Request for Qualifications

City of Canton, Ohio

Purchasing Department
218 Cleveland Ave. SW, 4th floor
Canton, Ohio 44702

Water Reclamation Facility Electrical Equipment Improvements Project
Design & Construction Oversight Services

Item/Project

Water Reclamation Facility

Responsible Department

Wednesday, May 12, 2021 at 4:00 PM Local Time

Proposals Due By

Proposal Submitted By:

Company Name

Street Address

City **State** **Zip**

Contact Person **Phone No.** **Email Address**

Overview

The City of Water Reclamation Facility (WRF) intends to contract with a professional engineering firm for design and construction oversight for upgrades to its electrical equipment throughout the facility.

Project Description

Project Name: WRF Electrical Equipment Improvements Project

- Improvements will include the replacement of the existing electrical equipment. Including the facilities: medium voltage switchgear, step down pad mounted transformers, and low voltage distribution motor control centers.

Professional Services Needed

The scope of services shall include survey, plan development, construction details, general & technical notes/specifications, engineering estimates, Ohio EPA PTI submittals, etc. A preliminary engineering report titled "WRF Electrical Equipment Replacement Study" dated February 2019 is attached as Exhibit A as a reference to the overall scope of the project.

Location

3530 Central Avenue SE, Canton, Ohio 44707

Questions

Please direct all questions regarding this Request for Qualifications in writing by Wednesday, May 5, 2021 at 4:00 PM to:

Katie Wise, Assistant Director of Purchasing
kathryn.wise@cantonohio.gov

Statement of Qualifications

Qualifications will be ranked based on the following information:

Firm's Background (10 Points)

- Information regarding the firm's history
- Types of services offered by the firm
- Information regarding the firm's available equipment and facilities

Similar Project Experience (10 Points)

- The firm's experience with similar projects, including at least three (3) examples of completed projects of a similar nature and scope

Past Project Performance (25 Points)

- Previous work performed for the City of Canton,
- Past project performance with regard to quality of work, experience with regulatory procedures and policies
- References

Project Team (25 Points)

- Education and experience of owners and key technical personnel who will be assigned this project. Project teams shall identify the proposed project manager, individuals anticipated to perform the work, and other in-house capabilities appropriate for this kind of work. Identification of possible outside sub-consultants shall be included.
- The technical expertise of the firm's current staff
- Current projects underway and availability of staff

Project Technical Approach (25 Points)

- Based on review of the WRF Electrical Equipment Replacement Study, dated February 2019, and similar project experience
- Additional recommendations and/or observations to the study

Submittal Presentation (5 Points)

- Overall appearance and quality of the submittal.

The entire qualification package must not to exceed 25 single-sided, numbered pages that are double- spaced with a 12-point font, including attachments. The cover page will not count towards the total number of pages, but all others will. The submission must be in PDF format or alternate formats that are easily readable using Microsoft Word. The qualification package must provide adequate information needed to rank the capability of a firm on each of the preceding categories, and consultants may utilize the allotted 25 pages as they see fit. The City may short list firms based on any combination of categories noted above. The City reserves the right to require an oral technical proposal to aid in the ranking process. Once the firms are ranked, the City will commence fee and contract negotiations with the top ranked firm.

Deadline and Submission Procedures

Firms interested in being considered for this contract must provide a statement of qualifications by **4:00 PM on Wednesday, May 12, 2021**. Statements received after this deadline will not be considered. Please submit your statement of qualifications via the City's sourcing tool, Vendor Registry. Vendor Registry is free for your use with City sourcing events (https://www.cantonohio.gov/448/Purchasing-Procurement), then click on Open Solicitations.

Evaluation and Next Steps

Responding firms will be evaluated and ranked pursuant to Ohio Revised Code Sections 153.65-153.73 based on the above criteria. Upon the completion of this evaluation process, the City will commence fee and contract negotiations with the selected firm most qualified to perform the services as needed. The final scope of engineering services will also be established during these negotiations.

The City of Canton reserves the right to reject any and all proposals and to accept the proposal deemed most beneficial to the City of Canton.

By order of the Director of Public Service
John M. Highman, Jr.

Published in The Repository
April 27, 2021 and May 4, 2021

MEMO

Exhibit A

To:
Tracy Mills
City of Canton WRF Superintendent

Copies:
Deb Houdeshell,
Doug Dickerhoff
Marc Morgan

Arcadis U.S., Inc.
222 South Main Street
Suite 200
Akron
Ohio 44308
Tel 330 434 1995
Fax 330 374 1095

From:

David A. Frank, PE, John M. Sidoti, PE

Date:

February 28, 2019

Arcadis Project No.:

AK000352.R001

Subject:
Canton, Ohio
WRF Electrical Equipment Replacement Study

Background and Summary

The Canton Water Reclamation Facility (WRF) electrical distribution system is comprised of Medium Voltage (MV) switchgear, step down pad mount transformers (XFMR), and low voltage distribution Motor Control Centers (MCC). The incoming 12.47kV MV Utility feed is distributed through the Facility from the Facility's MV Main Distribution Switchgear (Image 1). MV is then distributed throughout the Facility to pad-mounted XFMRs mounted near buildings/structures, with the ability to power each building from one of two pad-mounted XFMRs. Each structure has dedicated medium and low voltage distribution equipment to service building loads. Much of this equipment is still in service from initial Facility construction except for new equipment installed as part of adding Membrane technology to the water cleaning process. Existing equipment with service lives over 30+ years have now exceeded their expected useful life. Potential consequences of operating electrical equipment beyond its useful life are equipment failures due to insulation breakdown and mechanical failure, and corrosion due to equipment environment conditions. Equipment failures pose a threat to Facility operations and personnel safety.

Image 1: Plant incoming power with incoming pole mounted load break switches and 15kV Main Distribution Switchgear.

Image 2: First Stage Equalization Building MCC-P1. GE 7700 Series Motor Control Center.

A Facility walk through was held on October 9, 2018 with Mike Arrendale of Canton to tour the Facility and gather data for assessing equipment condition. Equipment that is 30+ years old is recommended for replacement to mitigate equipment failure, ensure plant personnel safety, and update existing systems to current technologies incorporating industry standard materials, monitoring and protection devices. A consolidated asset list of Facility electrical equipment recommended for replacement is provided as attachments to this memo. Equipment has been categorized by type, building location, voltage, and size. To aid in equipment replacement cost analyses an Engineering Cost Estimate of the equipment replacement is included with each asset. See Cost Estimation Method in the subsequent section for a detailed breakdown of the estimate development process. Finally, a list of additional Facility considerations discussed during the equipment assessment preliminary meeting between Arcadis and Facility staff and overseers has been included to assist in equipment replacement analyses.

Upon review of the provided asset list and associated cost estimates the next procedure in equipment replacement is to prioritize equipment replacements based upon service life, physical condition, risk analysis of equipment failure to plant operations, total cost of equipment replacement, and available monetary funds for design and construction services. This memo serves as a tool to aid the City in Capital Improvement Project planning to minimize equipment failure risk and proper allocation of monetary resources to ensure a fully functioning Facility.

Image 3: Compressor Building MV Transformers. Transformers were manufactured by Westinghouse in 1987.

Cost Estimation Method

Preliminary capital cost estimates were prepared for each asset and are presented in this section. All cost estimates are in December 2018 dollars. Cost estimates are consistent with Class 4 Estimates as defined by the Association for the Advancement of Cost Engineering (AACE) International. This level of engineering cost estimating is generally made with limited information including block diagrams, preliminary equipment lists, and conceptual layouts. Typical accuracy for Class 4 Estimates is expected to be in the range of +50/-30 percent. More detailed cost estimates should be completed during study or design phases once additional details are available.

Cost estimates were calculated using an Equipment Replacement Cost which includes a budgetary cost to manufacture and an additional 20% for distributor and contractor margins. Equipment Costs were developed in coordination with equipment supplier Schneider Electric. In addition to the Equipment Cost an additional 20% Labor Cost has been added to cover demolition of the existing electrical equipment and labor associated with installing the new. Finally, an overall Construction Factor of 15%, which covers mobilization, insurance, bond, and contingency for additional construction costs resulting from detailed design is included. These markups result in a total estimated cost of replacing electrical equipment. See tabulation of asset costs provided below.

Construction Cost Estimate

Category	Cost
Facility XFMRs	$1,527,891
Facility MCC	$2,348,817
Facility Switchgear (SWGR) and Switchboard (SWBD)	$2,217,625
Facility Switches	$103,233
Grand Total	$6,197,567

Table 1: Electrical Equipment Replacement Cost Summary.

Additional Plant Recommendations and Considerations

1) As part of the equipment replacement, an evaluation to refeed Maintenance Building from the Chlorine Building is recommended.
2) As part of equipment replacement, an evaluation to include provisions for a second power feed to the Administration Building from another portion of the Facility is recommended.
3) A short-circuit study, load flow, and arc flash analysis is recommended.
4) As part of the equipment replacement of the transformers at the Screen and Pump building, an analysis for increasing transformer capacity to four pumps may be considered. Current transformer capacity only allows for three pumps to operate at one time. This would increase pumping capacity but impact on overall power distribution is not known at this time. Current cost estimate for equipment replacement in this memo has been evaluated for replacement of equipment at its current size.

Attachments

Attachment 1 – Overall Facility Electrical Equipment Asset List

Attachment 2 – Overall Facility XFMR Asset List

Attachment 3 – Overall Facility MCC Asset List

Attachment 4 – Overall Facility SWBD and SWGR Asset List

Attachment 5 – Overall Facility Switch Asset List

Attachment 1
Overall Facility Electrical Equipment Asset List
Canton WRF

ARCADIS Design & Consultancy for natural and built assets

Equipment Name	Equipment Type	Building	Voltage	SIZE	Equipment Replacement Cost	Labor Cost (20%)	Subtotal	Construction Factor (15%)	Total
POLE LOAD BREAK SWITCHES	SWITCH	Incoming Service	15kV		$30,000	$6,000	$36,000	$5,400	**$41,400**
SWGR-MDS	SWGR	Incoming Service	15kV	600A	$663,106	$132,621	$795,728	$119,359	**$915,087**
XFMR-XAD	XFMR	Administration Buidling	12.47kV - 480/277V	500kVA	$35,342	$7,068	$42,410	$6,362	**$48,772**
MCC-AD	MCC	Administration Buidling	480/277V	1200A	$72,534	$14,507	$87,041	$13,056	**$100,097**
XFMR-XOP	XFMR	Old Water Pollution Control Center	12.47kV - 480/277V	500kVA	$35,342	$7,068	$42,410	$6,362	**$48,772**
SWBD-OP	SWBD	Old Water Pollution Control Center	480/277V	800A	$26,764	$5,353	$32,117	$4,818	**$36,935**
MCC-VS	MCC	Vehicular Storage Building	480/277V	200A	$25,326	$5,065	$30,391	$4,559	**$34,950**
MCC-MA	MCC	Maintenance Building	480/277V	400A	$27,419	$5,484	$32,903	$4,935	**$37,839**
MCC-D1	MCC	Digester Building	480/277V	400A	$35,875	$7,175	$43,050	$6,457	**$49,507**
MCC-CL1	MCC	Chlorine Building	480/277V	1200A	$69,666	$13,933	$83,599	$12,540	**$96,139**
MCC-CL2	MCC	Chlorine Building	480/277V	400A	$83,208	$16,642	$99,850	$14,977	**$114,827**
XFMR-XTR3	XFMR	Chlorine Building	12.47kV - 480/277V	750kVA	$46,041	$9,208	$55,250	$8,287	**$63,537**
XFMR-XTR4	XFMR	Chlorine Building	12.47kV - 480/277V	750kVA	$46,041	$9,208	$55,250	$8,287	**$63,537**
SECTIONALIZING SWITCH-SSH	SWITCH	Sludge Handling Building	15kV		$44,807	$8,961	$53,768	$8,065	**$61,833**
XFMR-XSH	XFMR	Sludge Handling Building	12.47kV - 480/277V	750kVA	$46,041	$9,208	$55,250	$8,287	**$63,537**
DP-SH	SWBD	Sludge Handling Building	480/277V		$100,761	$20,152	$120,913	$18,137	**$139,050**
MCC-SH1	MCC	Sludge Handling Building	480/277V	800A	$116,939	$23,388	$140,327	$21,049	**$161,376**
MCC-SH2	MCC	Sludge Handling Building	480/277V	400A	$61,573	$12,315	$73,887	$11,083	**$84,970**
MCC-I INCINERATOR	MCC	Sludge Handling Building	480/277V	800A	$53,358	$10,672	$64,029	$9,604	**$73,633**
MCC-HC HEAT CONDITIONING	MCC	Sludge Handling Building	480/277V	800A	$70,063	$14,013	$84,075	$12,611	**$96,686**
XFMR-XR1	XFMR	MBR Control Building (Old RAS Bldg)	12.47kV - 480/277V	2000kVA	$82,624	$16,525	$99,149	$14,872	**$114,021**
SWBD-RAS	SWBD	MBR Control Building (Old RAS Bldg)	480/277V	2500A	$116,898	$23,380	$140,278	$21,042	**$161,319**
XFMR-XR2	XFMR	MBR Control Building (Old RAS Bldg)	12.47kV - 480/277V	2000kVA	$82,624	$16,525	$99,149	$14,872	**$114,021**
XFMR-XTK	XFMR	Solids Handling Building	12.47kV - 480/277V	750kVA	$45,500	$9,100	$54,600	$8,190	**$62,790**
MCC-TK	MCC	Solids Handling Building	480/277V	800A	$49,085	$9,817	$58,902	$8,835	**$67,737**
MCC-PY	MCC	Polymer Building	480/277V	400A	$56,843	$11,369	$68,211	$10,232	**$78,443**
MCC-S	MCC	Second Stage EQ Building	480/277V	600A	$76,190	$15,238	$91,428	$13,714	**$105,142**
XFMR-XA1	XFMR	Aeration Buidling	12.47kV - 480/277V	1000kVA	$53,394	$10,679	$64,072	$9,611	**$73,683**
SWBD-A	SWBD	Aeration Buidling	480/277V	1600A	$82,259	$16,452	$98,711	$14,807	**$113,518**
XFMR-XA2	XFMR	Aeration Buidling	12.47kV - 480/277V	1000kVA	$53,394	$10,679	$64,072	$9,611	**$73,683**
MCC-A2	MCC	Aeration Buidling	480/277V	800A	$66,616	$13,323	$79,939	$11,991	**$91,930**
MCC-P1	MCC	First Stage EQ Building	480/277V	1000A	$56,786	$11,357	$68,143	$10,221	**$78,364**
MCC-P2	MCC	First Stage EQ Building	480/277V	400A	$56,623	$11,325	$67,948	$10,192	**$78,140**
XFMR-XCP1	XFMR	Compressor Building	12.47kV - 4.16/2.4V	3750/4200KVA	$168,343	$33,669	$202,011	$30,302	**$232,313**
XFMR-XCP2	XFMR	Compressor Building	12.47kV - 4.16/2.4V	3750/4200KVA	$168,343	$33,669	$202,011	$30,302	**$232,313**

Attachment 1
Overall Facility Electrical Equipment Asset List
Canton WRF

ARCADIS Design & Consultancy for natural and built assets

Equipment Name	Equipment Type	Building	Voltage	SIZE	Equipment Replacement Cost	Labor Cost (20%)	Subtotal	Construction Factor (15%)	Total
MV-SWGR-C2	SWGR	Compressor Building	4160/2400V	600A	$243,109	$48,622	$291,730	$43,760	**$335,490**
MV-SWGR-C1	SWGR	Compressor Building	4160/2400V	600A	$243,109	$48,622	$291,730	$43,760	**$335,490**
XFMR-XSP3	XFMR	Screen and Pump Building	12.47kV - 2.4kV	1500kVA	$81,069	$16,214	$97,283	$14,592	**$111,876**
XFMR-XSP2	XFMR	Screen and Pump Building	12.47kV - 2.4kV	1500kVA	$81,069	$16,214	$97,283	$14,592	**$111,876**
XFMR-XSP1	XFMR	Screen and Pump Building	12.47kV - 480/277V	500kVA	$35,959	$7,192	$43,151	$6,473	**$49,624**
SWGR-XSP	SWGR	Screen and Pump Building	2.4kV	450A	$130,969	$26,194	$157,163	$23,574	**$180,737**
MCC-SP2	MCC	Screen and Pump Building	480/277V	600A	$95,489	$19,098	$114,587	$17,188	**$131,775**
MCC-SP1	MCC	Screen and Pump Building	2.4kV	450A	$555,682	$111,136	$666,818	$100,023	**$766,841**
XFMR-XPA	XFMR	Pre-Aeration Building	12.47kV - 480/277V	750kVA	$46,041	$9,208	$55,250	$8,287	**$63,537**
MCC-PA	MCC	Pre-Aeration Building	480/277V	600A	$72,769	$14,554	$87,323	$13,098	**$100,421**
								Overall Total	**$6,197,567**

Attachment 2
Overall Facility XFMR Asset List
Canton WRF

ARCADIS Design & Consultancy for natural and built assets

Equipment Name	Equipment Type	Building	Voltage	SIZE	Equipment Replacement Cost	Labor Cost (20%)	Subtotal	Construction Factor (15%)	Total
XFMR-XAD	XFMR	Administration Buidling	12.47kV - 480/277V	500kVA	$35,342	$7,068	$42,410	$6,362	**$48,772**
XFMR-XOP	XFMR	Old Water Pollution Control Center	12.47kV - 480/277V	500kVA	$35,342	$7,068	$42,410	$6,362	**$48,772**
XFMR-XTR3	XFMR	Chlorine Building	12.47kV - 480/277V	750kVA	$46,041	$9,208	$55,250	$8,287	**$63,537**
XFMR-XTR4	XFMR	Chlorine Building	12.47kV - 480/277V	750kVA	$46,041	$9,208	$55,250	$8,287	**$63,537**
XFMR-XSH	XFMR	Sludge Handling Building	12.47kV - 480/277V	750kVA	$46,041	$9,208	$55,250	$8,287	**$63,537**
XFMR-XR1	XFMR	MBR Control Building (Old RAS Bldg)	12.47kV - 480/277V	2000kVA	$82,624	$16,525	$99,149	$14,872	**$114,021**
XFMR-XR2	XFMR	MBR Control Building (Old RAS Bldg)	12.47kV - 480/277V	2000kVA	$82,624	$16,525	$99,149	$14,872	**$114,021**
XFMR-XTK	XFMR	Solids Handling Building	12.47kV - 480/277V	750kVA	$45,500	$9,100	$54,600	$8,190	**$62,790**
XFMR-XA1	XFMR	Aeration Buidling	12.47kV - 480/277V	1000kVA	$53,394	$10,679	$64,072	$9,611	**$73,683**
XFMR-XA2	XFMR	Aeration Buidling	12.47kV - 480/277V	1000kVA	$53,394	$10,679	$64,072	$9,611	**$73,683**
XFMR-XCP1	XFMR	Compressor Building	12.47kV - 4.16/2.4V	3750/4200KVA	$168,343	$33,669	$202,011	$30,302	**$232,313**
XFMR-XCP2	XFMR	Compressor Building	12.47kV - 4.16/2.4V	3750/4200KVA	$168,343	$33,669	$202,011	$30,302	**$232,313**
XFMR-XSP3	XFMR	Screen and Pump Building	12.47kV - 2.4kV	1500kVA	$81,069	$16,214	$97,283	$14,592	**$111,876**
XFMR-XSP2	XFMR	Screen and Pump Building	12.47kV - 2.4kV	1500kVA	$81,069	$16,214	$97,283	$14,592	**$111,876**
XFMR-XSP1	XFMR	Screen and Pump Building	12.47kV - 480/277V	500kVA	$35,959	$7,192	$43,151	$6,473	**$49,624**
XFMR-XPA	XFMR	Pre-Aeration Building	12.47kV - 480/277V	750kVA	$46,041	$9,208	$55,250	$8,287	**$63,537**
								Overall Total	**$1,527,891**

Equipment Name	Equipment Type	Building	Voltage	SIZE	Equipment Replacement Cost	Labor Cost (20%)	Subtotal	Construction Factor (15%)	Total
MCC-AD	MCC	Administration Buidling	480/277V	1200A	$72,534	$14,507	$87,041	$13,056	**$100,097**
MCC-VS	MCC	Vehicular Storage Building	480/277V	200A	$25,326	$5,065	$30,391	$4,559	**$34,950**
MCC-MA	MCC	Maintenance Building	480/277V	400A	$27,419	$5,484	$32,903	$4,935	**$37,839**
MCC-D1	MCC	Digester Building	480/277V	400A	$35,875	$7,175	$43,050	$6,457	**$49,507**
MCC-CL1	MCC	Chlorine Building	480/277V	1200A	$69,666	$13,933	$83,599	$12,540	**$96,139**
MCC-CL2	MCC	Chlorine Building	480/277V	400A	$83,208	$16,642	$99,850	$14,977	**$114,827**
MCC-SH1	MCC	Sludge Handling Building	480/277V	800A	$116,939	$23,388	$140,327	$21,049	**$161,376**
MCC-SH2	MCC	Sludge Handling Building	480/277V	400A	$61,573	$12,315	$73,887	$11,083	**$84,970**
MCC-I Incinerator	MCC	Sludge Handling Building	480/277V	800A	$53,358	$10,672	$64,029	$9,604	**$73,633**
MCC-HC Heat Conditioning	MCC	Sludge Handling Building	480/277V	800A	$70,063	$14,013	$84,075	$12,611	**$96,686**
MCC-TK	MCC	Solids Handling Building	480/277V	800A	$49,085	$9,817	$58,902	$8,835	**$67,737**
MCC-PY	MCC	Polymer Building	480/277V	400A	$56,843	$11,369	$68,211	$10,232	**$78,443**
MCC-S	MCC	Second Stage EQ Building	480/277V	600A	$76,190	$15,238	$91,428	$13,714	**$105,142**
MCC-A2	MCC	Aeration Buidling	480/277V	800A	$66,616	$13,323	$79,939	$11,991	**$91,930**
MCC-P1	MCC	First Stage EQ Building	480/277V	1000A	$56,786	$11,357	$68,143	$10,221	**$78,364**
MCC-P2	MCC	First Stage EQ Building	480/277V	400A	$56,623	$11,325	$67,948	$10,192	**$78,140**
MCC-SP2	MCC	Screen and Pump Building	480/277V	600A	$95,489	$19,098	$114,587	$17,188	**$131,775**
MCC-SP1	MCC	Screen and Pump Building	2.4kV	450A	$555,682	$111,136	$666,818	$100,023	**$766,841**
MCC-PA	MCC	Pre-Aeration Building	480/277V	600A	$72,769	$14,554	$87,323	$13,098	**$100,421**
								Overall Total	**$2,348,817**

Attachment 4
Overall Facility SWBD and SWGR Asset List
Canton WRF

ARCADIS Design & Consultancy for natural and built assets

Equipment Name	Equipment Type	Building	Voltage	SIZE	Equipment Replacement Cost	Labor Cost (20%)	Subtotal	Construction Factor (15%)	Total
SWGR-MDS	SWGR	Incoming Service	15kV	600A	$663,106	$132,621	$795,728	$119,359	**$915,087**
SWBD-OP	SWBD	Old Water Pollution Control Center	480/277V	800A	$26,764	$5,353	$32,117	$4,818	**$36,935**
DP-SH	SWBD	Sludge Handling Building	480/277V		$100,761	$20,152	$120,913	$18,137	**$139,050**
SWBD-RAS	SWBD	MBR Control Building (Old RAS Bldg)	480/277V	2500A	$116,898	$23,380	$140,278	$21,042	**$161,319**
SWBD-A	SWBD	Aeration Buidling	480/277V	1600A	$82,259	$16,452	$98,711	$14,807	**$113,518**
MV-SWGR-C2	SWGR	Compressor Building	4160/2400V	600A	$243,109	$48,622	$291,730	$43,760	**$335,490**
MV-SWGR-C1	SWGR	Compressor Building	4160/2400V	600A	$243,109	$48,622	$291,730	$43,760	**$335,490**
SWGR-XSP	SWGR	Screen and Pump Building	2.4kV	450A	$130,969	$26,194	$157,163	$23,574	**$180,737**
								Overall Total	**$2,217,625**

Attachment 5
Overall Facility Switch Asset List
Canton WRF

ARCADIS Design & Consultancy for natural and built assets

Equipment Name	Equipment Type	Building	Voltage	SIZE	Equipment Replacement Cost	Labor Cost (20%)	Subtotal	Construction Factor (15%)	Total
POLE LOAD BREAK SWITCHES	SWITCH	Incoming Service	15kV		$30,000	$6,000	$36,000	$5,400	**$41,400**
SECTIONALIZING SWITCH-SSH	SWITCH	Sludge Handling Building	15kV		$44,807	$8,961	$53,768	$8,065	**$61,833**
								Overall Total	**$103,233**