CITY OF GREELEY
Purchasing

Request for Proposal
RFP #F24-01-011

HIGHLAND HILLS PUMP STATION CONTROL PANEL PROCUREMENT

for

WATER & SEWER DEPARTMENT

REQUEST FOR PROPOSAL (RFP)
RFP #F24-01-011

Procurement Contact:	Alex Adame
Email Address:	Purchasing@greeleygov.com
Telephone Number:	970-350-9325

Proposals must be received no later than the date indicated in the Schedule of Events below.

Proposals received after this date and time will not be considered for award.

ONLY ELECTRONIC RFP RESPONSES WILL BE ACCEPTED DURING THE COVID-19 EVENT

Email your RFP Response to purchasing@greeleygov.com. Only emails sent to purchasing@greeleygov.com will be considered as responsive to the request for proposals. DO NOT submit your RFP Response to multiple email addresses. Emails sent to other City emails may be considered as non-responsive and may not be reviewed.

Proposals shall be submitted in a single Microsoft Word or PDF file under 20MB. The RFP number and Project name must be noted in the subject line, otherwise the proposal may be considered as non-responsive to the RFP.

Electronic submittals will be held, un-opened, until the time and date noted in the RFP documents or posted addenda.

Schedule of Events (subject to change)	All times are MST
RFP Issued	March 12, 2024
Optional Pre-Proposal Conference – 1001 11th Avenue, 2nd Floor, Poudre Conference room followed by site visit to the Pump Station	March 20, 2024, 1:00 PM
Inquiry Deadline	March 25, 2024, 4:00 pm
Final Addendum Issued	March 28, 2024
Proposal Due Date	April 2, 2024, by 12:00 PM
Interviews (tentative)	NA
Notice of Award (tentative)	TBD

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EXHIBITS

*"**Public Viewing Copy**: The City is a governmental entity subject to the Colorado Open Records Act, C.R.S. §§ 24-72-200.1 et seq. ("CORA"). Any proposals submitted hereunder are subject to public disclosure by the City pursuant to CORA and City ordinances. Vendors may submit one (1) additional complete proposal clearly marked "FOR PUBLIC VIEWING." In this version of the proposal, the Vendor may redact text and/or data that it deems confidential or proprietary pursuant to CORA. Such statement does not necessarily exempt such documentation from public disclosure if required by CORA, by order of a court of appropriate jurisdiction, or other applicable law. Generally, under CORA trade secrets, confidential commercial and financial data information is not required to be disclosed by the City. Proposals may not be marked "Confidential" or 'Proprietary' in their entirety.* ***All provisions of any contract resulting from this request for proposal will be public information."***

SECTION I. BACKGROUND, OVERVIEW, AND GOALS

A. Background

The City of Greeley is a home rule municipality with a council-manager form of government and is the county seat and the most populous municipality of Weld County, Colorado. Greeley is in northern Colorado and is situated 52 miles north-northeast of the Colorado State Capitol in Denver. According to the U.S. Census Bureau, the population of the city is roughly 111,000 which makes it the 12th-most populous city in Colorado. The City has an annual budget of ~$490M with a fiscal year that starts Jan 1st, and employees over 1100 employees. Greeley is a major city of the Front Range Urban Corridor and home to the University of Northern Colorado which is a public baccalaureate and graduate research university with approximately 12,000 students and six colleges as well as Aims Community College, which has served the community since 1967.

B. Overview

The City is rehabilitating its Highland Hills Pump Station. The rehabilitation includes replacement of the existing pump station's pump skid control panel.

C. Goals

Obtain competitive proposals from qualified suppliers of irrigation pump skid control panels.

SECTION II. STATEMENT OF WORK

A. Scope of Services

- Design a replacement control panel to operate the existing three (3) 75-hp pumps, one (1) 5-hp maintenance pump, and two (2) Amiad SAF 6000 filters at the Highland Hills Golf Course's irrigation pump station. Design and construction shall meet the attached pump control panel specification. Each main 75-hp pump (3 total) shall have individual/dedicated variable frequency drives (3 total) mounted within the new control panel.
- Construct replacement control panel based on approved shop drawings prepared by the control panel manufacturer.
- Ship control panel and required ancillary equipment to project site. Required ancillary equipment includes the following:
    - 4-Inch valve (ball or butterfly) and motorized operator for pressure relief and surge anticipation.
    - Wet well low-level switch
    - Wet well radar sensor for wet well measurement
    - 10-Inch magnetic flow meter with grounding rings
- Control installation oversight and commissioning of the system.
- Draft and final O&M Manual.

B. Minimum Mandatory Qualifications of Offeror

Qualified vendors shall be limited to SyncroFlo and Precision Pumping Systems and their associated representatives/sub-contractors.

SECTION III. ADMINISTRATIVE INFORMATION

A. Issuing Office

The City's contact name listed herein is to be the sole point of contact concerning this RFP. Offerors shall not directly contact other personnel regarding matters concerning this RFP or to arrange meetings related to such.

B. Official Means of Communication

All official communication from the City to offerors will be via the City of Greeley's Purchasing Department. The Purchasing Contact will email notices that will include, but not be limited to, proposal document, addenda, award announcement, etc. It is incumbent upon vendors to carefully and regularly monitor their emails for any such postings.

C. Inquiries

Prospective offerors may make written inquiries by e-mail before the written inquiry deadline concerning this RFP to obtain clarification of requirements. There will be opportunity to make inquiries during the pre-proposal conference, if any. No inquiries will be accepted after the deadline. Inquiries regarding this RFP (be sure to reference RFP number) should be referred to:

E-Mail: Purchasing@greeleygov.com
Subject Line: RFP #F24-01-011

Response to offerors' inquiries will be provided as addenda in a timely manner. Offerors cannot rely on any other statements that clarify or alter any specification or other term or condition of the RFP.

Should any interested offeror, sales representative, or manufacturer find any part of the listed specifications, terms and conditions to be discrepant, incomplete, or otherwise questionable in any respect, it shall be the responsibility of the concerned party to notify the Purchasing Contact of such matters immediately upon discovery.

D. Modification or Withdrawal of Proposals

Proposals may be modified or withdrawn by the offeror prior to the established due date and time.

E. Minor Informalities

Minor informalities are matters of form rather than substance evident from the response or insignificant mistakes that can be waived or corrected without prejudice to other vendors. The Purchasing Manager may waive such informalities or allow the vendor to correct them depending on which is in the best interest of the City.

F. Responsibility Determination

The City will make awards only to responsible vendors. The City reserves the right to assess offeror responsibility at any time in this RFP process and may not make a responsibility determination for every offeror.

G. Acceptance of RFP Terms

A proposal submitted in response to this RFP shall constitute a binding offer. The autographic signature of a person who is legally authorized to execute contractual obligations on behalf of the offeror shall indicate acknowledgment of this condition. A submission in response to this RFP acknowledges acceptance by the offeror of all terms and conditions as set forth herein.

H. Protested Solicitations and Awards

Right to protest. Any actual or prospective bidder, offeror or contractor who is aggrieved in connection with the solicitation or award of a contract must protest in writing to the City Manager as a prerequisite to seeking judicial relief. Protestors are urged to seek informal resolution of their complaints initially with the Purchasing Manager. A protest shall be submitted within ten (10) calendar days after such aggrieved person knows or should have known of the facts giving rise thereto. A protest with respect to an invitation for bids or request for proposals shall be submitted in writing prior to the opening of bids or the closing date of proposals, unless the aggrieved person

did not know and should not have known of the facts giving rise to such protests prior to bid opening or the closing date for proposals.

Stay of procurement during protests. In the event of a timely protest under Subsection (A) of this Section, the Purchasing Manager shall not proceed further with the solicitation or award of the contract until all administrative and judicial remedies have been exhausted or until the City Manager makes a written determination on the record that the award of a contract without delay is necessary to protect substantial interest of the City. (Ord. 75, 1984 §2 (part))

I. Confidential/Proprietary Information

All proposals will be confidential until a contract is awarded and fully executed. At that time, all proposals and documents pertaining to the proposals will be open for public inspection, except for the material that is proprietary or confidential. However, requests for confidentiality can be submitted to the Purchasing Contact provided that the submission is in accordance with the following procedures. This remains the *sole responsibility* of the offeror. The Purchasing Contact will make no attempt to cure any information that is found to be at a variance with this procedure. The offeror may not be given an opportunity to cure any variances after proposal opening. **Neither a proposal in its entirety, nor proposal price information will be considered confidential/proprietary.** Questions regarding the application of this procedure must be directed to the Purchasing Contact listed in this RFP.

J. Acceptance of Proposal Content

The contents of the proposal (including persons specified to implement the project) of the successful contractor shall become contractual obligations into the contract award. Failure of the successful offeror to perform in accordance with these obligations may result in cancellation of the award and such offeror may be removed from future solicitations.

K. RFP Cancellation

The City reserves the right to cancel this RFP at any time, without penalty.

L. Negotiation of Award

In the event only one (1) responsive proposal is received by the City, the City reserves the right to negotiate the award for the services with the offeror submitting the proposal in lieu of accepting the proposal as is.

M. RFP Response/Material Ownership

All material submitted regarding this RFP becomes the property of the City of Greeley, unless otherwise noted in the RFP.

N. Incurring Costs

The City is not liable for any cost incurred prior to issuance of a legally executed contract and/or a purchase order.

O. Utilization of Award by Other Agencies

The City of Greeley reserves the right to allow other State and local governmental agencies, political subdivisions, and/or school districts to utilize the resulting award under all terms and conditions specified and upon agreement by all parties. Usage by any other entity shall not have a negative impact on the City of Greeley in the current term or in any future terms.

P. Non-Discrimination

The offeror shall comply with all applicable state and federal laws, rules and regulations involving non-discrimination on the basis of race, color, religion, national origin, age or sex.

Q. News Releases

Neither the City, nor the offeror, shall make news releases pertaining to this RFP prior to execution of the contract without prior written approval of the other party. Written consent on the City's behalf is provided by the Public Information Office.

R. Certification of Independent Price Determination

1. By submission of this proposal each offeror certifies, and in the case of a joint proposal each party, thereto certifies as to its own organization, that in connection with this procurement:

    a) The prices in this proposal have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other offeror or with any competitor;

    b) Unless otherwise required by law, the prices which have been quoted in this proposal have not been knowingly disclosed by the offeror and will not knowingly be disclosed by the offeror prior to opening, directly or indirectly to any other offeror or to any competitor; and

    c) No attempt has been made or will be made by the offeror to induce any other person or firm to submit or not to submit a proposal for the purpose of restricting competition.

2. Each person signing the Request for Proposal form of this proposal certifies that:

    a) He/she is the person in the offeror's organization responsible within that organization for the decision as to the prices being offered herein and that he/she has not participated, and will not participate, in any action contrary to (1.a) through (1.c) above; or

    b) He/she is not the person in the offeror's organization responsible within that organization for the decision as to the prices being offered herein but that he/she has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (1.a) through (1.c)above, and as their agent does hereby so certify; and he/she has not participated, and will not participate, in any action contrary to (1.a) through (1.c) above.

3. A proposal will not be considered for award where (1.a), (1.c), or (2.) above has been deleted or modified. Where (1.b) above has been deleted or modified, the proposal will not be considered for award unless the offeror furnishes with the proposal a signed statement which sets forth in detail the circumstances of the disclosure and the City's Purchasing Manager, or designee, determines that such disclosure was not made for the purpose of restricting competition.

4. The Contract Documents may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same document. The Contract Documents, including all component parts set forth above, may be executed and delivered by electronic signature by any of the parties and all parties consent to the use of electronic signatures.

S. Taxes

The City of Greeley is exempt from all federal excise taxes and all Colorado State and local government sales and use taxes. Where applicable, contractor will be responsible for payment of use taxes.

T. Assignment and Delegation

Neither party to any resulting contract may assign or delegate any portion of the agreement without the prior written consent of the other party.

U. Availability of Funds

Financial obligations of the City of Greeley payable after the current fiscal year are contingent upon funds for that purpose being appropriated, budgeted and otherwise made available. In the event funds are not appropriated, any resulting contract will become null and void without penalty to the City.

V. Damages for Breach of Contract

In addition to any other legal or equitable remedy the City may be entitled to for a breach of this Contract, if the City terminates this Contract, in whole or in part, due to Contractor's breach of any provision of this Contract, Contractor shall be liable for actual and consequential damages to the City.

W. Other Statutes

1. The signatory hereto avers that he/she is familiar with Colorado Revised Statutes, 18-8-301, et seq. (Bribery and Corrupt Influence) and 18-8-401, et seq. (Abuse of Public Office) as amended, and that no violation such provisions is present.

2. The signatory hereto avers that to his/her knowledge, no City of Greeley employee has any personal or beneficial interest whatsoever in the service or property described herein. See CRS 24-18-201 and CRS 24-50-507.

SECTION IV. PROPOSAL SUBMISSION

Following are the response requirements for this RFP. All specific response items represent the minimum information to be submitted. Deletions or incomplete responses in terms of content or aberrations in form may, at the City's discretion, render the proposal non-responsive.

RFP responses must be emailed to purchasing@greeleygov.com. Only emails sent to purchasing@greeleygov.com will be considered as responsive to the request for proposals. DO NOT submit your RFP Response to multiple email addresses. Emails sent to other City emails will be considered as non-responsive and will not be reviewed.

Proposals shall be submitted in a single Microsoft Word or PDF file under 20MB.

The RFP number and Project name must be noted in the subject line, otherwise the proposal may be considered as non-responsive to the RFP.

Electronic submittals will be held, un-opened, until the time and date noted in the RFP documents or addenda.

To facilitate the evaluation, offeror shall submit and organize all responses in the same order as listed in Section V. Proposals that are determined to be at a variance with this requirement may not be accepted.

Late proposals will not be accepted. It is the responsibility of the offeror to ensure that the proposal is received at the City of Greeley's Purchasing Division on or before the proposal due date and time.

SECTION V. RESPONSE FORMAT

The following items are to be included in your proposal, in the order listed. Deviation from this may render your proposal non-responsive.

A. Cover Letter

Include a cover letter introducing your company, summarizing your qualifications, and detailing any exceptions to this RFP (please note that significant exceptions may make your proposal non-responsive). This letter should also provide principal contact information for this RFP. Include the following:

1. Provide the following information as listed: Company Name, Address, Phone Number, Email, and Names of Principals, and website (if applicable).

2. Identify the year in which your company was established and began providing services.

3. Describe any pending plans to sell or merge your company.

4. Provide a comprehensive listing of all the services you provide.

B. Use of Subcontractors/Partners

There may be areas for use of subcontractors or partners in this project. If you are utilizing this approach, your proposal must list the subcontractors/partners, their area(s) of expertise, and include all other applicable information herein requested for each subcontractor/partner. Please keep in mind that the City will contract solely with your company, therefore subcontractors/partners remain your sole responsibility.

C. Evaluation Criteria

Evaluation Criterion #1 - Value/Cost of Efforts

1. Provide a lump sum cost based on the ***Scope of Services***, above. Include any exceptions to the attached Control Panel specification.

Evaluation Criterion #2 - Schedule

1. Provide a specific timeline or schedule for the work. (Spell out mile marks if needed. Example: including development of shop submittals, review time, delivery date, etc.). Show milestones and completion dates on the schedule.

Evaluation Criterion #3 - Client Responsiveness

1. Describe your customer service philosophy.

2. Provide information from at least three accounts of similar scope. Include, at a minimum, the following information: 1) Company Name, 2) Contact Name, 3) Phone Number, 4) Email Address, 5) Brief description of project scope, value, and schedule including original delivery date or time and the actual date or time the equipment shipped. Explain reason(s) for any delays in shipping.

   The City reserves the right to contact the references provided in your proposal as well as other references without prior notification to you.

3. List the names of the subcontractors you expect to use and the services to be provided by the subcontractors.

4. Describe the methods and timeline of communication your firm will use with the City's project manager.

F. Proposal Acknowledgement

Include this form as provided in Exhibit 1.

SECTION VI. EVALUATION AND AWARD

A. Proposal Evaluation

All proposals submitted in response to this RFP will be evaluated by a committee in accordance with the criteria described below. Total scores will be tabulated, and the highest ranked vendor will enter into negotiations.

In preparing responses, offerors should describe in how they propose to meet the specifications as detailed in the previous sections. Specific factors will be applied to proposal information to assist the City in selecting the most qualified offeror for this contract. Following is the evaluation criteria that will be used. Criteria will be assigned a points value.

Evaluation Criteria:

1. Value/Cost of Efforts:…….....50 Points
2. Delivery Schedule:……30 Points
3. Client Responsiveness…..…….20 Points

A presentation and/or demonstration may be requested by short-listed offerors prior to award. However, a presentation/demonstration may not be required, and therefore, complete information should be submitted with your proposal.

B. Determination of Responsibility of the Offeror

The City of Greeley awards contracts to responsible vendors only. The City reserves the right to make its offeror responsibility determination at any time in this RFP process and may not make a responsibility determination for every offeror.

The City of Greeley's Municipal Code defines a "Responsible Offeror" as one who has "the capability in all respects to perform fully the contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment, and credit which will assure good faith performance." The City reserves the right to request information as it deems necessary to determine an offeror's responsibility. If the offeror fails to supply the requested information, the City shall base the determination of responsibility upon any available information or may find the offeror non-responsible if such failure is unreasonable.

COOPERATIVE PURCHASING STATEMENT

The City of Greeley encourages and participates in cooperative purchasing endeavors undertaken by or on behalf of other governmental jurisdictions. To the extent, other governmental jurisdictions are legally able to participate in cooperative purchasing endeavors; the City of Greeley supports such cooperative activities. Further, it is a specific requirement of this proposal or Request for Proposal that pricing offered herein to the City of Greeley may be offered by the vendor to any other governmental jurisdiction purchasing the same products. The vendor(s) must deal directly with any governmental agency concerning the placement of purchase orders, contractual disputes, invoicing, and payment. The City of Greeley shall not be liable for any costs or damages incurred by any other entity.

EXHIBIT 1
PROPOSAL ACKNOWLEDGEMENT

The offeror hereby acknowledges receipt of addenda numbers _____ through _____.

Falsifying this information is cause to deem your proposal nonresponsive and therefore ineligible for consideration. In addition, falsification of this information is cause to cancel a contract awarded based on one or both of the above preferences.

By signing below, you agree to all terms & conditions in this RFP.

_____
Original Signature by Authorized Officer/Agent

Type or printed name of person signing	Company Name
Title	Phone Number
Vendor Mailing Address	Website Address
City, State, Zip	Proposal Valid Until (at least for 90 days)
E-Mail Address	

Project Manager:

Name (Printed)	Phone Number
Vendor Mailing Address	Email Address
City, State, Zip	

EXHIBIT 2
SAMPLE CONTRACT

(Incorporated by Reference, click link below to view)

Exhibit 2 Sample Contract.pdf

EXHIBIT 3
SAMPLE CERTIFICATE OF INSURANCE

Client#: 12170 GRECI

ACORD. **CERTIFICATE OF LIABILITY INSURANCE**

DATE (MM/DD/YYYY): 05/14/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
ABC Insurance Company P. O. Box 1234 Anywhere, USA	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	PRODUCER CUSTOMER ID #:	

INSURED	INSURER(S) AFFORDING COVERAGE	NAIC #
Sample Certificate	INSURER A : Financial Rating of A	
	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY						EACH OCCURRENCE	$1,000,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$100,000
	CLAIMS-MADE X OCCUR						MED EXP (Any one person)	$5,000
							PERSONAL & ADV INJURY	$1,000,000
							GENERAL AGGREGATE	$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER: POLICY PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$2,000,000
								$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS						BODILY INJURY (Per accident)	$
	SCHEDULED AUTOS						PROPERTY DAMAGE (Per accident)	$
	X HIRED AUTOS							$
	X NON-OWNED AUTOS							$
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$
	DEDUCTIBLE							$
	RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N						X WC STATU-TORY LIMITS OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)		N/A				E.L. EACH ACCIDENT	$100,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$100,000
							E.L. DISEASE - POLICY LIMIT	$500,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

City of Greeley is named as Additional Insured on General Liability. Waiver of subrogation is included on Work Compensation. This insurance is primary and noncontributory to insurance policies held by the City.

CERTIFICATE HOLDER

City of Greeley
1000 10th St
Greeley, CO 80631-3808

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2009/09) 1 of 1 The ACORD name and logo are registered marks of ACORD
#S786373/M786364 DSM

EXHIBIT 4
DEBARMENT/SUSPENSION CERTIFICATION STATEMENT

The proposer certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this transaction by any Federal, State, County, Municipal or any other department or agency thereof. The proposer certifies that it will provide immediate written notice to the City if at any time the proposer learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstance.

DUNS # (Optional) _____

Name of Organization_____

Address_____

Authorized Signature_____

Title_____

Date_____

EXHIBIT 5

HIGHLAND HILLS PUMP STATION
CONTROL PANEL SPECIFICATION

PART 1 – GENERAL

1.1 SCOPE

A. Design and fabrication of a pump control panel to operate the existing pumps and self-cleaning screens for the Highland Hills Golf Course. The control panel shall be designed to operate three (3) existing 75 HP motors, one (1) 5 HP pressure maintenance pump, two (2) Amiad SAF-6000 filters. Additionally, an electrically operated pressure relief/surge relief valve, magnetic meter are to be furnished. Each 75 HP motor shall have its own dedicated VFD.

1.2 DEFINITIONS

A.	ETL	ETL Testing Laboratories, Inc.
B.	Hz	Hertz
C.	IBC	International Building Code
D.	lbs	Pounds
E.	LCD	Liquid Crystal Display
F.	PLC	Programmable Logic Controller
G.	NEC	National Electric Code
H.	NEMA	National Electrical Manufacturers Association
I.	NFPA	National Fire Protection Association
J.	PM	Pressure Maintenance Pump
K.	PTFE	Teflon
L.	RPM	Revolutions Per Minute
M.	SCADA	Supervisory Control and Data Acquisition
N.	UL	Underwriters Laboratories Inc.
O.	VFD	Variable Frequency Drive
P.	HMI	Human Machine Interface

1.3 PROVISIONS FOR LOSS PREVENTION

A. The pump station control panel shall be UL listed and labeled. UL listing and labeling of individual electrical components only shall not be acceptable.

B. Provide USB flash drive(s) to the I&C department with a copy of the following:

1. Electrical and controls drawings.

2. A copy of the PLC program, HMI program, spreadsheet, and program file of the VFD parameters.

3. A bill of material spreadsheet with a list of all electrical and controls parts.

1.4 WARRANTY

A. Pumping System:

1. A two (2) year warranty shall be provided commencing when the control panel is delivered to the project site or city facility.

1.5 RULES AND REGULATIONS

A. Work and materials shall be in accordance with the latest edition of the International Building Code, the International Electric Code, the International Plumbing Code, and applicable laws and regulations of the governing authorities.

B. When the contract documents call for materials or construction of a better quality or larger size than required by the above-mentioned rules and regulations, provide the quality and size required by the contract documents.

C. If quantities are provided either in specifications or drawings, these quantities are provided for information only. It is the Contractor's responsibility to determine the actual quantities of all material, equipment, and supplies required by the project and to complete an independent estimate of quantities and wastage.

1.6 CONTROL FEATURES

A. A pressure start time delay, a stop time delay, and a minimum run timer with automatic and manual time out; shall be provided for each pump. Flow ON and OFF sequencing set points and a 100 percent speed start time delay shall be provided for each main pump.

B. "Double successive" automatic alternation shall be provided for the main pumps to prevent short cycling while limiting equal wear. Time delayed automatic "sequence shifting" shall be provided to ensure that all operating pumps will sequence properly when one or more of them have been disabled due to a motor overload or a manual shutdown.

C. An auto-pressurizing mode with adjustable settings that gradually restores system pressure with the VFD main pump shall be provided to protect the irrigation piping at station startup and after extended station shutdowns.

D. An energy saving mode with adjustable settings shall be provided to reduce the system pressure at low flow rates when friction losses in the system are lower.

1.7 OPERATION

A. During non-irrigation times, the pressure maintenance (PM) pump will cycle ON and OFF as required to maintain irrigation system pressure. The cycling pressures shall be user selected and set substantially below normal set point pressure, if desired.

B. If the PM pump cannot maintain the desired pressure, then the programmable logic controller (PLC) will start the first main pump and will gradually ramp the pressure up to desired irrigation pressure to meet small demands.

C. If the first main pump cannot maintain the desired pressure, the PLC will start the second main pump and will gradually ramp the pressure up to the desired irrigation pressure, and so on and so forth until all pumps are operating to maintain the desired pressure.

D. Pump speeds will be modulated to hold a constant discharge pressure regardless of flow. As the flow rate increases and the main VFD pump can no longer maintain pressure while at maximum speed, the next sequential pump will be started and the VFD drive pump will accordingly reduce its speed and modulate.

E. An algorithm shall be included for accurately reducing the VFD pump speed as the next sequential pump is started so that no pressure surges are generated during the transition (even with across the line starting). Algorithm shall apply to all transitions between pumping states.

F. As the flow continues to increase, pumps will sequentially be started until all pumps are operating. As the flow begins to decrease, pumps will be sequentially turned off until only a single VFD driven pump is operating. When a no flow condition occurs, the last pump in operation shall be turned off.

PART 2 – PRODUCTS

2.1 GENERAL

A. Materials used in the system shall be new and without flaws or defects of any type and shall be the best of their class and kind.

B. A trained representative or technician from the pump control panel manufacturer shall inspect the installation of the pump control panel before startup. The pump manufacturer's representative shall also provide a minimum two (2) days for the startup and training to City personnel in the operation, maintenance, and programming of the new control system.

2.2 PUMP SKID ELECTRICAL AND CONTROLS

A. General

1. All electrical control panels with controls and wiring shall be built in accordance with NEC, UL, and ETL standards. The electrical components and enclosure shall be labeled as a complete UL listed assembly with manufacturer's UL label

applied to the door.

2. All equipment and wiring shall be mounted within the enclosure and labeled for proper identification.

3. The power supply to the pump station shall be three (3) phase, 480 volt.

4. All wiring from control panels to motors shall be in liquid-tight conduit with MTW or THWN, stranded copper conductors rated not less than 600 volts AC. All wiring shall follow NEC code and local code. All wiring from the control panel to the motors shall be sized according to NEC requirements based on motor full load current. A grounding cable shall be included in the liquid-tight conduit. There shall be no splices between the motor starters and the motor connection boxes, except for the submersible pump motor.

5. Wiring to flow sensors and pressure transducer shall be multi-conductor shielded cable suitable for Class 2 low voltage controls. Must use Black and red wiring in cable for all class 2 low voltage controls.

6. All control wiring carrying more than 24 volts, shall be 16-gauge minimum with wire numbers at all termination points. The wiring to all devices outside the control panel shall be contained in metal lined, liquid-tight conduit.

7. All secondary control components shall be powered with 120 VAC or 24 VDC. All control relays shall be plug in type for easy replacement. No 120 VAC powered components shall be allowed on the door of the control panel, just 24 VDC components are permitted on the door.

8. Primary and secondary circuit breakers shall be provided for the control power transformer. A circuit breaker shall also be provided for the motor space heater circuits.

9. Provide full alarms and safety features needed to protect equipment and piping.

10. The following shall be permanently affixed to the inside of the control panel enclosure:

    a. A full-color, diagrammatic wiring schematic.

    b. Pump and motor nameplate information.

    c. Factory calibrated control setpoints.

B. Enclosures

1. The pumping station electrical controls shall be mounted in a self-contained UL Type 4 or 12 (NEMA-4 or 12) enclosure.

    a. The enclosure shall be mounted on the pump skid or placed on a concrete maintenance pad.

2. Door gasket seals shall be neoprene sponge, sufficient to protect interior

components from weather and dust. The electrical panel doors shall be constructed from 12-gauge steel with integral locking screws and latches.

3. All internal components of the enclosures shall be mounted on removable back panels.

4. All internal wiring within, and interconnecting between, the panels shall be complete and no field wiring within the panels shall be permitted. Wiring troughs and cable raceways shall be self-contained within the enclosures and no external cable trays or wiring troughs are permitted.

5. No pressure gauges, pressure switches, water activated devices, or water lines of any sort shall be installed in any electrical control panel.

6. All adjustments and maintenance shall be capable from the front of the control enclosure. A complete wiring circuit and legend with all terminals, components, and wiring identification shall be provided. Main disconnect shall be interlocked with door.

7. All electrical starter and control panels in the pump system shall be assembled from components that are UL listed.

8. Pump Control Panel Temperature Regulation

    a. The PLC shall monitor the internal temperature of the control panel using an internal temperature probe. The controller shall automatically fault or send an alarm when the internal temperature reaches user adjustable high/low temperature settings.

    b. The cooling system shall interface with the pump station controller for alarms and notifications.

    c. The cooling system shall be sized for local maximum ambient conditions, plus component cooling requirements. Cooling should be designed such that the internal panel temperature does not exceed 104F.

    d. Control panel temperature regulation shall be via a self-contained, closed loop AC cooling unit. The cooling unit shall utilize compressor-based refrigeration technology with two independent air paths – one which circulates enclosure-side air across the evaporator to displace unwanted heat within the enclosure, and one which circulates ambient air across the condenser to transfer waste heat to the ambient environment.

    e. Cooling Unit shall be NEMA 12, 3R, 4 listed and constructed with galvanized sheet-metal coated in RAL 7035 light-gray, semi-textured powder-coat paint.

    f. AC Units shall include a mechanical thermostat, digital temperature display, R134A earth-friendly refrigerant, and a cleanable & reusable aluminum mesh coil-protection filter.

g. The cooling unit shall be Hoffman Spectracool series or approved equal.

9. Adjustable, ambient temperature compensated, bimetallic, inverse time, UL class 10 thermal overload relays or motor circuit protectors shall be provided for each motor.

10. Provide complete instrumentation and controls to automatically start, stop, and modulate pump speeds for efficient and reliable pump flow rates, at a constant discharge pressure.

C. Power Monitor

1. The main power supply in the pump station shall be equipped with a 3-phase power monitor. It shall detect low voltage, phase loss, reversal, shift, or improper sequence. A voltage adjustment, status light, and a plug-in base shall be provided. The power monitor shall provide voltage, current, total energy consumed and wattage.

D. Surge Protection Device

~~1.~~ The main power supply in the pump station shall be equipped with a 3 phase, 480 volt rated, UL 1449 surge protected device (SPD). The SPD shall have a current rating of not less than 10,000 amps, an SCCR rating 200,000 amps, and shall include a green OK status light.

E. Variable Frequency Drive

1. Each pump shall have a Variable Frequency drive controlling it.

2. Must have Ethernet/IP communication capabilities with Allen Bradley PLCs and manufacturer supported Add On Instruction for AB PLC programming integration. Preference given to drives that interface to Allen Bradley PLC with AB supported Add On Profile and Automatic Device Configuration. Provide sample code and AOI for non-AB drives.

3. Provide suitable drive input impedance to prevent damage due to power system transients.

a. For drives without built-in inductors – add line impedance whenever the transformer kVA is more than 10 times larger than the drive kVA, or the percent source impedance relative to each drive is less than 0.5%. • For drives with built-in inductors – add line impedance whenever the transformer kVA is more than 20 times larger than the drive kVA, or the percent source impedance relative to each drive is less than 0.25%. Or follow tables in publication Drives-IN001 for Allen Bradley VFDs.

b. Alternate requirements for the inclusion of added input impedance will be evaluated if the requirements are product specific and within manufacturer published documents. The inclusion or omission of devices shall be documented with a reference to the source publication.

4. Provide Harmonic reduction devices as needed to prevent interference and impaired function of other equipment connected to the source transformer. Requirement is based upon IEEE 519. Distortion of voltage should be less than 5%. Suitable harmonic mitigation can be decided based on the size of the main power transformer. Contractor to verify if harmonic mitigation is needed and provide required harmonic mitigation.

    a. Preferred solution is the use of Active Harmonic Filter (AHF) sized to expected loads. If requirement 2 (above) does not indicate need for reactor and the AHF can be sized without input reactors, it is allowed to provide the drives without input reactor. Adding a 3% input reactor to all drives can reduce the size of AHF requirement and is suggested best practice.

    b. Passive Harmonic Filters (PHF), provided with each drive are acceptable means of harmonic mitigation. When provided, they shall be provided with means to disconnect internal capacitance when the VFD is running at low power level or not running.

    c. Active Front End (AFE) VFDs are acceptable when they are provided with isolating impedance and background distortion is lower than 3%. AFE drives shall have settings as needed for multiple input types such as utility power and backup generator. It is not recommended to mix and match different vendors of AFE drives or put drives on power systems that have unfiltered 6-pulse drives.

    d. Document using a harmonic calculation tool that the harmonics levels will meet requirements.

        i. Results/calculation output provided by a manufacturer provided tool such as those from drive and filter manufacturers is acceptable. (Does not have to be provided by a professional engineering tool.)

5. When using an AHF, contact the manufacturer for their recommendations on active harmonic filters sizing and suitability.

    a. Preferred manufacturer is Mesta/Hammond

    b. Include documentation of sizing provided by manufacturer.

6. Provide long lead length protection as needed to prevent motor failures. Follow drive manufacturer instructions on lead length recommendations. Mitigation/protection shall be manufacturer specific and shall follow published guidelines. Application must consider if the motor meets inverter rated duty and use minimum voltage rating of the inverter motor standard (1488V). If the motor does not meet inverter duty rated standards, apply suitable devices to protect the motor.

    a. Allen Bradley 7-class drives 3-300 HP do not require any output devices when powering inverter duty rated motors at distance up to 300 feet. For

distance from 300 to 600 feet it is preferred to use AB motor terminator (connects at motor) so that drive enclosure can be kept small. It is acceptable to use an output reactor for distances up to 600 ft. For distances above 600 feet it is allowed to use a dV/dT or Sine filter. Note that other AB drives and other manufacturers do exactly follow the previous recommendations. See publication drives-in001.

b. Use of reactors/terminators/filters shall follow the published guidelines of their respective manufacturer. The inclusion or omission of devices shall be documented with a reference to the source publication.

7. VFD cable shall be installed on the output of the VFD to the Motor to assure suitable insulation rating, protection against noise interference and to help mitigate bearing failures and other common mode related problems. Grounding practice and wire type and composition must follow manufacturer guidelines.

a. Document the source publication(s) used as reference.

b. For Allen Bradly drives the best practice document is Publication Drives-IN001. It also covers lead length and input impedance. The publication 750-IN001 also covers some drive specific guidelines for installation of 750 class drives.

8. Complete schematic, wiring and interconnection diagrams showing connections to both internal and external devices:

a. Include terminal number and wire numbers.

9. Complete single-line and 3-line diagrams including, but not limited to, circuit breakers, motor circuit protectors, contactors, instrument transformers, meters, relays, timers, control devices, and other equipment comprising the complete system:

a. Clearly indicate device electrical ratings on the drawings.

10. The VFD manufacturer shall be responsible for start-up of the VFDs in the presence of the equipment suppliers, Contractor, Engineer, and Owner. The contractor to provide parameter program from VFD.

11. Approved manufacturers are:

a. Allen Bradley

b. Eaton

c. Square D

d. No equivalent allowed.

F. Pressure Transducer

1. Standardize with GE UNIK5000UK 0-150 PSI Part # PTX5032-TA-A2-CA-

HO-PF.

2. No equivalent allowed.

G. Wet Well Monitoring

1. Wet wells shall be equipped with an E&H radar sonic liquid level indicator probe and level transmitter.

2. Low level cut off switch (float) shall be provided to send a discrete signal to the PLC to shut down the pumps on low wet well level.

H. Control Panel Intrusion Switch

1. Square D - XCKJ167 - Or Equivalent

I. Building Temperature Sensor

1. Omega EWSA-PT1000

J. Networking

1. Ethernet Switch

a. Moxa EDS-518

2. Radio

a. Provide 120 volt din rail mounted receptacle

i. Phoenix Contact 0804160

ii. Or Approved equivalent

K. Power Monitoring

1. See power monitoring requirements.

a. Motor Save Model 250

b. Or Approved equivalent

L. Flood Alarm

1. Gems LS-270

M. Vibration Sensors and transmitter

1. 607A11 Accelerometer

2. 682c03 ICP 4-20ma Transmitter

3. Provide three (3) vibration sensors and transmitter for each pump/motor.

N. Programmable Logic Controller

1. Provide a programmable logic controller (PLC) to control all functions of the station. Relays may be used for interface purposes only. The PLC shall include non-volatile EEPROM memory (no battery needed) that prevents loss of program or settings during power failures; The PLC shall be rated for locations where electro-magnetic noise, voltage spikes, high temperature, humidity, and mechanical shock exist. The PLC must have 2 spare analog inputs & outputs, and digital input & outputs.

2. All logic for system control, timing, and control of VFD speed shall be handled by the PLC. No external relay logic or timers are permitted. A separate set point controller is not acceptable.

3. The City shall be provided with an unlocked and PLC program. PLC program shall have detailed description on each tag and rung comments.

4. Approved PLC manufacturers are:

   a. Allen Bradley Studio 5000 Platform or Micro850 series.

   b. No equivalent allowed.

O. Human Machine Interface

1. A UL Type 4 rated, 24 VDC powered color touch screen operator interface shall be provided. The interface shall be a high resolution, backlit color, LCD touch screen. Should the interface fail, a signal shall be sent to the PLC, and the station will continue to run normally. The interface shall also provide protected access to changing all operational settings as well as a re-load factory settings function.

2. HMI program shall be unlocked and copy of program given to City of Greeley I&C department after commissioning of pump station.

3. Approved HMI manufacturers are:

   a. Redlion G15C1100

   b. No approved equivalent.

4. Human Machine Interface screen shall provide access to operator controls, alarms, and system data such as:

   a. Operator set points.

   b. Pump HAND-OFF-AUTO selector switches.

c. An inverter TEST-OFF-AUTO selector switches.

d. An inverter SETUP MODE button.

e. A DISABLE-ENABLE switch to prevent the low system pressure and high flow rate alarms from shutting down the station.

f. An ALARM RESET push button.

g. An ALARM LIGHT TEST button.

h. Flood Alarm. Provide flood alarm sensor to detect flooding in the building.

i. Irregular Power.

j. Runtime for each pump. – Reset yearly.

k. Runtime for each filter. – Reset yearly.

l. Count of filter back flushes.

m. Total pump starts.

n. Flow Rate.

o. Total Gallons Pumped – YTD.

p. Total Gallons Pumped – Previous day total.

q. System Efficiency (Watts/Gallon) including trending.

r. System Pressure.

s. Filter inlet and outlet pressure.

t. VFD/Pump speed for all pumps.

u. VFD/Pump feedback speed for all pumps.

v. VFD/Pump current draw for all pumps.

w. VFD/Pump Voltage for all pumps.

x. On/Off control of pump station.

y. Vibration sensors on motors.

z. Provide VFD speed reference and speed feedback.

aa. ON/OFF/faulted/manual/auto status of VFDs/soft starters and motor starters.

bb. Ability to change pumps into manual or auto.

cc. Wet Well level.

dd. Alarms page. Show existing and acknowledged alarms.

ee. Valve positions.

ff. Password protected.

i. Operator level

ii. Admin level

P. Alarms and Shutdown

1. Pumps shall be shutdown with the appropriate alarm whether they are operating in HAND or AUTO mode.

2. Alarms:

a. A power failure alarm with trip delay, manual and delayed automatic reset.

b. An irregular power alarm with trip delay, manual and delayed automatic reset.

c. A leak detection alarm with manual reset.

d. low pressure alarm with trip time delay and manual reset.

e. A high-pressure alarm with trip time delay and manual reset.

f. A high flow rate alarm with trip delay and manual reset.

g. A low-level alarm with trip delay and manual reset.

h. A high panel temperature alarm trip delay.

i. A manual and automatic reset.

j. An individual motor overload alarms with manual reset.

k. A contactor fault alarms with manual reset.

l. A pressure transducer failure alarm with manual reset.

m. A level transducer failure alarm with manual reset.

n. A flow meter failure alarm with manual reset.

o. An inverter (VFD) fault alarm with a two-attempt automatic reset,

p. A third trip lockout function with timed rollover, and manual reset.

q. A PLC failure alarm with automatic reset, and display failure alarm with automatic reset,

r. A low battery alarm with automatic reset, an input failure alarm with automatic reset.

3. The following specific alarm conditions along with procedures for correction will be displayed in English on the HMI:

a. Low discharge pressure (with override switch)

b. High discharge pressure

c. Low wet well level (Attempts restart)

d. Phase loss (Attempts restart)

e. Low voltage (Attempts restart)

f. Phase unbalance (Attempts restart)

g. Individual motor overload/phase loss (indicates which individual motor was shut down)

h. VFD fault (shutdown VFD pump only and attempts restart)

4. The HMI shall have user help screens and all faults and warning shall have trouble shooting suggestions and possible solutions.

Q. Pressure Relief Valves

1. Furnish a motorized actuated butterfly valve or plug valve to be installed by the contractor in the bypass piping that discharges to the wet well to provide pressure relief and surge anticipation suppression.

a. The actuator shall be powered by an uninterruptable power supply (UPS) to maintain power during utility power disruption. In the event of utility power disruption, the actuator shall be programmed to open in anticipation of a pressure surge.

b. The actuator shall also be programmed to open to bypass sufficient water to avoid operating pumps at or near shut off head conditions. The bypass shall be based on at least 50% of the total station capacity.

c. Manufacturer: Pratt Model BF Series Wafer/Lug Butterfly Valve with Pratt EQ Series Electric Actuator or approved equal.

R. Automatic Self-Cleaning Filter

1. Include controls for the existing Amiad SAF 6000 Automatic Self-Cleaning

Filters as part of the pump control panel.

2.3 SCADA

A. General

1. Coordinate SCADA requirements with the City of Greeley I&C Department. The City shall be provided with an unlocked PLC program. The programming of SCADA system shall be done by an approved and qualified controls contractor.

2. Provide one 15-amp circuit in the control panel for the radio power supply.

3. Contractor to provide PLC programming support to integrate SCADA controls into the pump station control panel. IP address will need to be requested for VFDs, PLC and HMI. COG I&C department will set up configuration on Moxa ethernet switch.

4. SCADA Communication

5. Controls, Alarms & Data.

   a. Flood Alarm. Provide flood alarm sensor to detect flooding in the building.

   b. Irregular Power.

   c. Runtime for each pump. – Reset yearly.

   d. Runtime for each filter. – Reset yearly.

   e. Count of filter back flushes.

   f. Station Flow Rate GPM.

   g. Total Gallons Pumped – YTD.

   h. Total Gallons Pumped – Previous day total.

   i. System Pressure.

   j. VFD/Pump speed for all pumps.

   k. VFD/Pump feedback speed for all pumps.

   l. VFD status - ON/Off status bits for all pumps.

   m. On/Off control of pump station.

   n. Wet Well level.

   o. Vibration sensors on motors.

p. VFD faulted. – On all VFDs.

q. Building temp.

r. Remotely Start and Stop Pump Station.

s. VFD amperage for all VFDs and soft-starts.

t. Low discharge pressure alarm.

u. High discharge pressure alarm.

v. Low and high wet well level alarms.

w. Phase loss alarm.

x. Low voltage alarm.

y. Phase unbalance alarm.

z. Individual motor overload/phase loss alarm.

aa. VFD Voltage – on all VFDs.

bb. VFD/Pumps Efficiency (Watts/Gallon).

cc. Wet well level in feet

dd. Pump runtimes in hours

ee. Building Temperature in degrees F°

ff. Total number of pump starts and number of pump start for yesterday; twenty-four (24) hour period.

gg. Total filter runtime and total filter runtime for yesterday; twenty-four (24) hour period.

hh. Pump Station Control Panel Main Power Voltage

ii. Pump Station Control Panel Main Power Current

jj. Instantaneous Efficiency – (Voltage * Current) / Flow Rates – Sampled (15) seconds and stored 24 hours.

kk. Average Efficiency – (Average Voltage * Average Current) Average Flow Rates – Averaged for 15 min intervals stored 30 Days.

6. Common alarms:

a. Pump run status

b. Low level well

c. High level well

d. Filter fault alarm

e. Irregular power

f. High panel temperature alarm

g. Station in remote shutdown

h. Filter run status

i. Reset station alarms

j. Station shutdown

k. Station restart

l. Flow totals should be messaged via Ethernet.

m. HMI shall indicate if the pump station is in shutdown mode due to SCADA input.

m. Vibration alarm for each pump.

3. SCADA historical data.

a. Flow data

b. Pressure sensor data

c. Vibration sensor data

d. Start and Stop Pump Station.

e. VFD or soft-starts feedback speed.

f. VFD Voltage

g. VFD/Pump Current

h. VFD/Pump Efficiencies (Watts/Gallon)

i. Wet Well level.

j. System Pressure

4. Status Colors

a. Motor Status

i. Green - Running in Auto

ii. Red - Off

iii. Yellow – Running in Hand or Manual

iv. Red flashing – Faulted

b. Valve position

i. Green – Open and Auto

ii. Yellow – Open and Manual

iii. Red – Closed in Auto

iv. Red Flashing – Faulted

B. Acceptable Pump Control Panel Manufacturers are:

1. SyncroFlo, 6700 Best Friend Road, Norcross, GA 30071, www.syncroflo.com

a. Local Representative: Cascade Industries, 970-402-3252, email: cascadeindustrieslimited@gmail.com

2. Precision Pumping Systems, 6515 Business Way, Boise, ID 83716, www.gopps.com

a. Local Representative: Aquacita LLC, 720-233-9698

3. Quantum Pump & Controls, LLC, 10750 Irma Drive, Unit #10, Northglenn, CO 80233, 970-712-1601, www.quantumpump.net

2.4 FLOW SENSOR

A. Provide a meter readout on OID for monitoring the flow rate, totalizing gallons used, and for shifting the flow sequencing set point range. Total gallons for previous day.

B. Settings and the gallons total shall both be held in non-volatile memory (no battery required) and protected by a user defined password with a hidden override key.

C. The flow sensor shall have the following requirements:

1. Liner Material – PTFE

2. Ethernet. Must be able to get flow and flow totals off of the flow meter.

3. Flow Measurement – as low as 6.0 micromhos/cm

4. Empty pipe detection

5. Bi-directional flow sensing/totalization

6. Automatic zero point stability

7. 1% repeatability or better

D. Acceptable flow sensor manufacturers are:

1. E&H Magnetic flow meter

a. The flow meter must have Ethernet communication and be the zero dn series.

2. No equivalent allowed.

PART 3 – EXECUTION

3.1 CONTROL PANEL

A. Shipping, off-loading, mounting details, and the technical start up shall be furnished by the pump control panel manufacturer. City of Greeley I&C Department representative shall be onsite for startup.

B. Electrical connection shall consist of a single conduit from three (3) phase, 480 volt.

C. Pump electrical connections shall use an Insulated Multitap Connector.

1. Manufacturers.

a. Polaris insulated Multitap connector.

b. Or approved equivalent.

D. Technical startup procedures by the pump station manufacturer shall include the following:

1. Station start up and pressurization

2. Pressure and flow

3. Programming adjustments

4. Monitoring of irrigation cycle

E. A manufacturer's representative/technician will instruct City personnel as to the operation, adjustment and maintenance of the pump station.

F. Provide the detailed start-up procedures from manufacturer to the City, a minimum two (2) weeks prior to start-up. City of Greeley I&C Department representative shall be onsite for start and review start-up procedures.

3.2 TESTING

A. Pump Controls:

1. Test, verify, and demonstrate to the City the proper operation of all control and safety shut off devices.

2. Verify flow and discharge pressure from the pump system and demonstrate to the City system performance based on the specified values.

3. Coordinate availability of water with the City.

3.3 SUBMITTALS

A. The Contractor shall deliver four (4) copies of all submittals to the City a minimum two (2) weeks prior to ordering materials.

B. Pump Equipment

1. Materials List: Include piping, valves, fittings, pumps and motors, control system components, and electrical equipment. Quantities of materials need not be included.

2. Manufacturer's Data: Submit manufacturers' catalog cut sheets, pump performance curves, specifications, start-up manuals, and operating instructions for equipment shown on the materials list. Submit complete instructions for installation, operation, and recommended maintenance of the pump system.

3. Shop Drawings: Submit shop drawings of the proposed pump system. Show products required for proper installation, their relative locations, and critical dimensions. Submit technical data sheets, electrical/wiring schematics showing all devices, connections and wire numbers, sequence of operation, and UL listing authorization form.

4. Operation and Maintenance (O&M) Manual: Include operating procedures, adjustments, and preventative maintenance procedures. Include a guide for troubleshooting operational problems with the pump system and complete documentation for programming (i.e. recommended settings, adjustments). Deliver the O&M Manual to the City prior to pump system start-up.

END OF SECTION