, (2) sets of universal joint assemblies and (2) packing seals with lantern rings.

214.04.19 Product Delivery and Storage: All equipment and components shall be delivered with sufficient time so as not to delay the Work. Store materials to permit visual access for inspection and identification. materials off the ground using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration by keeping in covered storage.

214.04.20 Warranty: The equipment shall be warranted for a period of two (2) years against defects in workmanship and materials under normal use, operation

and service. If the equipment should fail during the warranty period to a defective part, it shall be replaced and the units restored at no expense to the owner. The warranty shall cover parts and labor supervision by a certified representative, and a certified representative shall be available within 48 hours.

END OF SECTION

214.05 All materials, labor, equipment and supervision required for removal and replacement of one (1) Progressing Cavity Sludge Transfer Pump, STP02, at the Southside Wastewater Treatment Plant (SSWWTP) Digester 3&4 Basement per these specifications.

214.05.01 The project located at the City of Tulsa's Southside Wastewater Treatment Plant consists of removing and replacing one progressing cavity pump along with its associated pipe, fittings, valves, pump base, pipe supports and appurtenances in the existing Digester 3&4 Basement. The project includes the correct and complete installation of new components specified herein in conformance with the manufacturer's instructions and recommendations for installation, for subsequent testing of the new pump and for verification of satisfactory performance.

214.05.02 The pump to be replaced is identified as STP02 and is shown on the accompanying WPC 26-4 drawings designated as Sheet Numbers 3, 10 and 11.

214.05.03 The isolation plug valves associated with this pump shall be replaced with new valves where shown on the drawings. Refer to drawings for new valve requirements. Where new connections are made to existing pipe and fittings, use new bolt sets and new gaskets. Refer to drawings for new pipe requirements.

214.05.04 Electrical power and control wiring leading to the new pump shall be replaced from the pump connection back to the motor control center and to the local control switch. Add a local disconnect heavy-duty safety switch as shown and noted on the drawings. Replace the flexible conduit from the motor to the existing rigid conduit. Remove and delete the solenoid valve from the seal water supply system. Add a seal water pressure detector inline and set to shut off pump when seal water pressure drops below 5 psi.

214.05.05 Contractor shall be knowledgeable about and shall field verify all elevations and dimensions of existing pump bases, piping, conduit, valves and equipment that in any way, directly or indirectly, relate to the removal of existing equipment or installation of new equipment. Work shall be based on field measurements. The Authority will make available the information it has pertaining to the existing equipment.

214.05.06 Project work shall include all materials, equipment, labor, and supervision necessary to complete the project as specified herein including, but not limited to, any and all crane work, rigging, delivery, staging and complete installation of components to fully operational and warrantable condition. All

work requiring flow stoppage or equipment removed from service shall be scheduled 48 hours in advance with Plant Superintendent. Contractor shall have on hand the valves, temporary pumps and any other necessary materials and equipment at the installation site prior to flow stoppage. It is the contractor's responsibility to prepare the affected system and any related systems for disassembly. This includes closing of upstream/downstream valves and pumping down any reservoirs necessary. One sludge transfer pump, STP01, shall remain in service continuously during STP02 replacement work.

214.05.07 The pumping unit shall be of the self-priming, positive displacement, progressing cavity type. Equipment and parts shall include one (1) SEEPEX Series BN, identified as The Seepex Option below, or one (1) MOYNO Series 2000, identified as The Moyno Option below. For both The Seepex Option and The Moyno Option pump shall meet the following requirements:

PARAMETER	VALUE
Application	Transfer of Digested Sludge
Solids Content	6%, maximum
Rated Differential Pressure	30 psi
Capacity at Rated Differential Pressure	300 gpm
Maximum Differential Pressure	60 psi
Minimum Capacity at Maximum Rated Differential Pressure	270 gpm
Minimum NPSH Available at Pump Shaft Center Line at Rated Head	Flooded Suction
Maximum Pump Operating Speed at Rated Conditions	300 rpm
Maximum Motor Speed	1200 rpm
Minimum Motor Nameplate Rating	20 hp
Electrical Service	480 Volt, 60 Hz, 3-Phase
Motor	Severe-Duty, Premium Efficiency, TEFC
Nominal Size of Connections	6 inches or 8 inches

For The Seepex Option, specifically, pump shall meet the requirements listed in the following table:

PARAMETER	VALUE
Manufacturer	SEEPEX, Inc.
Model	Series BN 130-6L

Rotor Material	Duktil Chromium Nitride Coated Tool Steel
Rotor Assembly	Two-piece with Smart Conveying Technology, SCT
Stator Material	Buna N
Stator Assembly	Two-piece with Smart Conveying Technology, SCT
Pump Body	Carbon Steel
Shaft Sealing	Single Internal Mechanical, Two-Part
Drive	Right-Angle Gear Motor
Minimum Service Factor	1.5
Thrust Load Capability	150% of Actual
Bearings	Oil-Lubricated
Run Dry Protection	Required with Sensor Sleeve, Thermistor and Controller

For The Moyno Option, specifically, pump shall meet the requirements listed in the following table:

PARAMETER	VALUE
Manufacturer	MOYNO (by NOV, L.P.)
Model	2000 Series – 1H115G1CDQ3ARA
Rotor Material	Duktil Chromium Nitride Coated Tool Steel
Stator Material	Buna N
Casing	Cast Iron
Shaft Sealing	Braided Teflon and Graphite
Drive	V-Belt and Pulleys
Bearings	Grease-Lubricated

214.05.08 The pump, along with associated drive appurtenances, shall be mounted on common fabricated steel base plates.

214.05.09 Over Pressure Protection: The pump unit shall be supplied with a silicone-filled isolation ring with a dual mounted gauge and single point pressure switch. The pressure ranges for the switch and gauge shall be selected for each specified service. The isolation ring shall be mounted between ANSI flanges, shall be sized according to the discharge pipe as shown on the plans, and shall be constructed with a carbon steel body and fittings with a Buna sleeve. The switch shall be SPDT, NEMA 4.

214.05.10 No cutting, drilling or welding of the new pumps or part thereof as delivered from the manufacturer, for the purpose of adapting or modifying said unit to

facilitate its installation, will be permitted without written prior approval by the Authority.

214.05.11 The existing concrete pad my be reused if its size matches the new pump manufacturer's recommendations. Otherwise, the contractor shall provide a new concrete pad for the pump that will accommodate the new equipment's footprint size. Any new concrete pad shall be constructed with 4,500 psi normal weight concrete, reinforced with ASTM A615 #4 bars at 6 inches on-center each way and anchored with (8)-#4 dowels into existing floor slab with Hilti HIT-HY 200 injection adhesive with 4 ½ inches embedment. Notify the Engineer at least 48 hours before planned concrete placement by calling 918-405-4907. A City of Tulsa Senior Engineer will inspect and observe concrete placement.

214.05.12 All piping, pipe supports and hangers, valves and fittings shall be installed to tie into the existing piping system. When attaching piping to pump, care shall be taken to align pipe so that stresses are not transmitted to or imposed upon such connections. All pipe supports, existing or new, shall be secured to surrounding structure by mechanical means.

214.05.13 Pumping units shall be furnished complete with all accessories and appurtenances specified or otherwise required for proper operation. All parts shall be installed and adjusted by the contractor. The manufacturer shall furnish necessary drawings and detailed installation, operation and maintenance instructions for all components. It shall be the contractor's responsibility to handle, store, and install all parts, including belts and sheaves, as required and in accordance with the manufacturer's written recommendations.

214.05.14 Painting: All sludge transfer suction and discharge piping that is modified through the course of this work shall be painted. Coordinate with Plant Superintendent for confirm color selection and signage prior to any piping work. Process identification and flow arrow shall be painted on pipe.

214.05.15 Tagging: Contractor shall supply equipment tags. Tags shall show the City of Tulsa's Equipment ID number for the sludge transfer pump as listed below. Install tags in plainly visible locations where they shall be viewable and readable from eye level.

Equipment ID Plates: All equipment tagged on the drawings, except for buried submerged equipment, shall be provided with an Equipment ID Plate bearing the equipment tag number identified on the drawings. Equipment ID Plates shall be rectangular 3 1/2 inches wide by 3/4 inch tall by 1/16 inch

thick laminated Blue/White, impact acrylic such as Rowmark Ultra-Mattes #322512 or equivalent. Lettering shall be one line of text with centered, white, capitalized block letters 1/4 inch high and engraved to a depth of 0.012 inches. Equipment ID Plates must follow the Equipment ID scheme as illustrated below. Equipment ID Plates shall be attached with permanent adhesive.

XXXX-XXXX-XXXXX

Equipment ID Tag Number: S080-DIG3-STP02

214.05.16 Testing: The sludge transfer pump, electrical disconnects, conduit and all associated new equipment and/or appurtenances shall be installed in strict conformance with the manufacturer's recommendations, which are to be submitted with the shop drawings. After completion of the installation, the equipment shall be tested by the Contractor under normal operating conditions to achieve the flow specified. The test shall be conducted under the supervision of the manufacturer's technical representative and in the presence of the Owner's representative. Three (3) copies of test results shall be submitted to the Engineer. The equipment manufacturer shall furnish the services of a factory field representative to inspect the installation, initial lubrication, testing and start up of the equipment.

214.05.17 Operation and Maintenance: The manufacturer shall provide information to the Owner's representative regarding the operation and maintenance of the equipment.

214.05.18 Spare Parts: With The Seepex Option provide the following spare parts: (1) set of stator halves, (1) rotor, (2) sets of universal joint assemblies and (2) mechanical seals. With The Moyno Option provide the following spare parts: (1) stator, (1) rotor, (2) sets of universal joint assemblies and (2) packing seals with lantern rings.

214.05.19 Product Delivery and Storage: All equipment and components shall be delivered with sufficient time so as not to delay the Work. Store materials to permit visual access for inspection and identification. materials off the ground using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration by keeping in covered storage.

214.05.20 Warranty: The equipment shall be warranted for a period of two (2) years against defects in workmanship and materials under normal use, operation

and service. If the equipment should fail during the warranty period to a defective part, it shall be replaced and the units restored at no expense to the owner. The warranty shall cover parts and labor supervision by a certified representative, and a certified representative shall be available within 48 hours.

END OF SECTION

214.98 Extra Work Allowance – $11,300.00 Lump Sum Allowance for various mechanical, electrical, plumbing, or unforeseen circumstances work not identified in the bid items.

214.98.1 The allowance shall be used for cost of materials, labor, installation, and overhead and profit for additional MEP/Unforeseen Circumstances work that is not identified in the base bid items.

214.98.2 The allowance shall be used only at the discretion of the City of Tulsa. Any allowance balance remaining at the completion of the contract will be credited back to the City of Tulsa on the final Application for Payment submitted by the contractor.

214.98.3 The contractor shall provide to the City of Tulsa representative a written request for the use of any of the allowance with a schedule of values and all associated backup information.

214.98.4 The contractor shall proceed with Extra Work included in the allowance only after receiving a written order from the City of Tulsa representative authorizing such work. Proceeding with work expected to be covered in the allowance without a written order from the City of Tulsa representative will be at the contractor's risk. Contractor may not be paid for unapproved work/materials at the discretion of the City of Tulsa representative.

214.98.5 Any additional costs for bonds and insurance shall not be included in any Extra Work allowance because this cost is already included in the contract.

END OF SECTION

214.99 Mobilization Bid Item – A mobilization bid item is included to help cover initial costs of bonds, insurance, permits, submittal preparation and other incidental costs.

214.99.1 Payment shall be made for a Mobilization Bid Item which is intended to cover the costs of bonds, insurance, permits, submittal preparation and other incidental costs. Payment of the Mobilization Bid Item maybe be requested in full on the first payment application. The Mobilization Bid Item shall not exceed five percent (5%) of the sum of all Base Bid Items excluding the Mobilization Bid Item. Add Alternate Items are not part of the Base Bid Items.

END OF SECTION