INVITATION FOR BID # 101316GC

CONVERSION OF EXISTING FIXED SPEED PUMPING SYSTEM TO VARIABLE FREQUENCY DRIVE (VFD) CONTROL PUMPING SYSTEM WITH PIPING MODIFICATIONS FOR LASSING POINTE GOLF COURSE

ACCEPTANCE DATE: October 13, 2016 at 2:00 pm (Local Time)

ACCEPTANCE PLACE
Boone County Fiscal Court
2950 Washington Street
PO Box 960
Human Resources Office
2nd Floor Administration Building
Burlington, Kentucky 41005

Requests for information related to this Invitation should be directed to:

Justin Pack
E-mail address: jpack@boonecountyky.org

Issue Date: September 29, 2016

ANYONE IN NEED OF ANY REASONABLE ACCOMMODATION FOR ANY TYPE OF DISABILITY IN ORDER TO PARTICIPATE IN THIS PROCUREMENT, SHOULD CONTACT THE HUMAN RESOURCES OFFICE AS SOON AS POSSIBLE
The Boone County Fiscal Court will receive sealed bids in the Office of the Human Resources, Second Floor, Administration Building, 2950 Washington Street, Burlington, Kentucky 41005, until 2:00 p.m., local time, October 13, 2016, for conversion of existing fixed speed pumping system to VFD control pumping system with piping modifications for Lassing Pointe Golf Course. Bids will be opened and publicly read aloud at that time in the fiscal courtroom, First Floor of the Boone County Administration Building. Late, electronically submitted or facsimile bids will not be accepted.

BID ENVELOPE MUST BE LABELED: “Sealed Bid: Conversion Of Existing Fixed Speed Pumping System To VFD Control Pumping System With Piping Modifications For Lassing Pointe Golf Course.” Envelopes must also be labeled with the name and address of the vendor submitting the bid.

Specifications may be obtained from the Purchasing Agent in the Office of Human Resources, Administration Building, Second Floor, 2950 Washington St, Burlington, KY 41005. Please call Mr. Justin Pack at 859-384-1465 to make arrangements for site visits or email him at jpack@boonecountyky.org.

Boone County reserves the right to reject any and all Bids, to waive any informalities and to negotiate for the modifications of any Bid or to accept that Bid which is deemed the most desirable and advantageous from the standpoint of customer value and service and concept of operations, even though such Bid may not, on its face, appear to be the lowest and best price. No Bid may be withdrawn for a period of thirty (30) days after scheduled time of receipt of Bids.

INTENT

Whenever a specific “Brand Name” is used in these specifications, it is used for descriptive purposes only. Whenever or where the Bidder takes exceptions to the specifications, such exceptions shall be listed on the “Exception Sheet,” of these specifications, and signed by the Bidder. The Bidder must use the attached “Bid Form as No Other Form,” will be accepted. The Bidder shall also attach to the Bid Form, descriptive information and literature showing the items on which the Bid was based.

KENTUCKY PREFERENCE LAW

The scoring of bids/proposals is subject to Reciprocal preference for Kentucky resident bidders and Preferences for a Qualified Bidder or the Department of Corrections, Division of Prison Industries. *Vendors not claiming resident bidder or qualified bidder status need not submit the corresponding affidavit.
SPECIFICATIONS

1. General
To provide a single source responsible for the retrofit, installation, warranty, service and operation of a fully automatic control retrofit for the pumping system for non-potable water. The pumping system shall automatically maintain a constant discharge pressure regardless of varying flow demands within the station rating. Pumping system shall conform to the following specifications in all respects. This specification covers minimum requirements; however, it should not be construed as all inclusive. It is the successful vendor's responsibility to include all necessary appurtenances to provide for a complete, automatic, smooth operating, and reliable pumping system. The manufacturer shall supply a complete set of electrical power schematics, and control schematics in the operations & service manual.

2. Existing Pump Station Performance and Specifications
   A. 1250 GPM @ 125 PSI
   B. (1) 25 HP motor and (2) 50 HP motors
   C. 460 volt; 3 phase; 60 cycle

3. Scope of Work
   A. Demolition consists of removing from the property; the Fixed Speed Control panel, 300 Gallon Tank and Cla-Valve.
   B. Supply and install new VFD control panel, new 14 inch Pump Manifold and Steel Spool Piece to fill the space from removing the Cla-Valve.
   C. Supply and install a new 3” 50-01 Cla-Valve down-stream relief valve on the pump manifold and pipe discharge back to the existing wet well

4. Sequence of Operation – Programmable Logic Controllers (PLC)
   A. General items applying to each alarm circuit shall include a display of condition on the system display, the illumination of a red indicating light, and manual reset of a persistent condition.
   B. Alarm sequence
      1. Low Discharge Pressure alarm circuit shall stop pumping system in the event discharge pressure drops below normal level. Operator interface device, mounted in enclosure door, shall signal low discharge pressure. Pumping system shall not operate until safety has been manually reset.
2. High Discharge Pressure alarm circuit shall shut down pumping system if discharge pressure reaches a predetermined high level. Operator interface device, mounted in enclosure door, shall signal high discharge pressure. Pumping system shall not operate until pressure is reduced and alarm has been reset.

3. Low Water Level alarm shall serve to protect the pumps from the adverse effects of running dry. Alarm shall be activated when level in the supply reservoir reaches a critical low level. Alarm shall cause the pumps to be retired in an orderly manner. Alarm shall not be capable of being overridden. Alarm shall not allow any pumps to run, whether in the "PLC bypass" or "Automatic" functions of the selector switch until level has been restored and alarm has been reset. Indication of the alarm shall be displayed visually on the control panel door.

4. Main phase failure and low voltage safety circuit shall retire the pumping system if it experiences low voltage, phase failure or phase reversal as monitored at line-side of control enclosure. Phase monitor shall have a time delay to allow for transient low voltage during motor starting and to allow maximum motor protection. Operator interface device, mounted in enclosure door, shall signal phase failure for any affected pump.

5. Individual Phase Failure and Low Voltage alarm circuitry, as part of the overload relay circuit, shall retire any pump that experiences low voltage, phase failure or phase unbalance as monitored at the load-side of each pump motor contactor by the overload relay. Each pump motor shall have its individual protective device and time delay to allow for transient low voltage during motor starting allowing maximum motor protection. The individual pumps or pumping system shall not operate until the voltage problem has been corrected and safety has been manually reset. Incoming phase monitor safety circuit as the only phase failure sensing device is not acceptable.

6. Anti-Cycle alarm and protection to be adjustable based on Horse power of motors.

C. Functional Sequence, Pressure and Flow Sequencing.

1. Initially the (25 HP) pump shall operate on its own VFD to maintain system pressure during low demand periods.

2. Lead irrigation pump shall start immediately on a drop in system pressure (Adjustable).

3. PLC shall control the speed of the pump to produce constant pressure regardless of demand within the pump’s capacity.
4. Lag pump/s shall start on a continued low pressure after a short time delay (Adjustable).

5. PLC shall control the speed of the lead pump to produce constant pressure regardless of demand within the pumps' combined capacity.

6. On failure of either lead or lag pump/s to start or to continue running, the next pump in sequence shall start in its place. Alarm light shall be illuminated, and individual pump fault shall be displayed.

7. Equal sized pumps shall be alternated based on accumulated motor run time after the running pump is retired. The pump with the least run time shall be started first.

8. All data and screens accessible on control panel Human Machine Interface (HMI) shall also be available remotely on mobile devices and PC.

5. Codes

Control panel with controls shall be built in accordance to National Electric Code (NEC), and UL standards. Without exception, the electrical components and enclosure shall be labeled as a complete UL listed industrial control panel assembly, with manufacturer's UL label applied to the door, under UL category UL508A, control panels.

6. Quality Assurance

Controls are to be engineered and manufactured under a written Quality Assurance program. The Quality Assurance program is to be in effect for at least ten years, to include a written record of periodic internal and external audits to confirm compliance with such program. Controls are to be engineered and manufactured under the certification of ISO-9001:2000.

7. Fabrication

All piping for the new pump manifold and Cla-Valve spool piece shall be constructed from ASTM A105 schedule 40 pipe or heavier as required to maintain a 3 to 1 pressure safety factor. (Sch10 piping shall not be allowed) All piping shall be hydrostatically tested to 200 psi. All steel piping shall be free of rust and painted. Fitting and welding will be performed on site to match existing pump and irrigation discharge piping.

Piping Support: All piping supports shall cover 120 degrees of arc under the piping and support the weight of the piping and the water it contains. Thrust shall be resisted by proper thrust blocking of the supply and distribution system piping which shall be connected to the pumping system in the field, and through proper anchoring of the pump station to the slab according to manufacturer's recommendations. Piping supports not occupying at least 120 degrees of arc shall not be accepted.
Air Release: The existing air release valve shall be re-used and mounted on the new pump manifold.

Cla-Valve 50-01 DSR: Install a 3” Cla-Valve 50-01 pressure relief valve on the new pump manifold and pipe the discharge back to the existing wet well.

8. Sensors
Pressure transducer shall be mounted on the discharge headers and shall provide all pressure signals for the control logic. Pressure transducer shall be a solid-state bonded strain gage type with an accuracy of plus/minus 0.25% and constructed of 316L stainless steel. Resolution of the transducer shall be greater than the resolution of the analog to digital conversion for PLC operation. Transducer shall be rated for pressures greater than station discharge pressure, and shall provide gauge pressure output, rather than absolute pressure.

9. Protective Coatings
All new piping shall be painted with a rust preventative primer.
All bolts, nuts, washers, and lock washers used in the assembly of the piping system shall be zinc plated to retard corrosion.

10. Controls
Scope: Furnish UL Listed 508a complete control panel that will provide the necessary controls to efficiently control the irrigation pumping system. The system will provide all of the required components including but not limited to main disconnect, surge protection, phase monitor, fuses/blocks, Variable Speed Drive, high speed drive fuse protection, dual interlocked contactors, solid state overloads, door devices, color HMI touch screen and plc. Control system shall be a standard product with a configurable program. The system shall not use a custom program or one that requires modification to provide the specified system control. The HMI must use a manufacturer’s standard offering without requiring screen or database changes.

11. Ratings/Listings
   a) All products shall be UL labeled, meet the requirements of UL508a, and maintain Certified Safety Organization (cUL).
   b) 100 ka Short Circuit Current Rating of the panel.
   c) Service Entrance Rated.

12. Environmental requirements
   a. Temperature 14 to 122 Degrees Fahrenheit.
   b. Relative Humidity 98% maximum.
13. Construction

Enclosure shall be a UL Listed Type 4 Carbon Steel Enclosure with a powder coat finish. All penetrations in the panel shall be made prior to the application of the powder coat finish. Powder coat finish shall be a polyester Textured RAL 7035 heat guard finish. The powder coat process shall be a minimum 5 stage process. The enclosure shall contain a pour in place two part urethane gasket. **Adhesive strip gaskets shall not be allowed.** The enclosure door shall use a 3 Point latch system. The enclosure will be furnished with a 6” leg kit.

**Surge Arrestor:** Incoming Power shall be a UL Type 1 with bicolor led status indicators. 120 Vac shall be Square D (SQD) with replaceable modules.

**Main Service Disconnect:** Main service disconnect shall be a rotary fusible disconnect with J Class fuses. Handle shall be pad lockable and interlock with main panel door to prevent opening the door without first turning the disconnect to the off position. See-through covers shall be provided to cover line and load side lug connections.

**Phase Monitor:** Phase monitor shall be an 8 Pin replaceable type unit with line side fuse protection. Provides protection from low/high voltage, phase loss, reverse phase and voltage unbalance. Unit shall be provided Diagnostic LED with adjustable trip delays.

**Short Circuit protection:** Control Panel shall be protected by J Type fuses. XL Motor shall be protected by J Type fuses. Fuse blocks shall be finger safe and provided with covers. High clarity see-through covers allow for inspecting wire terminations or to take thermography measurements without removing cover. Probe holes included for easy, safer testing and troubleshooting. Built-in lockout/tag out feature improves safety. VFD shall be protected by high speed J type fuses such as the Bussman DFJ.

Panel will require a set of mechanically interlocked contactors with one solid state overload per pump. Contactors shall be Allen Bradley C series contactors. Coils shall be 110 Vac control and include varistor protection. Solid state overload shall be E1 Plus as manufactured by Allen-Bradley. Overload shall provide phase loss protection, ambient compensated and wide current adjustment range of 5:1.

14. Variable Speed Drive

One variable speed drive will be provided for the (25 HP) jockey pump and one variable speed drive will be provided for the (2-50 HP) main pumps. Furnish complete VFD as specified herein or in the equipment schedule for loads designated to be variable speed. VFD’s shall be user-selectable for either constant or variable torque loads.

The VFD shall be a six-pulse input design. The VFD shall be of a Pulse-Width Modulation (PWM) output design utilizing current Insulated-gate Bipolar Transistor (IGBT) inverter technology and voltage vector control of the output PWM waveform and shall output a waveform that closely approximates a sine wave.

The manufacturer of the VFD shall demonstrate a continuous period of manufacturing and development of VFD’s for a minimum of 40 years. VFD’s that are brand-labeled are not acceptable. The VFD shall produce an output waveform capable of handling
maximum motor cable distances of up to 1,000 ft. (unshielded) without tripping or de-rating.

VFD shall automatically boost power factor at lower speeds. In variable torque applications, the VFD shall provide a Constant torque (CT)-start feature and be able to provide full torque at any speed up to the base speed of the motor. In either CT or Variable torque (VT) mode, the VFD shall be able to provide its full rated output current continuously and 110% of rated current for 60 seconds.

Switching of the input power to the VFD shall be possible without interlocks or damage to the VFD at a minimum interval of 2 minutes. Switching of power on the output side between the VFD and the motor shall be possible with no limitation or damage to the VFD and shall require no additional interlocks.

The VFD shall include an integral RFI filter conforming to the A2 standard as a minimum. VFD shall provide full galvanic isolation with suitable potential separation from the power sources (control, signal, and power circuitry within the drive) to ensure compliance with Protected Extra-Low Voltage (PELV) requirements and to protect PLC’s and other connected equipment from power surges and spikes. All inputs and outputs shall be optically isolated. Isolation boards between the VFD and external control devices shall not be required.

The VFD shall provide internal DC Link reactors to minimize power line harmonics and to provide near unity power factor. DC Link reactor shall be installed so that power fluctuations to the DC Capacitors shall be reduced to increase Capacitor life. VFD’s without a DC link reactor shall provide a 5% impedance line side reactor and provide spare capacitors.

VFD shall have input surge protection utilizing Metal Oxide Varistor’s (MOV), spark gaps, and Zener diodes to withstand surges of 2.3 times line voltage for 1.5 msec. Printed Circuit boards shall be conformal coated to reduce the corrosion effect from environmental gases and other conditions. The conformal coating must meet International Electrotechnical Commission (IEC) 61721-3-3, Class 3C2. VFD shall include circuitry to detect phase imbalance and phase loss on the input side of the VFD.

VFD shall include current sensors to monitor all three-output phases to detect and report phase loss or unbalance or other power issues to the motor. The VFD will identify which of the output phases is low or lost.

VFD shall provide an alphanumeric backlit display keypad (LCP) which may be remotely mounted using a standard 9-pin cable. VFD may be operated with keypad disconnected or removed entirely. The remote mount must meet N4X rating. Keypad may be disconnected during normal operation without the need to stop the motor or disconnect power to the VFD.

All VFD’s shall be of the same series, and shall utilize a common control card and LCP (keypad/display unit) throughout the rating range. The control cards and keypads shall be interchangeable through the entire range of drives used on the project.

A battery back-up shall be provided to maintain internal clock operation during power interruptions. Battery life shall be no less than 10 years of normal operation.

The VFD shall have an adjustable output switching frequency.

Four complete programming parameter setups shall be provided, which can be locally selected through the keypad or remotely selected via digital input(s), allowing the VFD to
be programmed for up to four alternate control scenarios without requiring parameter changes.

In each programming set up, independent acceleration and deceleration ramps shall be provided. Acceleration and deceleration time shall be adjustable over the range from 0 to 3,600 seconds to base speed.

The VFD shall have four programmable “Bypass frequencies” with adjustable bandwidths to prevent the driven equipment from running at a mechanically resonant frequency. The feature shall offer a Semi-Automatic program to simplify the set-up. *The pump station manufacture shall identify and record the 1st and 2nd critical frequencies on any pump operating on a VFD and shall lock out these frequencies. The pump/s may pass through these frequencies on ramp-up and ramp-down but shall not be allowed to reside within these identified frequencies.*

In each programming setup, independent current limit settings, programmable between 50% and 110% of the drives output current rating, shall be provided.

The VFD will include a “loss of follower” function to detect the loss of process feedback or reference signals with a live-zero value and a user-selectable choice of responses (go to set speed, min speed, max speed, stop, stop, and trip).

An initial ramp function shall be available to provide a user-selectable ramp, up to 60 seconds, for applications requiring a faster or slower ramp than the normal ramp.

A Dual Ramp feature shall include a Check Valve Ramp and a final Ramp feature. The Check Valve Ramp shall be programmable to gently seat a check valve and reduce the potential of damage from excess pressure while shutting-down the system. Both time and end speed shall be programmable. On the Final Ramp, the VFD shall be programmable to quickly stop the motor after seating of a check valve or for a more rapid stopping than the normal ramp down setting.

The ambient operating temperature of the VFD shall be -10°C to 50°C (14 to 122°F), with a 24-hour average not to exceed 45°C. Elevation to 3,300 feet (1000 meters) without de-rating. VFD shall provide full torque to the motor, given input voltage fluctuations of up to +10% to -15% of the rated input voltage (525 to 690VAC, 380 to 480VAC, or 200 to 240VAC). Line frequency variation of ± 2% shall be acceptable.

The VFD shall be equipped with a standard RS-485 serial communications port and front-of-drive accessible USB port. Danfoss FC or ModBus RTU communications shall be integrally mounted.

VFD Keypad shall be mounted and accessible from the exterior of the control panel door in a NEMA 4 configuration. Keypads mounted internally shall not be allowed.

*The VFD shall be provided with a six year warranty. This warranty includes coverage’s for momentary line or load anomalies such as lightning strikes. This includes the cost for travel for one visit to the customer site for repair or replacement of the VFD.*
15. Control Power Transformer

Control power transformer shall be a minimum of 350 VA and include primary and secondary fuse protection.

16. Programmable Logic Controller

Programmable logic controller shall be an Allen Bradley compactlogix processor with built-in dual port Ethernet and one USB port. Processor utilizing battery for program storage will not be acceptable. Unit shall operate on 24 Vdc and shall include 750 KB user memory. The operating range of the processor shall be 32 to 140 degrees Fahrenheit. PLC shall be provided with capability of using SD memory card for data logging. I/O shall be 24 VDC. Processor shall be capable of expanding the I/O with the addition of up to 4 expansion modules. The processor shall be provided with the following on board I/O:

a) 16 DC Inputs.
b) 16 DC Outputs.
c) 4 Analog Inputs current and voltage.
d) 2 Analog Outputs current and voltage.
e) 4 High Speed Counters.

17. Color Touchscreen

HMI Color Touch Screen interface shall be an Allen Bradley Panel View Plus 6 10” HMI and shall include 512MB memory, and Windows® CE 6.0 operating system. Recipe management, machine setup, and data-tracking through .csv files. HMI shall include:

a) Built-in PDF viewer for context-sensitive operator support.
b) Built-in full Unicode font to support multiple languages with a single run-time application.
c) Base-configured terminal available with display and logic modules.
d) Supports real-time monitoring of your terminals through a web browser.
e) RS-232 and Ethernet networks available through built-in communication ports.
f) Built-in USB ports and SD card slot.
g) Allen Bradley 24 DC Power Supply: 5 Amp DC power supply with built in status indicators.
h) Allen Bradley 5 Port Ethernet Switch with 24 Vdc supply power.
i) Panel devices shall be Allen Bradley NEMA 4 30 mm heavy duty devices. Panel indicator lamps shall be 24 VDC LED types.
j) Level sensing relays shall be Crozet PNR utilizing 3W2 SS probe tips.
k) HMI shall contain job specific drawings and data which shall be user accessible within PDF format.

18. Control System Configuration

The control system configuration and operation parameters shall be configurable through the HMI touch screen and shall be available remotely. (With communication package option the station manufacture shall be capable of remote programming of PLC and HMI) No laptops or programming devices shall be required to configure the system for operation. The system configurable parameters are protected by password levels to ensure correct personnel are making system configuration changes. Manufacture shall be capable of remote access to the actual PLC and HMI programs for upgrades and modifications. The following are parameters that are required but not limited to be configurable though the touch screen.

a) File Set up Syste: Allow changes to be saved to a SD memory card. Existing parameters may be uploaded from the SD memory card. This shall allow the system to be returned to last state, factory default or new configuration.
b) Pump System: The quantity, type and operational parameters are assignable through the touch screen.
c) Pump Control Assignable safeties, lockouts, limits, anti-cycle, and faults, shall be assignable to each pump.
d) Auxiliary pumps: Quantity and mode of operation shall be configurable.
e) Lake Level Controls: Enable/disable of lake level controls. Selectable operation from probes or analog level transmitter. Delay times, and analog set points if analog mode is chosen.
f) Inlet Screen: Enable/disable with flow and flush parameters.
g) Chemical Injection: Enable/disable with flow set point and scaling parameters.
h) Station Filter: Enable/disable with flow and flush parameters.
i) Station Safeties: Enable type of safety and associated time parameters and operational set points. System should contain the following type of safeties:
   b. Station Safeties: Low/high Discharge pressure set points, phase fail and VFD fault.
j) Analog Scaling: Analog inputs shall be able to be scaled for min/max for raw and scaled values.
k) I/O Mapping: All PLC inputs/outputs regardless of type can be assigned from the HMI.
l) All data and screens accessible through HMI shall be available with remote access.

19. Operation Setup

The operation parameters are configurable and settable based on the operating needs of the site system:

a) Pump Sequence: Settable parameters to set the start/stop for the sequence of pumps that includes pressure/flow set points and timers to verify required operation. This includes transition speeds and timing when starting/stopping lag pumps. Includes configuration of flow stop parameters.

b) Variable Speed Bypass: Start/stop set points which include delay timer settings for configuration when the variable speed drive is in bypass mode.

c) PID Turning: Includes tuning parameters for different PID loop requirements and advanced PID tuning of a minimum of 3 pressure ranges. Includes status indications and trend graphing to assist in the tuning process.

d) VFD Controlled Shutdown: Configurable parameters to add in smoothly transition to an off state.

e) High Pressure Check: System parameters to verify if flow demand exist and at what point to shut the system down to no flow demand.

f) Line Fill: Configurable set points to allow slow filling of the distribution system during the initial startup or recovery after power failure.

g) Lockouts: Time and day of the week settings to restrict the number of pumps that may operate during the restrictive times. Maximum pressure and VFD speed are configurable set points. The lockouts can be enable/disabled.

h) Time/Date Configuration: Allows sync of real time clock of PLC with HMI and allows manual setting of the time and date.

i) System shall allow a remote connected user to shut down the station with a single emergency shut down feature. This shall require manual reset from the pump control panel.

20. Maintenance

Maintenance settings to assist in troubleshooting and repairing of the control system.

a) Project Documentation: HMI must include the ability to store and view PDFs from the touch screen display. This includes manuals,
b) Pump Sequence Logic: Provides status indications of what current step the program is in and the amount of the high pressure accumulator. This screen also provides for temporally overriding the amount of pump run time. The alternation of pumps is based on least run time and this provides a method to either have a pump run more or lease often.

c) Lamp Test: Provides a method to test all lighted panel devices with one push button.

d) Email Setup: The system shall provide the ability to send email and text messages due to an assignable fault or warning occurrence. It also provides the ability to attach the event log for review. A configuration screen is provided for input of the required parameters.

e) Remote I/O status screen shall be provided to allow remote viewing of all I/O status from the HMI.

f) Maintenance reminders shall be automatically emailed to the customer when due (adjustable) Minimum of 7 maintenance items shall be programmable.

21. Operation

Screens to provide indication of the system operation, events, alarms, trends and totalizes.

a) Dashboard: Screen will provided indication of the systems current state. Display shall provide current flow, pressure, set point, VFD speed, pump status, pump run time, and status indicators for auxiliary controls.

b) Current Alarms: Displays any current alarms with time/date stamp of occurrence.

c) Historical Alarms: Displays historical alarms with time/date stamp of occurrence. Additional information that is captured with each alarm is flow rate, pressure, status and operational method of each pump, and speed of the VFD. The last 100 alarms are stored on PLC memory and are viewable thru the HMI.

d) Trends: Trend screen provides trending information of pressure set point, PID set point, Pressure, VFD speed & flow rate. The status of each pump is trended that will provide indication of pump is running or off and if the pump is operating across the line or on the VFD. HMI must be able to store 300,000 points of trend data for trend view.
e) Historical Events: Displays historical event occurrence and the status of the system at the time of the event. The event is time/date stamped. System conditions such as flow, pressure, set point, VFD speed and pump status is reordered with each event. The last 200 events shall be stored on the PLC memory and shall be accessible for view thru the HMI. All historical events are logged to an HMI data log CSV file. A new data log file shall be created weekly. The data log file shall be capable of being extracted to be viewed on a PC with excel viewer program.

f) Totalizers: Provides current and two previous years cumulative totals for system flow and for each pump run times and number of starts. This is displayed in daily, monthly and yearly totals.

g) Auxiliary Pumps: Enable time clock controlled pumps or auxiliary devices. Start start/stop time per day. Day of week operation is selectable.

h) Dashboard shall also be configured to provide each pumps status.

i) Help Screen: Provides contact information for Service Group to provide 24/7 phone support and field support.

j) System shall have a cloud based storage that will hold one full year of events, flow and pressure graph and flow totals

k) System shall be configured to send automatic email reports every month in Excel showing daily flow totals and monthly total

l) Cloud system shall be no charge for the life of the panel.

22. Remote Cellular Connection

a) Unit shall be provided with a cellular modem to provide a remote connection via the internet utilizing any smart phone, tablet or PC that is capable of connection to the WEB.

b) Cell Modem shall be pre-activated and paid for one full year

c) This system shall not require any modification to the pump station control system to install and operate this feature.

d) The Control System will provide a cellular modem, antenna and first year of service included. No additional software changes shall be allowed.

23. Warranty

A. The manufacturer shall warrant that the Control System shall be free of defects in workmanship for a period of one year from date of authorized start-up but not to exceed sixteen months from date of manufacturer's invoice. Variable frequency drive shall be provided with a 6-year warranty as described in the VFD section above and shall include protection against lightning strikes and electrical surges. The electrical components inside
the control panel shall be warrantied for 6 years and shall include protection against lightning strikes and electrical surges. This warranty covers parts only.

B. Provided that all installation and operation responsibilities have been properly performed, manufacturer shall provide a replacement part or component during the warranty life. Any repairs to be accomplished at manufacturer's expense must be pre-authorized. The start-up certificate must be on file with manufacturer to activate warranty. Upon request, manufacturer shall provide advice for trouble shooting of a defect during the warranty period.

C. Manufacturer shall use only first quality material. As with any mechanical or electrical device, some preventive maintenance efforts are required to assure an adequate service life. A periodic preventive maintenance program recommendation shall be included in the owner's manual. Manufacturer shall support a large national network of technical service technicians. Manufacturer's field service technicians shall be contacted for service.

24. Installation

Bid amount shall include all costs associated with the installation of the proposed system, site work, licenses, permits and restoration of the shelter.
BID REQUIREMENTS

1. Contractor Supplied Measurements

Bidders are responsible for providing their quotes based on their own measurements. All bidders are required to inspect and measure the site at:

Lassing Pointe Golf Course
2266 Double Eagle Dr. Union, KY 41091

Appointments need to be made by contacting Mr. Justin Pack at 859-384-1465 or jpack@boonecountyky.org. Contractor will have to supply their own ladder to access the roof areas.

2. Eligibility

To be eligible for award, the contractor shall be licensed to do business in the State of Kentucky. The amount of the bid shall not exceed the license limit. The contractor’s bid shall describe general relevant corporate experiences in constructing projects similar to the one described in this ITB.

3. Materials

The contractor shall provide materials that have a proven track record and shall be responsible for all products, components, accessories, and methods used for the project.

4. Worksite Cleanup And Care

Contractor must comply with requirements in NFPA 241 Section 5.4 for removal of combustible waste materials and debris; Contractor must containerize hazardous and unsanitary waste materials separately from other waste; Contractor must remove old material removed from the project; Contractor must protect the existing condition of the building.

5. Time of Completion

The project will ideally be started and completed between November 2016 and March 2017. All construction work shall be completed no later than March 15, 2017.

6. Required Submittals

With submittal of bid, the contractor shall furnish a complete bid including a detailed list of materials and labor. All bids are required to include work start and completion dates. Sample materials, including brand name and warranty information will be submitted with bid.
7. **Performance Bond**

The contractor will be required to provide a performance bond in an amount of not less than the total bid. The bond shall be submitted prior to the award of the contract.

8. **Bid Response**

The bid of the successful contractor will be incorporated into the project contract and will become a part of the subsequent contractual documents. Failure to accept this obligation will result in the cancellation of any award. Any damages accruing to Boone County Fiscal Court, as a result of the contractor’s failure to contract, will be recovered from the contractor. The successful contractor shall enter into a contract for the performance of the work bid and the contract shall incorporate all applicable provisions of this ITB. Boone County Fiscal Court reserves the right, in its sole discretion, to award the contract to another contractor if contract negotiations do not appear successful.

9. **Insurance Requirements**

The contractor shall purchase and maintain in force, at his own expense, such insurance as will protect him and the County from claims, which may arise out of or result from the Contractor’s execution of the work, whether such execution be by himself, his employees, agents, subcontractors, or by anyone for whose acts may be liable. The insurance coverage shall be such as to fully protect the Owner, the Engineer (if applicable) and the general public from any and all claims for injury and damage resulting by any actions on the part of the contractor or his forces as enumerated above. The Contractor shall furnish a copy of an original Certificate of Insurance, naming Boone County as an additional insured.

**Certificate of Insurance must have an original signature.** Should any of the policies be canceled before the expiration date, the issuing company will mail 30 days written notice to the certificate holder. The Contractor shall furnish insurance in satisfactory limits, and on forms and of companies which are acceptable to the Owner's Attorney and/or Contracts Administrator and shall require and show evidence of insurance coverage’s on behalf of any subcontractors (if applicable), before entering into any agreement to sublet any part of the work to be done under this Contract.

The following insurance requirements are the minimum that will be acceptable:

- **Worker's Compensation** - Statutory limits for State of Kentucky including Employers' Liability Insurance of $100,000.
- **Commercial General Liability** - $1,000,000 Each Occurrence Combined Single Limit.
Comprehensive Automobile Liability - $500,000 Each Occurrence Combined Single Limit.

Surety Bonding of Employees - $10,000 each employee.

The Contractor and his insurance company should carefully review the insurance requirements applicable to this job. All requirements herein must be met before the County will execute the contract. In particular, we would call your attention to the following:

Please note that the Insurance Certificate must state that the Commercial General Liability and the Umbrella Liability Insurance Policies name Boone County as an additional insured. This requirement may be met by placing the following language on the Certificate. Many Certificates have a space headed "OTHER" where the language may be inserted as follows:

All general liability and excess liability policies coverage’s listed hereon name Boone County, as an additional insured.

The Insurance Certificate must also contain the required statement concerning notice of cancellation or other change in coverage. The statement used on some Certificate forms is not acceptable. The statement, which is required by the contract documents, reads as follows:

"Such certificate shall provide that in the event of the cancellation of the policy or policies listed on such certificate, not less than 30 day’s notice in writing shall be given to the County.

NOTE: The cancellation clause in the Insurance Certificate shall be modified by striking the words 'endeavor to' in the second line and by striking the clause reading 'but failure to mail such notice shall impose no obligation or liability of any kind upon the company'."

The Certificate Holder should be listed as: County of Boone, KY
Asst. County Administrator
P. O. Box 900
Burlington, KY 41005
Contract No. #101316GC
KENTUCKY PREFERENCE LAWS

The scoring of bids/proposals is subject to Reciprocal preference for Kentucky resident bidders and Preferences for a Qualified Bidder or the Department of Corrections, Division of Prison Industries. *Vendors not claiming resident bidder or qualified bidder status need not submit the corresponding affidavit.

Reciprocal preference for Kentucky resident bidders

KRS 45A.490 Definitions for KRS 45A.490 to 45A.494.
As used in KRS 45A.490 to 45A.494:
(1) "Contract" means any agreement of a public agency, including grants and orders, for the purchase or disposal of supplies, services, construction, or any other item; and
(2) "Public agency" has the same meaning as in KRS 61.805.

KRS 45A.492 Legislative declarations.
The General Assembly declares:
(1) A public purpose of the Commonwealth is served by providing preference to Kentucky residents in contracts by public agencies; and
(2) Providing preference to Kentucky residents equalizes the competition with other states that provide preference to their residents.

KRS 45A.494 Reciprocal preference to be given by public agencies to resident bidders -- List of states -- Administrative regulations.
(1) Prior to a contract being awarded to the lowest responsible and responsive bidder on a contract by a public agency, a resident bidder of the Commonwealth shall be given a preference against a nonresident bidder registered in any state that gives or requires a preference to bidders from that state. The preference shall be equal to the preference given or required by the state of the nonresident bidder.
(2) A resident bidder is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:
(a) Is authorized to transact business in the Commonwealth; and
(b) Has for one (1) year prior to and through the date of the advertisement, filed Kentucky corporate income taxes, made payments to the Kentucky unemployment insurance fund established in KRS 341.490, and maintained a Kentucky workers’ compensation policy in effect.
(3) A nonresident bidder is an individual, partnership, association, corporation, or other business entity that does not meet the requirements of subsection (2) of this section.
(4) If a procurement determination results in a tie between a resident bidder and a nonresident bidder, preference shall be given to the resident bidder.
(5) This section shall apply to all contracts funded or controlled in whole or in part by a public agency.
(6) The Finance and Administration Cabinet shall maintain a list of states that give to or require a preference for their own resident bidders, including details of the preference given to such bidders, to be used by public agencies in determining resident bidder preferences. The cabinet shall also promulgate administrative regulations in accordance with KRS Chapter 13A establishing the procedure by which the preferences required by this section shall be given.
(7) The preference for resident bidders shall not be given if the preference conflicts with federal law.
(8) Any public agency soliciting or advertising for bids for contracts shall make KRS 45A.490 to 45A.494 part of the solicitation or advertisement for bids.

The reciprocal preference as described in KRS 45A.490-494 above shall be applied in accordance with 200 KAR 5:400.

Determining the residency of a bidder for purposes of applying a reciprocal preference

Any individual, partnership, association, corporation, or other business entity claiming resident bidder status shall submit along with its response the attached Required Affidavit for Bidders, Offerors, and Contractors Claiming Resident Bidder Status. The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

A nonresident bidder shall submit, along with its response, its certificate of authority to transact business in the Commonwealth as filed with the Commonwealth of Kentucky, Secretary of State. The location of the principal office identified therein shall be deemed the state of residency for that bidder. If the bidder is not required by law to obtain said certificate, the state of residency for that bidder shall be deemed to be that which is identified in its mailing address as provided in its bid.

Preferences for a Qualified Bidder or the Department of Corrections, Division of Prison Industries.

Pursuant to 200 KAR 5:410, and KRS 45A.470, Kentucky Correctional Industries will receive a preference equal to twenty (20) percent of the maximum points awarded to a bidder in a solicitation. In addition, the following “qualified bidders” will receive a preference equal to fifteen (15) percent of the maximum points awarded to a bidder in a solicitation: Kentucky Industries for the Blind, any nonprofit corporation that furthers the purposes of KRS Chapter 163 and any qualified nonprofit agencies for individuals with severe disabilities as defined in KRS 45A.465(3). Other than Kentucky Industries for the Blind, a bidder claiming “qualified bidder” status shall submit along with its response to the solicitation a notarized affidavit which affirms that it meets the requirements to be considered a qualified bidder- affidavit form included. If requested, failure to provide documentation to a public agency proving qualified bidder status may result in disqualification of the bidder or contract termination.
Solicitation/Contract #: 101316GC
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING RESIDENT BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:
The bidder or offeror hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the entity bidding is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:

Is authorized to transact business in the Commonwealth;
Has for one year prior to and through the date of advertisement
Filed Kentucky income taxes;
Made payments to the Kentucky unemployment insurance fund established in KRS 341.49; and
Maintained a Kentucky workers’ compensation policy in effect.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

________________________________________  __________________________________________
Signature                                             Printed Name

________________________________________  __________________________________________
Title                                                Date

Company Name ________________________________________

___________________________
Address

Subscribed and sworn to before me by

___________________________ (Affiant)    (Title)

of ____________________________ this ______day of ____________, 20___.

(Company Name)

________________________________________
Notary Public

[seal of notary]  My commission expires:     __________
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING QUALIFIED BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:
I. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, and all subcontractors therein, meets the requirements to be considered a “qualified bidder” in accordance with 200 KAR 5:410(3); and will continue to comply with such requirements for the duration of any contract awarded. Please identify below the particular “qualified bidder” status claimed by the bidding entity.

_______ A nonprofit corporation that furthers the purposes of KRS Chapter 163

_______ Per KRS 45A.465(3), a "Qualified nonprofit agency for individuals with severe disabilities" means an organization that:
(a) Is organized and operated in the interest of individuals with severe disabilities; and
(b) Complies with any applicable occupational health and safety law of the United States and the Commonwealth; and
(c) In the manufacture or provision of products or services listed or purchased under KRS 45A.470, during the fiscal year employs individuals with severe disabilities for not less than seventy-five percent (75%) of the man hours of direct labor required for the manufacture or provision of the products or services; and
(d) Is registered and in good standing as a nonprofit organization with the Secretary of State.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of qualified bidder status. Failure to provide such documentation upon request may result in disqualification of the bidder or contract termination.

Signature __________________________________________ Printed Name ______________________________

Title _______________________________________________ Date ______________________________

Company Name ________________________________________
Address ______________________________________________
____________________________________________________
____________________________________________________

Subscribed and sworn to before me by ______________________________
(Affiant) (Title)
of ______________________________ this ___ day of ____________, 20__.
(Company Name)

__________________________
Notary Public

[seal of notary] My commission expires: ______________
EXCEPTION TO SPECIFICATIONS

Signature required, if exceptions are noted
REFERENCES

1. COMPANY NAME:
   
   ADDRESS:
   
   CONTACT PERSON:
   
   TELEPHONE #:
   
   FAX#:

2. COMPANY NAME:
   
   ADDRESS:
   
   CONTACT PERSON:
   
   TELEPHONE #:
   
   FAX#:

3. COMPANY NAME:
   
   ADDRESS:
   
   CONTACT PERSON:
   
   TELEPHONE #:
   
   FAX#: 
BID SHEET

The cost to convert the existing fixed speed pumping system to VFD control pumping system with piping modifications for Lassing Pointe Golf Course. Including the removal and disposal of all combustible waste materials and debris, contain hazardous and unsanitary waste materials and the removal and disposal of all old material, per these specifications for the fixed lump sum of:

$ ____________________________

Start Date: ____________________________

Completion Date: ____________________________

In compliance with this Bid and subject to all conditions thereof, the undersigned offers and agrees to furnish any or all items and/or services upon which prices are quoted, at the price quoted as specified.

My signature certifies that the accompanying bid is not the result of or affected by, any act of collusion with another person or company engaged in the same line of business or commerce, or any act of fraud. I hereby certify that I am authorized to sign this bid for the bidder.

NAME OF BIDDER: ____________________________ DATE: ________________

ADDRESS: ____________________________

________________________________________

FEDERAL ID #: ____________________________

SIGNATURE: ____________________________

OFFICIAL TITLE: ____________________________

PHONE (_____) __________________ FAX(_____) ________________