City of Carthage, Missouri

PUBLIC SERVICES COMMITTEE

October 21, 2025 - 5:30 PM
CITY HALL COUNCIL CHAMBERS

AGENDA

1. **Call to Order**
2. **Old Business**
   1. Approval of September 18, 2025 minutes.
3. **Citizen Participation**
   (Citizens wishing to address the Council or Committee should notify the City in advance and provide the item they want to address in written format at least 24 hours before the meeting. Please call Angie Judd at the Parks & Recreation office at 417-237-7035, or email a.judd@carthagemo.gov.)
4. **New Business**
   1. Consider and discuss road names in Municipal Park.
   2. Consider and discuss Route 66 emblem on Kellogg Lake Road.
   3. Consider and discuss Boots Court Visitor's Center operating hours.
   4. Consider and discuss Vision Carthage holiday events.
   5. Consider and discuss dog park fee.
   6. Consider and discuss work release program.
   7. Consider and discuss RFP for golf irrigation pump station.
   8. Consider and discuss RFP for golf chemicals.
   9. Consider and discuss RFP for ash tree removal.
   10. Consider and discuss RFP for tree purchase and planting.
5. **Staff Reports**
   1. Staff reports.
6. **Other Business**
7. **Adjournment**

PERSONS WITH DISABILITIES WHO NEED SPECIAL ASSISTANCE CALL 417-237-7000 (VOICE) OR 1-800-735-2466 (TDD VIA RELAY MISSOURI) AT LEAST 24 HOURS PRIOR TO MEETING

City of Carthage, Missouri

PUBLIC SERVICES COMMITTEE

September 18, 2025 - 5:30 PM
CITY HALL COUNCIL CHAMBERS

MINUTES

1. Call to Order

MEMBERS PRESENT: Jana Schramm, Jack Perkins, Ray West, Beth Kang
MEMBERS ABSENT:

OTHERS PRESENT: Mayor David B. Flanigan

STAFF PRESENT: Administrative Assistant Angie Judd, City Administrator Traci Cox, Tourism Director Melissa Little, Golf Operations Supervisor Tyler Markham

Chair Jana Schramm called the meeting to order at 05:30 PM.

2. Old Business

1. Approval of previous minutes.
   Ms. Kang motioned to approve minutes from the August 18th Public Services Committee meeting, motion passed.

ACTION:	Motion to accept/approve item 2.1. by Beth Kang; Motion passed with a 4:0
AYES:	Jana Schramm, Jack Perkins, Ray West, Beth Kang
NOES:	None
ABSTAIN:	None

3. Citizen Participation

(Citizens wishing to address the Council or Committee should notify the City in advance and provide the item they want to address in written format at least 24 hours before the meeting. Please call Angie Judd at the Parks & Recreation office at 417-237-7035, or email a.judd@carthagemo.gov.)

1. Public comment period for proposed street names in Municipal Park.
   Chair Schramm invited citizens to comment on the proposed street names within Municipal Park. Ms. Cox reported that Tom Jones submitted an email supporting the proposed names but suggesting “Rodeo Drive” in place of “Livestock Drive.” Ms. Schramm confirmed there is not another Rodeo Drive in town and stated she would follow up on the request prior to the final vote.
2. Jonathan Roberts - YMCA
   Jonathan Roberts, Executive Director of the Fair Acres YMCA, presented a report on summer pool operations. He stated that Pool Manager Amy reported day-to-day operations went relatively well despite ongoing maintenance challenges. The Municipal Pool was open for 68 days, averaging 100 visitors per

day, with a total of 7,534 visits for the season. The Central Pool was open for 35 days, averaging 36 visitors per day, with a total of 1,587 visits. He also noted that the Red, White, and Boom free swim day drew 757 visitors to the Municipal Pool.

3. Citizen's Participation.

Mark Salazar with Light Sports addressed the committee regarding Carl Lewton Stadium, noting that he and a team of volunteers have been working to make improvements at the facility. He reported that the field is now in playable condition and that a successful scrimmage has already been held. He expressed interest in partnering with the City to continue improvements at the baseball stadium and also indicated a willingness to assist with potential upgrades to the Municipal Park softball field.

4. New Business

1. Consider and discuss Bikes, BBQ, and Toy Run in Central Park.

Ms. Cox reported that Maple Leaf Festival items were approved last month; however, one event originally scheduled for the square presented a scheduling conflict with a local business. Julie Reams, President of the Carthage Chamber of Commerce, requested that the event be moved to Central Park. Mr. West motioned to approve the use of Central Park for the Bikes, BBQ, and Toy Run event on October 11th from 8am until 3pm, motion passed.

ACTION:	Motion to accept/approve item 4.1. by Ray West; Motion passed with a 4:0
AYES:	Jana Schramm, Jack Perkins, Ray West, Beth Kang
NOES:	None
ABSTAIN:	None

2. Consider and discuss grant application for Carthage Saddle Club.

Ms. Little reported on behalf of Judy Thomas with the Saddle Club, who was unable to attend the meeting, regarding a request for permission to pursue a second grant for improvements at the Saddle Club arena. She noted that Council had approved a grant application in January for arena improvements, and the Saddle Club now hopes to move forward with a second phase of updates at the rodeo grounds, including improvements to the holding pens,announcer’s stand and concrete bleachers. Mr. Perkins motioned to approve the grant application for the Carthage Saddle Club, motion passed.

ACTION:	Motion to accept/approve item 4.2. by Jack Perkins; Motion passed with a 4:0
AYES:	Jana Schramm, Jack Perkins, Ray West, Beth Kang
NOES:	None
ABSTAIN:	None

3. Consider and discuss permission for food trailer during Maple Leaf Rodeo event.

Ms. Judd presented a request on behalf of the Saddle Club for permission to set up their food trailer inside Municipal Park during the Maple Leaf Rodeo, scheduled for October 9th through 11th. Ms. Kang motioned to approve the use of the food trailer during the Maple Leaf Rodeo October 9th through 11th, motion passed.

ACTION:	Motion to accept/approve item 4.3. by Beth Kang;

Motion passed with a 4:0

AYES: Jana Schramm, Jack Perkins, Ray West, Beth Kang
NOES: None
ABSTAIN: None

4. Consider and discuss Soles 4 Paws charity run.

Renay Minshew, President of the Carthage Humane Society, reported that the second annual Soles 4 Paws charity run has been rescheduled for November 23rd at 3:00 p.m. Ms. Cox noted that the event was previously approved at the last Public Services Committee meeting, and this request was solely for a date change. Mr. Perkins motioned to approve the date change for the Soles 4 Paws charity run to be held on November 23rd, motion passed.

ACTION: Motion to accept/approve item 4.4. by Jack Perkins;
Motion passed with a 4:0

AYES: Jana Schramm, Jack Perkins, Ray West, Beth Kang
NOES: None
ABSTAIN: None

5. Consider and discuss Golf Course liquor sales.

Tyler Markham, Golf Operations Supervisor, announced his resignation after accepting a position with Clear Creek and expressed appreciation for his time with the City, noting he is committed to making the transition as smooth as possible. He reported that arrangements have been made with Anheuser-Busch, with additional arrangements pending with Heart of America, and stated his intent to keep pricing fair and consistent with the area market at approximately $3-3.50 per can. He noted that Pro Shop staff will be required to be at least 18 years old and trained to check identification, with "no outside food/beverage" signage posted around the course and on carts. He further explained that tournament alcohol sales will be managed through the golf course, with orders placed specifically for events to avoid affecting regular stock. He added that weekly inventory, staff training, and the implementation of clear policies will be required. Mr. Perkins motioned to approve liquor sales at the Pro Shop pending submission of a summary outlining inventory, training, signage, tournament pricing, and regular pricing, motion passed.

ACTION: Motion to accept/approve item 4.5. by Jack Perkins;
Motion passed with a 4:0

AYES: Jana Schramm, Jack Perkins, Ray West, Beth Kang
NOES: None
ABSTAIN: None

5. Staff Reports

1. Staff reports.

Ms. Little presented the Civil War Museum report, noting August attendance of 427, with numbers affected by road closures related to a water main replacement. She reported that a broken window and lighting repairs were completed with assistance from Public Works and stated that both attendance and revenue remain comparable to last year. She also highlighted participation in the Governor’s Conference for Tourism, ongoing collaboration with nonprofits, and continued work on advertising campaigns, including securing the back cover

of Missouri Life dedicated to the Route 66 centennial. She further noted the conclusion of Food Truck Friday, which was successful with strong community participation and featured a Kids Market with ten youth vendors.
Ms. Judd reported that Parks Maintenance staff have continued routine upkeep across all parks and completed the replacement of the Kellogg Lake fountain. She added that staff are also preparing the roundabout for installation of the Maple Leaf sculpture. Chair Schramm inquired about bathroom timers, and discussion followed to set park restroom closures at 7:00 p.m. in light of earlier sunset times. Chair Schramm also shared that Mahjong classes at Memorial Hall have seen increased attendance.
Mr. Markham reported that golf revenue for August was higher than he has observed in the past since at least 2014. He stated that the increase was driven by significant public play alongside a few tournaments. He noted that the recent rate increase was met with mostly understanding feedback, though Ms. Kang reported receiving a few complaints. Mr. Perkins added that members have observed an increase in public play. Mr. Markham advised that the first Senior Scramble drew 36 players and expressed confidence that participation will grow as the scrambles continue. He also noted that a new course record was recently set.

6. Other Business

7. Adjournment

ACTION:	Motion to Adjourn at 06:52 PM by Jack Perkins
	Motion Passed with a 4:0
AYES:	Jana Schramm, Jack Perkins, Ray West, Beth Kang
NOES:	None
ABSTAIN:	None

COUNCIL BILL NO. _____ **ORDINANCE NO. _____**

An Ordinance of the City of Carthage naming the streets within Municipal Park around the Rodeo Arena

WHEREAS, the Jasper County Youth Fair Board presented names to the Public Services Committee to name the streets in the Rodeo Arena area; and

WHEREAS, public notice was duly given, and a public hearing was held by the Public Services Committee on September 18 at 5:30; and

WHEREAS, the proposed names have been reviewed by the appropriate departments and found to meet the city's street naming policy; and

WHEREAS, the street names will help with emergency operation and for identifying roads that are requested to be closed during events; and

WHEREAS, now that the public notice period is over and no further changes have been presented, the Public Services Committee has voted in favor to forward the street names to City Council for approval;

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF CARTHAGE, JASPER COUNTY, MISSOURI as follows:

Section 1. Street Naming within Municipal Park

The following internal streets located within the boundaries of Municipal Park, as depicted on the attached map, are hereby named as follows:

Street Location / Description	**Assigned Name**
2nd left turn off of Richard Webster Drive	**Fairway Drive**
1st left turn off of Richard Webster Drive	**Livestock Drive**
South of Chitwood Barn, runs East to West	**Exhibitor Lane**
Connecting Fairway Drive and Livestock Drive	
Runs East to West, South of the Race Brother	**Clover Lane**
Pavilion #8, and North of 4-H Concession Stand	

SECTION II: This Ordinance shall take effect and be in force effective from and after its passage and approval.

PASSED AND APPROVED THIS _____DAY OF _____, 2025.

_____
David B. Flanigan, Mayor

ATTEST:

_____
Miranda Deal, City Clerk

Sponsored by: Public Services Committee


RICHARD WEBSTER DR
Black line - Fairway Drive
Red Line - Livestock Drive
Yellow Line - Exhibitor Lane
Green Line - Clover Lane
ROBERT ELLIS YOUNG DR

The Boots Court Foundation would respectfully request operating hour changes to the following.

November 1 to March 31 open 10 am to 6pm.

April 1 to October 31 open from 10am to 8pm.

Based on previous history, this operating schedule will result in accommodating the most visitors for these two seasons.

Respectfully submitted,

Lynn Andrews

Boots Court Foundation President

Public Services Meeting

10/21/25

1. The Candy Cane Hunt - 12/08 at 6:30 pm. Central Park. Hot Chocolate, Santa, and the Candy Cane Hunt itself.
2. Kellogg Lake – 12/16, A Woodland Winter Theme. Hayride, Hot Dogs, S'mores and Hot Chocolate, Nature Crafts, Santa, games by the playground, and possibly a nativity scene. Some Decorations, but we will be respectful of Nature. Vision Carthage has asked if this is approved, could we get supplemental lighting from the Fire Department? Parking issues? A map needs to be developed for parking and to lay out the path for the wagon ride. Insurance?
3. Ugly Sweater Roller-Skating Party – 12/22 – Parks will need to approve this as well. Not sure what type of safety concerns to bring forth. Insurance? Held at the Roller-Skating Rink at Municipal Park.

City of Carthage
Carthage Golf Course

Request for Proposals
326 Grant Street
Carthage, MO
64836

CARTHAGE
GOLF COURSE
Est. 1937

The City of Carthage, Missouri Golf Course is accepting proposals from qualified companies for the following:

- Golf Course Irrigation Pump Station

1. **Contact Information**
   a. Companies responding to this solicitation should direct all inquiries to:

      Tyler Markham
      Carthage Golf Course
      2000 Richard Webster Drive
      Carthage, MO 64836
      t.markham@carthagemo.gov
      Office: 417-237-7030

2. **Technical Specifications**
   a. The list below details technical specifications relating to the item being bid. The bidder must address each specification listed. The City will consider but reserves the right to reject any and/or all alternate proposals submitted.

Golf Course Pump Station

1. **Parts Requirements**
    a. Engineered Pump Station / Skid Design
    b. VFD Per Motor (VPM)
    c. 60 Hz, 3-Phase Power
    d. Two vertical and submersible turbine pump stations for wet well applications
    e. 230V (60HP per pump) 460V, 575V
    f. Air conditioning for Control Panel
    g. 5HP submersible sustain pump
    h. Pressure relief valve with wye strainer
2. **Other Requirements**
    a. All piping must be fusion bonded with epoxy inside and out
    b. Pumps must be installed by manufactured employees to ensure proper installation
    c. Product must have at least a 4-year warranty and provide preventive maintenance and have a pump watch remote monitoring service available
3. **Site Details**
    a. Wet Well Depth is 10' 6" with a diameter of 6'
    b. Roof will be ready for removal but will require a crane to lift off existing structure.
4. **Instructions to Bidders Concerning the Request for Proposal (RFP)**
    a. Bids and modifications thereof shall be enclosed in a sealed envelope and addressed to:

        Carthage City Hall
        326 Grant Street
        Carthage, MO 64836

    b. The bidder shall show the name and address of their company on the face of the envelope
    c. Bids will be publicly opened and read aloud as stipulated
    d. Evaluation of bids will include consideration of price, quality, and adherence to specifications
    e. After considering the basis of award and evaluation of bids, the City of Carthage will notify the successful bidder of acceptance of bid

5. **Inspection and Acceptance**
    a. No material received by the City pursuant to this project shall be deemed accepted until the City has had reasonable opportunity to inspect said material. All material which is discovered to be defective, or which does not conform to specifications

upon initial inspection, or at any later time if the defects contained in the material were not reasonably ascertainable upon the initial inspection, may be returned at the Seller's expense for full credit or replacement.

6. **Bid**
   a. The Undersigned Bidder hereby proposes any details regarding this request for proposal including required parts, other requirements, and warranty information as stated above. If possible, calculate payments quarterly, semi-annually, and annually while providing interest rates.

Lump Sum Cost: **$189,062.77**

Lease Options

~~**Annual Payments**~~**:**

~~**Semi-Annual Payments**~~**:**

~~**Quarterly Payments**~~**:**

Seasonal Payments - April to November
- **October 2025 Down Payment - $47,465.69**
- **$3,531.96 per month**
- **8 payments per season, 5 seasons (April - November)**
- **January 2031 $40,000.**
- **See attached proposal for details and rationale**

Interest Rate: **7.5%**

The City of Carthage shall also solicit bids from local financial institutions for lease purchase rates.

7. **Company**
   a. Name:
      Nuco Pump Sales and Service
   b. Name & Title of Signer:
      Andy Jones - President

8. **Schedule**
   a. To be considered, two copies of the proposal must be received at the address stated above for submission on or before September 22nd by 2:00 PM local time. All proposals shall be in a sealed package marked:
      SEALED BID/GOLF COURSE PUMP STATION

9. **Bidder Notes:**

Golf - Pump Station

9-22-25

Name	Amount
Nuco Pump	$ 189,062.77
Turf Werks	$ 222,185-

Amy Taylor
Cap Cy

NUCOPUMP
SALES AND SERVICE
(816) 863-7335

September 22, 2025

Tyler Markham
Carthage Golf Course
2000 Richard Webster Drive
Carthage, MO 64836

CC: Josiah Bayless, Public Works Director- City of Carthage, Missouri
Cody Gray, Golf Course Superintendent – Carthage Golf Course

Dear Tyler,

Our team at Nuco appreciates this opportunity to replace the pump station at the city's golf course. During multiple visits and ongoing conversations throughout the last several months, both Nuco's staff and the city engineers agree that the pump station is clearly beyond its useful life and needs replacement. We trust that this proposal can be an important supplement to the Request for Proposal, and the replacement plan for the station.

Nuco is uniquely positioned to provide the City of Carthage with the custom-built pump station that the golf course needs and the commitment to long-term service by Nuco engineers and technicians that a purchase like this requires. Please note, all Nuco products are UL Listed and meet or exceed all government approved safety and sustainability standards.

Finally, Nuco provides self-funded custom financing options for our clients. With the City of Carthage's high-quality credit, Nuco could offer a myriad of flexible payment alternatives that could assist the city in spreading the acquisition of this asset over multiple fiscal years. We look forward to reviewing this proposal with the city.

Goals of Proposal

- Assist the City of Carthage in replacing a key golf course asset that has become obsolete.
- Eliminate risk of system failure.
- Eliminate ongoing and escalating maintenance and repair expense.
- Provide the city with the option to spread payments over multiple fiscal years.

Equipment

- 1x New Custom UL Listed Nuco Pump Station (see attached specs)

** "UL Listed" means that a stand-alone product has been tested by Underwriters Laboratories (UL) and determined to meet specific safety and sustainability standards, protecting consumers from risks like electric shock, fire, or other manufacturer liabilities. **

Equipment Cost

- $189,062.77
- Price Includes
    - Freight and delivery
    - Installation
    - 4 years Pump Watch Remote Monitoring
    - 4 years Nuco Peace of Mind Service Agreement

Proposed Payment Structure

- October 2025 Down payment- $47,465.69
- April 2026 – November 2030 - $3,531.96 per month
    - 8 payments per season, 5 seasons
- January 2031 - $40,000.00

** Please note, Nuco has a self-funded portfolio and can provide multiple financing options **

** Current prime interest rate is 7.5% with no additional fees or charges **

Rationale for Proposed Payment Structure

- Down payment is significantly less than the industry standard of 50% lowering impact on fiscal 2025 budget.
- Seasonal payment stream aligns with Carthage Golf Course's peak revenue and use.
- Annual pump station expense is under $30,000.
- Down payment in 2025, 5 seasons (2026-2030), and a lump payment in January 2031 allows the City of Carthage to spread the payments of this 20-year asset out over 7 fiscal years.

Anticipated Outcome

- Obsolete golf course asset replaced prior to 2026 season.
- Eliminated risk of catastrophic system failure for 15-20 years.
- Significantly reduced maintenance and repair expenses.

Next Steps

- City of Carthage, Missouri to review proposal – September 22, 2025
- Proposal signed and down payment submitted – October 2025
- New station will be put into production with signed order and down payment.
    - Lead time estimated 12-14 weeks

Nuco is grateful for the opportunity to provide this comprehensive and long-term proposal for partnership with the City of Carthage. Time is of the essence for the city to make a decision this fall as Nuco's strong recommendation is to have a new station installed and operational well in advance of the 2026 golf season.

Yours truly,

Jamie Chambers
Andy Jones

ACCEPTANCE AND AUTHORIZATION TO PROCEED

_____

Print Name, Title

_____

Signature

_____

Date

We are pleased to offer the following pump station package:

1 Nuco UL listed Custom Vertical Turbine VFD pump station model number VT2-VFD60-P5-1200-125.

- Two 60hp 1800-rpm main vertical turbine pumps each capable of 600gpm @ 125psi.
- One 5hp submersible pressure maintenance pump capable of 30gpm @ 125psi.
- Total pump length to be 10'-6" from pump skid to the bottom of basket strainer.

Standard features include:

- Fabricated steel discharge head with integral air relief
- Vertical turbine pumps
- 1-1/4" Shafting with John Crane Mechanical Seals and steady bushings (no adjusting/leaking packing)
- 6" steel channel construction
- Blasted to bare metal, primed and fusion bonded epoxy coated inside and out
- Skid coated with rust preventative polyurethane cover with Kevlar ™ additive
- Pressure relief valve with butterfly style isolation valve.
- Butterfly style station isolation valve
- Butterfly style individual pump isolation valve
- Wafer style silent check valve on each pump
- Hose bib connection for station wash down

NEMA 12 Analog Control Panel to Include:

- 250 amp main disconnect
- Premium grade incoming surge protection
- Panel air conditioner to control panel temperature and humidity
- Industrial micro-processor plc controls
- Custom pump control software - purposefully simple and reliable
- Touch screen operator interface with systems status display.
- 60HP Variable frequency drive per motor
- Molded case circuit breakers
- 48 months of cellular remote access for; Remote operation, as well as email and text alerts for alarms conditions.
- Data Industrial flow sensor
- Auto alternation of main pumps based on hours of operation
- Phase loss safety
- Low water safety
- Low discharge pressure safety
- High discharge pressure safety
- High flow (discharge rate) safety

- Motor overload safety
- Easy access to daily and monthly flow totals
- Pump motor elapsed run time

Additional items included:

- Factory assembly, testing and calibration prior to shipment
- Freight to Job Site

Delivery and Installation

Delivery 12-14 weeks after receipt of order. Nuco Pump Sales and Service will make all reasonable efforts to meet requested delivery date after the receipt of the signed quote and down payment but shall not be liable for incidental or consequential damages for delay in delivery. Nuco will provide personnel for the installation of the pump station and train key personnel.

- Nuco will be responsible for transportation of equipment to the job site.
- Nuco will be responsible for lifting equipment required for unloading and installation.
- Nuco will be responsible for the installation of new pump stations.
- Nuco will be responsible for disposal of the old pump station.
- Purchaser will be responsible for primary electrical hookup to pump station.
- Purchaser will be responsible for pump house construction / modifications as required.
- Purchaser will be responsible for providing concrete slab, wet well and ventilated pump house structure.
- Purchaser will be responsible for electrical & other permits as required.

Warranty

Nuco warrants its products to be free of defects in materials and workmanship for a period of (4) years from the date of startup.

- Station Warranty for 4 years
- Variable Frequency Drive warrantied for 6 years
- Warranty includes parts and labor

Repair or replacement of defective product at the sole option of Nuco Pump Sales and Service. This warranty does not apply to equipment which has been damaged by accident, act of God, negligence, vandalism, misapplication or has been modified in any way. Any maintenance or repairs done without the pre-authorization of Nuco Pump Sales and Service shall void all warranties.

Turfwerks
PARTNERS IN GROWTH

5225 NW Beaver Dr. • Johnston, IA 50131
Phone: 877-544-8102 • Fax: 515-270-0117
www.Turfwerks.com

Carthage Golf Course
2000 Richard Webster Drive
Carthage, MO 64836

September 18, 2025

Dear Mr. Markham,

Enclosed is Turfwerks/Rain Bird bid for your new pump station. We are offering you Rainbird's state-of-the-art pump station. Rain Bird is a billion-dollar manufacturer of irrigation and pump stations world-wide. They have over 4000 products and sell to over 130 countries worldwide. Several things make the Rain Bird pump station the leader in the pump industry. One key feature is our pump station's ability to fully integrate into our CirrusPro software via Smart Pump. Smart pump makes key decisions in real time and maximizes your watering efficiency. No other manufacturer has this capability. Since you are a Rain Bird customer, this feature alone has significant value added to this proposal, especially down the road as you consider a renovation of your irrigation system.

Our pump station meets or exceeds all the specifications as outlined. Our price is **$222,185 installed**. This includes the factory's 4-year warranty and 4 annual preventative maintenance visits to keep the station running at peak efficiency. Please note that the drawing that is included with our bid is a standard generic drawing. A custom drawing will be done upon signing the proposal which will be custom built to the exact dimensions needed to fit your pump house.

We are offering you a 3 and 5-year annual payment option. This is outlined below. We require 25% down payment and a credit application will need to be filled out. Here are the Tval quotes:

3 yr:

	Event	Date	Amount	Number	Period	End Date
1	Loan	12/20/2025	222,185.00	1		
2	Payment	01/20/2026	55,546.25	1		
3	Payment	02/20/2026	0.00	7	Monthly	08/20/2026
4	Payment	09/20/2026	62,771.18	1		
5	Payment	10/20/2026	0.00	11	Monthly	08/20/2027
6	Payment	09/20/2027	62,771.18	1		
7	Payment	10/20/2027	0.00	11	Monthly	08/20/2028
8	Payment	09/20/2028	62,771.18	1		

Turfwerks
PARTNERS IN GROWTH

5225 NW Beaver Dr. • Johnston, IA 50131
Phone: 877-544-8102 • Fax: 515-270-0117
www.Turfwerks.com

5 yr:

	Event	Date	Amount	Number	Period	End Date
1	Loan	12/20/2025	222,185.00	1		
2	Payment	01/20/2026	55,546.25	1		
3	Payment	02/20/2026	0.00	7	Monthly	08/20/2026
4	Payment	09/20/2026	40,250.95	1		
5	Payment	10/20/2026	0.00	11	Monthly	08/20/2027
6	Payment	09/20/2027	40,250.95	1		
7	Payment	10/20/2027	0.00	11	Monthly	08/20/2028
8	Payment	09/20/2028	40,250.95	1		
9	Payment	10/20/2028	0.00	11	Monthly	08/20/2029
10	Payment	09/20/2029	40,250.95	1		
11	Payment	10/20/2029	0.00	11	Monthly	08/20/2030
12	Payment	09/20/2030	40,250.95	1		

Sincerely,

Brian Freeman
General Manager, Irrigation Division, Turfwerks

VERTICAL TURBINE VARIABLE SPEED PUMP STATION SPECIFICATION

DATE:	**9-16-2025**
PROJECT NAME:	**Carthage Golf Course**
PROJECT LOCATION:	**Carthage, MO**
IRRIGATION DESIGNER:	
PUMP STATION MODEL NUMBER:	**T2L060Y1N00058VAC8**
DESIGN FLOW RATE:	**1200**
DISCHARGE PRESSURE:	**118**
POWER:	480 VAC, 3 Phase, 60 Hz

	QUANTITY	HORSEPOWER
MAIN PUMPS:	**2**	**60**
INTERMEDIATE PUMP:		
PRESSURE MAINTENANCE PUMP:	**1**	**5**

For Pricing email: pumps@rainbird.com, or contact your local Sales Manager
Note: In the event of any discrepancy between this document and the Pump Station Quote and associated Customer Approval Drawing, the Pump Station Quote and associated Customer Approval Drawing shall prevail. This document is to serve as support documentation to the quotation only.

SCOPE OF WORK

This specification describes a prefabricated, skid mounted, variable speed line shaft vertical turbine pump station. Design, manufacture, and testing are the sole responsibility of the pump station manufacturer. The pump station is to provide water to the irrigation system while simultaneously maintaining a constant discharge pressure by using a prefabricated pump station with variable frequency drive (VFD) pumps for pressure regulation, under varying flow conditions up to the maximum specified capacity.

1.0 MANUFACTURER

The pump station shall be of the type manufactured by **Rain Bird Corporation**, at the facility in Tucson, Arizona, or approved equal. Submissions for consideration of equal must be submitted in writing prior to the bid closing and contain the capacities described in the technical specifications.

The following information must be furnished by the contractor or manufacturer's representative:

- A complete specification for the pump station including name of all manufacturers of all components to be supplied for the specific application.
- A pump station proposal drawing illustrating complete pump station detail and layout with dimensions and including pump curves and technical specifications for all components.
- UL file number for the manufacturer (for packaged Pump Station and Control Panel – UL-508A).

- To ensure full system compatibility and single point responsibility for complete irrigation system upgrades or new installations, the irrigation central control and pump station shall be supplied by the same manufacturer.

The pumping station shall conform to all of the following specifications in all respects.

The prefabricated pump station is to have, at the station discharge isolation valve, the volumetric flow rate and pressure stated in the technical specifications.

The station shall be completely wired, piped, hydraulically, electrically, and flow tested to full station capacity at factory prior to shipment to job site. Construction shall include a fabricated steel plate and skid assembly to support all components during shipping and to serve as the installation mounting base.

It is the sole decision of the owner's representative and the irrigation designer as to whether proposed equals are accepted by the owner. An approved equal shall provide the following documentation:

- Complete specification with submittal information on all major components of the pumping system.
- Pump system drawing including top and elevation views and location and size of all major components.
- Electrical schematic
- Certification from the manufacturer that the substituted packaged pump station meets all the requirements in this specification
- Copy of the manufacturer's certificate of insurance for a minimum of $1,000,000 coverage
- The individual components and entire packaged pump station will be UL Listed.

2.0 MECHANICAL

2.1 Base Construction

The pump base will be manufactured out of carbon steel with channel construction to provide proper structural support for all equipment mounted on the base during reasonable and competent transportation, loading and off-loading, installation and operation.

- **Pump Plate** The plating under the pumps and pump heads shall be composed of ½" steel, supported by 6" structural frame support underneath and between each main pump. The main structural support will be provided by the channel construction and sufficiently sized for weight and wear. The plate and channel construction shall be designed so as to be structurally sound and sufficiently rugged to withstand potential damage caused by wear or vibration and keep the pump shafts true in their hanging vertical orientation.
- **Deck Plate** The deck plate for the rest of the station shall be composed of 3/8" steel on remainder of the base, utilizing 6" channel construction to provide rigidity to withstand operational stresses. All deck plating shall be smooth steel, not diamond decked, to minimize wear points and surface area and provide superior corrosion resistance.
- **Handling hooks** for loading, off-loading and installation of the station will be provided.

- **Hardware** Easy-to-access bolt hardware shall be welded onto the base to facilitate easy installation and servicing. Stainless Steel, Zinc, or Cad-plated hardware will be used to retard corrosion.
- **Welding** all deck and pump plates shall be 100% complete seam-welded. No skip welding allowed.
- **Access Hatches** Integral framed access hatch with ½" carbon steel shall be designed into the base.

2.2 Piping Requirements

Pipe and fittings will meet ASTM A-53 Grade B steel pipe specifications. Flanges will be ANSI 150 psi-rated. Pipe will be schedule 40 or heavier.

- **Discharge Manifold** Pumps shall discharge into an oversized pipe discharge manifold to minimize friction losses and eliminate air build-up. Manifold shall be sized not to exceed a speed of 8 FPS based on full flow.
- **Minimum connections** at the manifold shall include a 3/4" hose bib connection, pump discharge entrances, exit pipe, pressure relief valve, and pressure gauge port.
- **Fitting Pressure Rating** Threaded-type fittings welded into the piping will be rated at more than 150 PSIG working pressure.
- **Discharge Outlet** The discharge outlet of the system will be welded into the manifold and shall have an ANSI 150 PSI flange for connection to the irrigation system.
- **Pump discharge connections** to the discharge manifold will be via grooved fitting to allow for ease of pump fit-up and adjustment.

2.3 Powder Coating

The pump station base, all piping and supports shall be finished with a polyester powder coat paint application according to the following specifications. For normal pump station applications, polyester powder coating is the only acceptable method of paint application to ensure long life and superior corrosion resistance. Deck skids include a Zinc powder coat primer for added corrosion resistance.

- Deck skid, piping and base shall be sandblasted with garnet to a white metal finish immediately prior to paint application.
- Base, pipe, and fittings (not motors, pumps, or electrical panel) will be powder-painted with Fence Green Powder PGS8-C0651 as supplied by **Sherwin Williams**. The powder coat shall be solid in color to facilitate easy touch-ups and color matching in the field. Coating shall be applied in a single homogenous layer following the paint manufacturer's specifications with thickness of 5-7 mils. A touch up kit shall be available from the manufacturer for "touch-up" requirements in the field.
- Powder coating shall be applied to the inside of all piping 6" diameter and larger where practical, that is mounted on the pump station base to increase corrosion resistance.
- When requested, the manufacturer shall submit results of salt spray testing on a representative paint sample, as conducted by an independent third party. The coating must receive a test score of 10 out of 10 based on a 1,400 hour duration salt spray test, with no degree of rusting or blistering, as reported by the third party test facility. The testing shall follow ASTM tests, D1654, D610 and D717 per ASTM B117.

2.4 Valves and Gauges

- **Check valves** shall be mounted on discharge side of each pump between the discharge head and the isolation valve. They shall be of the wafer-style, silent-operating type, or as required by application, dual disk. Check valves shall pass 100% of the pump volume. They will begin to close as velocity decreases and fully close at zero velocity. This will prevent reversal of flow. The valves shall be as manufactured by Val-Matic or equivalent. Standard construction shall be a cast iron body, Resicoat R4-ES fusion bonded epoxy coated, with a bronze disk.
- **Butterfly isolation valves** (lugged style) shall be utilized for pump isolation. Valves will be rated for 200 PSI and sized according to the manufacturer's technical specification sheet. Lever-operation shall be employed for valves 8" and smaller. Gear-operation shall be employed for valves 10" and larger. The valves shall be as manufactured by Kitz or equivalent. Standard construction shall be an epoxy coated ductile iron body, ductile iron disk, stainless steel shaft and Buna-N (or EPDM) seat and seals.
- **Discharge Isolation** A pump station discharge isolation valve (lug style) will be installed on the pump station discharge to isolate the pump station from the irrigation system. The valve will be equipped with a ten-position locking lever or gear operator. The valves will be rated at 200 PSI. The valve will be equipped with a ten-position locking lever or gear operator if 8" or larger. The valves shall be as manufactured by Kitz or equivalent. Standard construction shall be an epoxy coated ductile iron body, ductile iron disk, stainless steel shaft and Buna-N (or EPDM) seat and seals.
- **Pressure Gauges** All pressure gauges shall be mounted with an isolation valve. Gauges shall be glycerin or silicon filled and 2.5" in diameter. The gauge shall be selected so that the maximum expected operating pressure shall not exceed 75% of gauge range.

2.5 Pressure Relief Valve A pilot operated modulating pressure relief valve shall be installed downstream of the pump station pumps and sized per the technical data sheet.

- The valve is designed to relieve excess pressure at a designated pressure in excess of the normal operating system pressure. The valve shall be quick opening and slow closing to minimize pressure surges.
- The pressure relief valve shall not be used as an integral part of normal irrigation pressure control. The pressure relief valve shall work hydraulically and shall not be operated or opened from any electrical external source or control.
- The valve shall be factory set 15 PSI above system operating pressure (but not over any rating of a Pump Station component) and will relieve back to the wet well (or back to the lake, based on specification) when the inlet pressure exceeds spring setting on pilot.
- The valve will seal by means of a corrosion-resistant seat and resilient, rectangular seat disc.
- The valve body shall be ductile iron with 125 LB inlet and outlet flanges, and shall be rated for 250 PSI.
- A wye-strainer shall be installed in the inlet side of the valve body to provide clean water to the CRL pilot.
- A lug style butterfly valve shall be installed on the inlet of the relief valve for maintenance purposes. Specifications for this isolation valve will be the same as for the station isolation valve also found in this specification.
- It will be operational and hydrodynamically tested prior to shipping.
- Pressure relief valve shall be as manufactured by CLA-VAL.

3.0 ELECTRICAL

All electrical controls shall be U.L. listed. Manufacturer shall provide U.L. file number upon request. The entire panel shall be labeled as a complete U.L. listed assembly with manufacturer's label applied to the station.

3.1 Pump Station Electrical Enclosure and Associated Penetrations

- The pumping station electrical controls are to be mounted in a lockable NEMA 4 steel enclosure, fabricated of 12 gauge steel, designed and built per UL 508 specifications.
- Door gaskets seals will be close-cell neoprene sufficient to protect interior components from weather and dust.
- All wiring within and interconnecting the panel and pump will be complete. Wiring troughs and cable raceways will be self-contained within the enclosure. A complete wiring circuit diagram showing all components, terminals and wiring shall be supplied. All components shall be labeled and wires shall be numbered to correspond with the wiring diagram.
- Enclosure internal components shall be mounted on a removable back panel. Component mounting screws shall not be tapped into the enclosure wall.
- Installation of water lines inside the control panel are not permitted.
- An air-to-water heat exchanger unit or air conditioner is to be utilized to cool the enclosure and remove VFD-generated heat.
- Open cooling systems that penetrate the enclosure and could allow introduction of foreign material into the enclosure are not permitted.

3.2 Main Electrical Disconnect

A three-pole main electrical disconnect is to be installed inside the electrical enclosure to secure all power to the electrical panel.

- The main disconnect is to be non-fused and sized as per the manufacturer's technical data sheet.
- The main disconnect is to be interlocked with the panel door to prevent entry while disconnect is in the ON position.

3.3 Control Transformer (120 VAC)

A control transformer is to provide 120V power to the pump station controls. The control transformer shall be protected on primary and secondary sides with appropriately sized circuit breakers. No load other than the pump controls shall be supplied by the control transformer.

3.4 Surge Suppression

3.4.1 Three Phase Surge Suppression

Surge suppressor is to meet or exceed the following criteria and must comply with U.L. 1449 – 4th Edition:

- Maximum Discharge Current: 40,000A
- Short Circuit Current Rating (SCCR) 200KA
- Voltage protection rating at 460V, 3 Phase: L-G 2,500 V, L-L 2500V @ 3KA
- Voltage protection rating at 230V, 3 Phase: L-G 1,800 V, L-L 1800V @ 3KA
- Response time: <20µs

Suppressors are to be constructed of solid-state components and operate bi-directionally.

3.4.2 Single Phase (120VAC) Surge Suppression

Surge suppressor is to meet or exceed the following criteria and must comply to UL 1449 – 4th Edition:

- Surge current rating: 50,000A
- Voltage protection rating at 120V, 1 phase: L-G 700 V, L-N 700V, N-G 1500V.
- Response time: <1ns

Suppressors are to be constructed of solid-state components and operate bi-directionally.

3.5 Secondary Control Circuit (24VDC)

Appropriately rated single-pole secondary distribution circuit breakers are to supply power to the 24 VDC control transformer for powering PLC inputs and outputs as well as the pressure transducer, and any other 24 VDC circuits as specified.

3.6 Motor Protection

Motors are to be protected from an over-current condition via the use of industrial grade circuit breakers of the type manufactured by ABB or equivalent.

- The circuit breakers will be fast acting, low peak, current limiting, and meet (A.I.C.) as required by UL.
- The utilization of fuses for main motor protection is not permitted.
- Bi-metallic thermal overloads will be utilized for motor protection.
- Phase and voltage imbalance as well as phase loss conditions shall be monitored and alarmed by devices listed in section 3.8 below.

3.7 Motor Starting

Motors that are started across the line shall use industrial grade IEC rated motor starters sized equal to or larger than the rated motor load (per manufacturers data sheet) and will be of the type manufactured by Mitsubishi or equivalent. Motor starters shall have a mechanical endurance rating of 5 million operations for loads over 40 amps and 10 million operations for loads under 40 amps. Temperature rating shall be from -20 to +55 °C. Non-reversing contactor designs shall include mechanical and electrical interlocking capability.

Motors that are started by VFD shall use parameters as described in Section 4 below.

3.8 Main Line Power and Phase Monitor

The incoming power will be monitored by a phase loss/low voltage system relay to de-energize the pump station control circuit or motor contactor if a phase failure, phase reversal or low voltage condition occurs.

- If the maximum number of attempted automatic re-starts is reached and the phase failure/low voltage alarm condition remains, the alarm will be required to be manually reset.
- Individual motor overloads will also act as phase monitors for each motor.

3.9 Electrical Power

Pump station electrical wiring is to conform to NEC Standards. All wiring from control panels to motors is to use UL listed, water tight, flexible conduit with copper conductors rated not less than 600 volts. Wires are properly sized to carry the full load amperage of the motors without exceeding 70% capacity of the conductor. A grounding cable sized to NEC requirements shall be included in the flexible conduit. There shall be no splices between the motor starters and the motor connection boxes.

4.0 CONTROLS

4.1 Programmable Logic Controller

The Programmable Logic Controller (PLC) shall handle all control logic in the pump station. Control software is to be parameter driven and allow user to easily change ALL operational parameters via HMI. The PLC shall be of the type manufactured by Mitsubishi, or an approved equal, and meet the following specifications:

- **Program memory:** EEPROM memory
- **Setting switch:** RUN/PRG selector switch
- **LED indication:** POWER, RUN, ERROR, BATTERY, LED, I/O

4.2 Variable Frequency Drive (VFD)

4.2.1 VFD Manufacturer

- The Variable Frequency Drive shall be as manufactured by Mitsubishi Electric Automation, Inc. or Delta
- The VFD control technique shall employ pulse width modulated (PWM) control.
- Private labeled products are not permitted.

4.2.2 VFD Environmental Ratings

- The VFD shall be designed to operate in the following Ambient Temperature range: Non-freezing.
  - Variable Torque and Constant Torque loads: –10C to +50C (14 to 122F).
- The storage temperature shall be –20C to +65C (-4 to 149F), non-condensing. Applicable for short periods, such as during transit.
- The maximum relative humidity shall be 90% at 50C (122F), non-condensing.
- The VFD shall be rated to operate at altitudes less than or equal to 1,000m (3,280ft).
- For altitudes above 1,000m (3,280ft) the VFD shall be de-rated as follows:
  - All sizes: Reduce the rated output current (Amperes) by 3% for every 500m (1640ft), up to 2,500m (8,200ft) maximum (91% of rated).
  - Consult factory for higher altitudes.

4.2.3 VFD Ratings

The VFD shall be designed for operation with the following input voltages.

- 1Hp to 75Hp using nominal 230VAC input voltage.
  - 170-242Vac 50HZ
  - 170-264Vac 60Hz
  - 200-240Vac (+10%/-15%)
- 1Hp to 800Hp using nominal 480VAC input voltage.
  - 323-528Vac 50/60Hz
  - 380-480Vac (+10%/-15%)
- The input voltage frequency range shall be 47.5 to 63 Hz.
- The displacement power factor shall not be less than 0.93 with optional DC line reactor at 100% load factor. (DC reactor shall be standard for VFD's of 100HP and above.)
- The efficiency of the VFD at 100% speed and load shall be not less than 95%.

4.2.4 VFD Protection

- The VFD shall be U.L. 508C-Listed for use on distribution systems with 65kA rms available fault current, based upon the UL short-circuit test.
- The VFD shall be protected against short circuits between the output phases & ground and the logic & analog outputs.
- Once operational, monitoring shall continually take place and an abnormality will result in an alarm.
- For a fault condition other than an internal fault, an auto restart function shall provide up to 10 programmable restart attempts. The programmable time delay before each restart shall range from 0 to 10 seconds.
- The deceleration ramp of the VFD shall be programmable for normal and fault conditions.
- The VFD shall include Metal Oxide Varistors (MOVs) wired to the incoming AC terminals.
- The VFD shall be insensitive to input power phase sequence.
- The VFD shall monitor the main circuit capacitors, control circuit capacitor, in-rush suppression circuit, and cooling fan and shall provide a pre-alarm so that maintenance can be scheduled.
- The VFD shall include parameter selectable input and output phase loss protection.

4.2.5 VFD Adjustments and Configurations

- The VFD shall store the last eight (8) alarm faults and data at time of fault. The data shall include output frequency, output current, output voltage and VFD operation time at fault occurrence.
- The VFD shall have selectable settings for accel/decel times, torque boost, base frequency, stall prevention frequency and current, and output frequency detection functions.
- The VFD shall be able to limit motor rotation to only one direction.
- The VFD shall have current detection functions which are able to trigger individual alarms.
- High output current detection.

4.3 Main Motors – VFD Start Selection

This section refers to the VFD start selection protocol to start the main motors. An intermediate pump shall have a separate dedicated VFD if quoted. VFD's shall be used to start the main motors in one of two following methods, as specified by the irrigation designer. The technical specifications at the end of the document shall be considered as accurate if any question regarding the approved method for this station.

4.3.1. Dedicated VFD for each Motor

If specified, the manufacturer shall design the pump station with a separate, dedicated VFD for each motor on the station. The "VFD per motor" option is employed for improved motor operation in locations with poor or inconsistent power quality, reducing the surge on pump starts, increased motor protection, reducing motor starting current, and extending motor life.

With VFD per motor, the lead motor will be started by the VFD and ramped up based on demand. When the lead motor is at full speed, the next motor in the sequence will be started via its dedicated VFD and will become the lead motor. The lead motor will continue to be ramped to full speed based on demand. If more than two main motors, the remaining

motors will be started via dedicated VFD's in this same manner, with the lead motor adjusting to maintain pressure and the following motors running at full speed on the VFD(s). After each irrigation event, the motor with the lowest hours will be become the lead motor started by its dedicated VFD. The following motors will also be started via dedicated VFD's in the same manner based on run time. In systems with more than two main motors, the following protocol shall be followed:

a) The lead motor will be started with the VFD. Accumulated operating hours of the remaining motors will be evaluated and the motor/pump with the lowest operating hours shall become the next lead motor to be started during the next irrigation event.
b) Accumulated operating hours for the main motors are to be maintained with +/- 8 hours of each other.

4.4 Alarms

Standard alarm features that shall be included as a minimum are as follows:

- Emergency Stop
- Low discharge pressure
- High discharge pressure (attempts restart)
- Low water level (attempts restart)
- Phase loss (attempts restart)
- Low voltage (attempts restart)
- VFD fault (shutdown VFD pump only and attempts restart)
- Flow meter fault
- Motor over temperature (optional)
- High Flow
- Excessive pump starts (shut down pump if any user selectable limit is exceeded)

All alarms will be indicated on the touch screen operator interface. Specific alarm conditions will be displayed in English on the touch screen operator interface. Pilot light indicators shall not be acceptable.

4.5 Color Touch Screen Operator Interface (HMI)

The Color Touch Screen Operator Interface also commonly known as Human Machine Interface (HMI) is to be a full-color 8.4 inch NEMA 4 rated touch-screen unit. It shall be mounted in the enclosure door. The HMI shall be able to access all pump information, including but not limited to logging, alarm, and current status readings. It shall have a minimum data storage capacity of 4.0 GB of memory with a USB connection on the front panel for data accessibility. The HMI shall be able to select and change all pump and pressure settings while protecting the system from accidental programming errors by password protecting sensitive set up readings.

The use of a text display operator is not permitted.

The HMI shall be multilingual (English, Spanish, French (Canadian), Chinese (Mandarin), German and Swedish) and shall show the following information on a default screen:

- Current PSI actual and set point
- VFD Speed %
- Volumetric Flow Rate

- Fault conditions
- Pump selected for VFD operation
- Pump operation select position (Manual/Off/Auto)
- Pumps operating

PLC bypass switches shall be mounted on the front of the NEMA 4 electrical panel to allow the user to manually operate pumps should the PLC experience a failure.

- Individual Auto / Off / Manual switches for each pump.
- The three position Auto/ Off / Manual switches are illuminated when pump is activated.

An Emergency Stop button shall be mounted on the front of the NEMA 4 electrical panel to enable the user to shut the pump station down in an emergency situation.

4.6 HMI Operation

The HMI shall have the following capabilities.

- Individual pumps including the PM Pump can be enabled or disabled. The display will indicate color-coded operation as follows:
  - Ready to Start Automatically (Yellow)
  - Off (Grey)
  - Running across-the-line (or at full speed) (Green)
  - Running utilizing VFD (Blue)
  - Alarm (Red)
  - Enabled but not in Auto (Purple)
- Alarm and Alarm Reset
- Password Protection
- Trends Screens
  - Flow Graph
  - Pressure Graph
  - Running Pumps Graph
  - VFD Speed Graph
  - Backup abilities to external flash drive
  - User definable maximum values trends adjustment
- Preset Pressure: Setpoint pressure shall be adjustable based on specification. Also with automatic adjustment per operating pump increasing or decreasing up to 10 psi upon each pump start. Each pump start allows station setpoint adjustment from -99 to 99 psi upon start. Allows user to maintain a lower setpoint when not operating the pumping station for irrigation use and to variably increase as demanded flow increases. Additional external signal setpoint increase or decrease of 10 psi shall be provided.
- Main Pump Start and Stop Pressure Settings: The HMI shall allow for user defined start and stop margins and delays for both small and large under or over pressure setpoints and delays. The interface shall have a user-defined delay for a second pump start to prevent cycling a pump on and off that is not required for the demand flow.
- PM Pump Adjustments: The HMI shall allow for user defined start and stop margins and delays for both small and large under or over pressure setpoints and delays. Additionally, flow values for when the PM pump is active (or not) shall be used if the system is equipped with a Flow Meter.
- Flow Meter Adjustments: The HMI shall allow for flow meter operational settings for managing lead pump on / off control.

- Soft Starting (line re-pressurization) Adjustments: The HMI shall allow the station to ramp up system pressure upon falling below a user-defined setpoint. This pressure ramp up feature shall allow for a pressure rise over a user-defined time interval. Note: The intended function of this program is to refill lines during re-pressurization, not initial fill of lines during an event like spring start-up or initial fill which should be done with direct supervision.
- VFD Bypass: The HMI shall allow for all main pumps to be operated Across the Line (ATL) without use of the VFD. This may be used for emergency operation upon VFD failure on systems with single main motor VFD's and with non-reversing contactors.
- Filter Flushing Adjustments: The pumping station shall be capable of flushing up to 8 filters periodically per user-defined time interval. It shall provide a user-defined flush mode, differential pressure adjustment up to 7 PSI, and an adjustable flushing time per element. A flushing counter shall be provided with reset abilities. The HMI must allow for manual flush operation.

4.7 Pressure Transducer

A solid state pressure transducer shall be used to provide all pressure signals for the pump station control logic.

- The transducer shall provide a noise free, linear output proportional to discharge pressure.
- The transducer shall be solid-state, strain gauge type with integral voltage regulation and output accuracy not less than 0.25%.
- The pressure transducer is to be constructed of stainless steel and rated for system pressure.
- Plastic pressure transducers are not permitted.

4.8 Flow Meter:

A flow meter is to be installed for providing the pump station flow rate and total flow through the operator interface. Optionally, one of two different meters may be specified, as indicated below. If not clarified, the technical data sheet at the end of the document shall be considered as accurate.

4.8.2 Magnetic Flow Meter

A magnetic flow meter shall be installed for providing the pump station flow rate and total flow through the operator interface. Meter must be installed with at least 5 upstream and 2 downstream pipe diameters of straight uninterrupted flow to yield the accuracies listed below. The magnetic flow meter shall meet the following specifications:

Flow Range:	0.8 - 40 fps (0.24-12 m/s)
Minimum Conductivity:	5 micro siemens/cm
Accuracy:	± 0.55% or better with velocity between 6-40 fps. ± 0.65% or better with velocity between 1.6-6.0 fps.
Electrode Materials:	Standard material shall be Hastelloy® C
Pressure Limits:	Upper pressure limit, unless specified otherwise, shall be 150 psi (10Bar)
Coil Power:	DC power shall be supplied to the meter
Ambient Temperature:	-20°F to 149°F, (-28°C to 65°C)
Meter Housing Material:	Carbon Steel welded
Flanges:	Carbon Steel - Standard (ANSI B16.5 Class 150 RF)

Meter Enclosure Classification: NEMA 4

5.0 PUMP AND MOTOR ASSEMBLIES

The pump station manufacturer will adhere to the following specifications in all areas.

5.1 Main Irrigation Pumps

- All main irrigation pumps are to be from the same manufacturer. The pumps shall be manufactured according to the standards of the Hydraulic Institute and to ANSI specification No. B58.1.
- The pump manufacturer will have a network of worldwide service centers, which will have spare parts and service technicians to address service, repair and warranty issues.

5.1.1 Pump Discharge Head

- The discharge head shall be manufactured of ASTM A536, cast ductile iron with a 60,000 PSI tensile strength, and shall be powder coated for maximum corrosion resistance. The discharge head assembly is to be accurately machined with a rabbet fit for mounting the driver and supporting the column assembly. The design will allow for the head-shaft to couple above the stuffing box assembly. The discharge head stuffing box area is to include an integrated drain, which will be directed back to the wet well along with an air relief outlet to be piped to the wet well.
- The discharge head is to have a working pressure of at least 275 PSI and shall match a a 150# ANSI discharge flange in the design.
- The cast iron stuffing box is to be rated for 300 PSI with a minimum of six (6) packing rings and an adjustable packing gland. Any bypass tubing for lubrication and cooling will return to the wet well.
- The head-shaft will be two-piece, 416 SS, turned, ground, and polished. Impeller adjustment will be provided at the top of the head-shaft.

5.1.2 Pump Column Pipe, Shafts, Impeller and Bowls

- **Column Pipe** shall be manufactured with ASTM A-53 Grade B steel pipe. The column pipe will be furnished in interchangeable sections not more than ten (10) feet in length and will be threaded or flanged. If threaded, the threads shall be machined to eight (8) threads per inch with a 3/16" taper and parallel facing to ensure proper alignment and to secure the bearing retainers when assembled.
- **Line-shafts** shall be manufactured of ASTM A582 Grade 416 SS, turned, ground and polished. They shall be true within 0.005 in. total indicator reading for a 10 ft. section. The butting faces will be machined with center relief and square to the axis of the shaft. The line-shaft will be coupled with 416 SS extra heavy duty couplings, and held in place by ASTM A743 CF8 stainless steel bearing retainers with neoprene fluted bearings at each threaded joint.
- **Pump bowls** shall be of cast iron, ASTM A-48 Class 30. The bowls will have vitreous porcelain enamel lined waterways to reduce friction losses and maximize efficiency and wear protection. Intermediate bowls will be provided with C89835 Bronze B 505 bearings.
- **Impellers** shall be manufactured out of CF8M Nickel Aluminum Bronze and shall be enclosed type, machined, balanced, and trimmed for optimum performance. They will be fastened to the shaft with ASTM A 519 Grade 1018 carbon steel tapered collets.
- **Suction bell** shall be fitted with grease packed ASTM B505 C89835 Bronze bearing and protected by a sand collar. The suction bell will be fitted with a stainless steel slip-

on basket strainer. The strainer inlet area will be more than 4 times the suction bell inlet area.

- **Bowl shaft** shall be ASTM, A582 grade 416 stainless steel: turned, ground, and polished.
- **Vertical turbine pump length** is to extend to 12" (30cm) above the bottom of the wet well.
- **Operating Speed** The main pumps are to operate up to a maximum of 1760RPM for 60 Hz applications. (1450RPM for 50Hz applications). The pressure maintenance pump is to operate at 3550RPM for 60 Hz applications. (2960RPM for 50Hz applications).

5.3 Pressure Maintenance Pump

For the purpose of maintaining system pressure during non-irrigation periods, a pressure maintenance pump (PMP) shall be incorporated in the system. Pressure maintenance pump shall be submersible type, constructed of stainless steel.

- The PMP shall be sized to prevent main pump cycling.
- The PMP shall perform as specified in the Technical Specifications.

5.4 Main Irrigation Pump Motor

Motors supplied for the main irrigation pumps shall be WP1 squirrel cage induction 4-pole motors (meeting the requirements of NEMA design B) rated for continuous duty, and meet government required Premium Efficiency standards.

- The thrust bearing will handle the entire hydraulic thrust load of the pump plus the weight of the rotating parts.
- The coil insulation shall be Class F or Class H.
- The motor rating shall be such that at design it will not be loaded beyond nameplate rating.
- Each motor shall be equipped with a 120 volt anti-condensation heater (to be energized when the motor is not running) and a non-reverse ratchet to prevent catastrophic pump damage due to power reversal.
- Main irrigation pump motors shall be operated in accordance with NEMA MG1-31 and MG-2.
- Motors designated for 60Hz operation are rated for a service factor of 1.15. International duty motors designated for 50Hz operation are rated for a service factor of 1.0.
- Optionally, if the pump station will not be housed in a permanent enclosure, TEFC motors may be specified in place of WP1 motors.

5.5 Pressure Maintenance Pump Motor

The system shall be equipped with a pressure maintenance pump. The PMP shall be equipped with a 2-pole, high efficiency submersible motor.

- The pressure maintenance pump shall perform as specified by the Technical Specifications.
- The pressure maintenance pump motor shall be operated in accordance with NEMA MG-1 and MG-2

6.0 REMOTE MONITORING AND CONTROL PACKAGE

Pump station manufacturer shall provide the following remote monitoring system. Remote monitoring and control software shall have been developed internally by the pump system manufacturer and shall operate within the Windows® operating platform.

6.1 Remote Pump Station Control and Monitoring.
Pump station monitoring software shall be included with the pump station. The software shall be 100% compatible with the Microsoft Windows operating system. Software shall be graphical in nature with full (point and click) mouse control. The monitoring system shall be capable of communicating via an Ethernet IPv4 connection. The pump station software shall be field configurable for hardwired Ethernet extenders or 900MHz Ethernet enabled radios.

The software shall include functionality in flow rate units of GPM, m3/hr, l/s. The software shall allow pressure units of psi or bars. The software shall include the following languages: English, Swedish, German, French, Spanish, or Portuguese. The software shall have user defined logging abilities of Alarms, Data, and Events. The software shall allow user defined maximum values for pressure and flow trends. The software shall allow up to 10 individual pump stations to be monitored and controlled.

The software shall enable users to locally and/or remotely access (the same or multiple) pump stations simultaneously. All require hardware at the pump station (other than computer, monitor screen, and direct burial cable) shall be supplied by pump station manufacturer.

Pump Manager 2 software shall be included. The following parameters can be monitored by the user on a remote computer:

- Individual pump operating status. The status shall be color-coded as:
  - Enabled – Yellow.
  - Disabled – Gray.
  - Running – Green.
  - Alarm – Red.
- Preset Operating Pressure can be viewed and adjusted remotely.
- Actual discharge pressure and flow rate can be viewed remotely
- Graphical display of historic discharge pressure and flow rate.
- VFD controlled Pump speed can be viewed remotely.
- Active alarms or faults can be viewed remotely and adjusted or reset.
- Communication connectivity status can be viewed remotely.

Manufacturer shall provide the capability to monitor and control the pump system from a remote location. The following equipment shall be supplied by owner. Pump Monitor software program shall require:

- PC with Intel Core I5 – 10600 @ 3.3 Ghz processor, 12MB Cache or better
- Microsoft Windows 10 Pro OR Windows Server Essentials 2019 operating system
- 16 GB or RAM minimum
- Hard disk space required: 1 TB
- CD-ROM drive
- 6 Serial (RS232/Com) ports, 1 parallel port

- Ethernet port, a second port may be necessary to create two networks. One network for standard Internet access and the other network for pump station access.

Monitoring software shall be user configurable. Communications shall be capable of the following basic modes but as specified in the technical information and specifications section:

- **Rain Bird MCA** - The Pump Station will communicate to the cloud with a cellular modem kit that is pre-configured and managed by Rain Bird. Customer to verify adequate cellular signal at pump house.

6.2 Central Control Communication

The station must be compatible with an irrigation central control system that enables automatic adjustment of the irrigation demand in the field based on real time flow observed at the pump station.

- The central control software must be capable of interacting with real-time flow measurements at the pump station, comparing with theoretical flow rates in the irrigation central control software, and automatically adjusting demand, increasing or reducing the number of irrigation stations active in the field in response to observed demand at the pumping station. This shall allow the pump station to operate at peak design flow capability in real time without affecting the majority of the on going irrigation.
- The capability to adjust field demand must be based on the actual pump station flow meter reading during an irrigation cycle.
- The system must also be capable of recognizing actual flow discrepancies due to pipe leaks or breaks via the central control and reacting in real time to those small or large discrepancies based on expected system flow. The monitoring software shall have user-selectable settings to ensure complete control of the pump station reaction to a variety of fault indicators, including complete shut down of the pump station and irrigation system if a pipe leak is suspected.
- In addition to taking immediate, real-time action in the field, the software will be capable of sending alarms to the user or designated personnel by phone, text or email when faults are detected. This will ensure the user can make independent decisions to respond to faults, if desired.

7.0 TESTING REQUIREMENTS

The pump station manufacturer shall have on their premises a complete hydraulic flow testing facility, capable of testing pump stations to 100% of pump station design capacity with all pumps fully engaged.

Prior to shipment, the pump station shall be fully assembled at the manufacturing facility, including the assembly and mounting of pump shafts, pump heads and motors. The station shall be hydraulically flow tested to design capacity across a full range of operating parameters to ensure that all components are operational and in proper working order. Any required calibrations will be performed during this factory test. All electrical Amperage draw measurements and calibration / control adjustments and settings will be recorded in the operation manual test section.

The complete pumping system shall operate without undue vibration throughout the range of operating conditions. The unit shall be given a running test of normal start and stop conditions under load. Any defects shall be corrected and adjustments made at the expense of the manufacturer. Test shall be repeated until satisfactory results are obtained and operation is deemed satisfactory.

8.0 ON-SITE PUMP INSTALLATION

Off-loading and installation of the pump station shall be the responsibility of the customer or designated representative, unless specifically agreed upon in writing between the interested parties. The equipment utilized to off-load and install the pump station shall be provided by the customer or his/her designated representative unless specifically agreed upon in writing between the interested parties.

Following the installation of the pump station, the complete pumping system shall be given a complete test across the full range of operation.

9.0 TRAINING REQUIREMENTS

The pumping system manufacturer shall provide training for the end user on proper operation of the pumping system. The training will be performed on the actual installed equipment after such time as installation, startup, and calibration have been completed.

10.0 WARRANTY

Rain Bird guarantees that its pump station will be free of manufacturer defects for three years from the date of start-up but not beyond forty months from the date of purchase by the original customer with a copy of the seller's invoice required for coverage under this Policy. Rain Bird's Professional Customer Satisfaction Policy is attached at the end of this document for additional reference.

11.0 OPTIONAL EQUIPMENT

The following optional equipment can be provided by the pump station manufacturer per customer request. If specified, the equipment will be listed in the Technical Specifications.

1) Magnetic Flow Meter
2) Skid and piping to be fusion bonded with zinc epoxy primer
3) Auto-flush Wye-Strainer.
4) Communication: Rain Bird MCA Cloud Based Telemetry
5) VFD per main pump with A/C cooling

12.0 TECHNICAL INFORMATION

Total Pump Station Design Requirements

Irrigation Zone	Design Flow Rate (GPM)	Design Pressure (PSI)
1	1200	118

Required Incoming Power

	Voltage	Amperage	KVA	Phase	Hertz
Service Entrance	480	229	191	3	60

Pump Station Main Disconnect

	Amps	Volts
Service Entrance	400	480

Variable Frequency Drive

Ambient Temperature	-10 ºC to +50ºC (non-freezing)
Ambient Humidity	90% relative humidity (non-condensing)
Maximum Efficiency	97% full load (55,000 Watts)
Frequency Rating	100% at rated load, 120% OL / 1 min, 150% OL / 3 sec

Standard Safeties

Incoming Phase Failure, Phase Reversal, Low Voltage, and High Voltage Safety
Individual motor over load protection
High and Low Discharge Pressure Fault Alarm
Low Water Level Safety
High Flow Fault Alarm

Motor and Pump Data

	PMP		Main Pumps	Units
Motor Power	5		60 Nidec	HP
Motor And Pump Speed	3450		1770	RPM
Motor Service Factor (Sine Wave Power)	1.15		1.15	-
Motor Efficiency (Main Motors are Premium Efficient)	78		94.5	%
Motor Power Factor	76		86.9	-
Motor Type	SUB		VHS	-
Motor Full Load Amperage	8.1		68	Amps
Motor Protector Setting	9.315		78.2	AMPS

Motor Circuit Breaker Rated Operational Current	15		125	AMPS
Motor Circuit Breaker SCCR Rating	25,000		25,000	AMPS
Motor Starter Type	XL		VFD	-
Altitude De-rating Factor For Main Motors	0%		0%	%
Individual Motor Exhaust Fan Requirements	0		1020	CFM
Total Station Exhaust Requirements	5,100			CFM
Individual Pump Flow Rates	40		600 Simflo	GPM
Individual Pump Total Dynamic Head	319		305	FEET
Pump Efficiency at Design Flow Rate	69		83.3	%
Maximum Pump Shut Off Head	367		456	FEET
Pump Column Pipe Diameter	2		6	INCHES
Pump Discharge Flange Size	2		6	INCHES
Check Valve Size	2		6	INCHES
Check Valve Maximum Pressure Rating	200		200	PSI
Check Valve Pressure Loss at Design Flow Rate	1.1		1.7	PSI
Pump Isolation Valve Size	2"		6"	INCHES
Pump Isolation Valve Maximum Pressure Rating	200		200	PSI
Pressure Relief Valve Size	4			INCHES
Station Isolation Valve Size	8			INCHES
Station Isolation Valve Maximum Pressure Rating	200			PSI

All Motors to be VFD rated, Motor Starting Code G, Design B, and Class F or H Insulation

Pump Seals

Packing	X	**Mechanical Seal with flush**	

Pump Station Discharge Information

Zone	Isolation Valve	Meter Run Size	Meter Type	Z Pipe	TOL's
1	8"	8"	Mag	N/A	N/A

Remote Interface & Alarm Notification

Ethernet Extender Modem		**Ethernet Radios**		**Rain Bird MCA**	X

Fertigation System Interface

Optical Isolator	X	**Run Relay**	X

Panel Cooling

Air Conditioner	X	**Heat Exchanger**	

Lake Level Control Circuit

Floats		**Transducer - Analog**	

Wet Well and Pump Set Information

Wet Well Depth	10.66 Feet (Verify)
Pump Set	9.66 Feet
Wet Well Open Area	72" Inches Diameter

Rain Bird Pump Station Professional Customer Satisfaction Policy Terms and Conditions

Rain Bird guarantees that its pump station will be free of manufacturer defects for three years from the date of start-up but not beyond forty months from the date of purchase by the original customer with a copy of the seller's invoice required for coverage under this Policy. Start-up or service by anyone other than a Rain Bird authorized representative, when required, will void these terms and conditions.

Provided that all installation, start-up, operation responsibilities, and recommended maintenance procedures have been properly executed and performed by authorized Rain Bird representatives, when required, Rain Bird will replace or repair, at Rain Bird's option, any Rain Bird part found to be defective under normal recommended use during the effective period of this Policy, such evaluation to be solely determined by Rain Bird. Rain Bird's only obligation and customer's exclusive remedy under this Policy is limited to repair or replacement, at Rain Bird's option, of the parts or the products the defects of which are

reported to Rain Bird within the applicable Policy period, which prove to be defective and such evaluation will be solely determined by Rain Bird.

In no case will Rain Bird cover labor costs associated with repair or replacement of parts beyond one year from date of start-up. Repairs performed and parts used at Rain Bird's expense must be authorized by Rain Bird, in writing, prior to repairs being performed. Product repairs or replacement under this Policy will not extend this Policy. Coverage for repaired or replaced product shall end when this Policy terminates. Rain Bird's sole obligation and customer's exclusive remedy under this Policy shall be limited to such repair or replacement.

Upon request, Rain Bird may provide advice on trouble-shooting a defect during the effective period of this Customer Satisfaction Policy. Repair service must be performed by a Rain Bird authorized representative regardless of whether the labor is covered by Rain Bird or is at the owner's expense during the effective period of this Policy. However, no service, replacement or repair under this Customer Satisfaction Policy will be rendered while the customer is in default of any payments due to Rain Bird

Rain Bird will not accept responsibility for costs associated with the removal, replacement or repair of equipment in difficult-to-access locations and such evaluation will be solely determined by Rain Bird. Difficult-to-access locations include (but are not limited to) locations where any of the following are required:

1) Cranes larger than 15 tons
2) Divers
3) Barges
4) Helicopters
5) Dredging
6) Roof removal or other such construction/reconstruction requirements
7) Any other unusual means or requirements

Such extraordinary cost associated with difficult-to-access locations shall be the sole responsibility of the customer, regardless of the reason requiring removal, repair or replacement of the equipment.

The terms and conditions of this Customer Satisfaction Policy do not cover damage, loss or injury caused by or resulting from the following:

1) Misapplication, abuse, or failure to conduct routine maintenance (to include winterization / winter lay-up procedures).
2) Pumping of liquids other than fresh water as defined by the U.S. Environmental Protection Agency, unless the pump station quoted by Rain Bird specifically lists these other liquids and their concentrations.
3) Use of pesticides (to include insecticides, fungicides and herbicides), free chlorine or other strong biocides.
4) Exposure to electrolysis, erosion or abrasion.
5) Use or presence of destructive gases or chemicals unless these materials and their concentrations are specified in the Rain Bird quotation.

6) Electrical supply voltages above or below those specified for correct pump station operation.
7) Electrical phase loss or reversal.
8) Use of a power source other than that specified in the original quotation.
9) Non-WYE configured power supplies such as open delta, phase converters or other forms of unbalanced three phase power supplies
10) Improper electrical grounding or exposure to incoming power lacking circuit breaker or fused protection.
11) Using the control panel as a service disconnect.
12) Lightning, earthquake, flood, windstorm or other Acts of Nature.
13) Failure of pump packing seal (unless the failure occurs on initial start-up).
14) Any damage or loss to plants, equipment or groundwater or injury to people caused by the failure of or improper use of an injection system or improper concentration of chemicals or plant nutrients introduced into the pump station by an injection system.
15) Any failure of nutrient or chemical storage or spill containment equipment or facilities associated with the pump station location.

THE FOREGOING TERMS AND CONDITIONS CONSTITUTE RAIN BIRD'S ENTIRE PUMP STATION CUSTOMER SATISFACTION POLICY. THIS POLICY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES WHATSOEVER, WHETHER EXPRESS, IMPLIED, OR STATUTORY INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE ALL HEREBY EXPRESSLY DISCLAIMED. THE SOLE REMEDY UNDER THIS POLICY SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT OF THE PUMP STATION OR ITS COMPONENTS PURSUANT TO THE TERMS AND CONDITIONS CONTAINED HEREIN. IN THE CASE OF ANY COMPONENTS OR INJECTION SYSTEMS MANUFACTURED BY OTHERS (AS NOTED ON THE PUMP STATION QUOTATION), THERE IS NO WARRANTY PROVIDED BY RAIN BIRD AND THESE ITEMS ARE COVERED SOLELY BY AND TO THE EXTENT OF THE WARRANTY IF ANY, OFFERED BY THOSE OTHER MANUFACTURERS.

RAIN BIRD SHALL NOT BE LIABLE TO THE CUSTOMER OR ANY OTHER PERSON OR ENTITY FOR ANY LIABILITY, LOSS, DELAY OR DAMAGE CAUSED OR ALLEGED TO BE CAUSED, DIRECTLY OR INDIRECTLY, BY ANY USE, DEFECT, FAILURE OR MALFUNCTION OF THE PUMP STATION OR BY ANY INJECTION SYSTEM WHETHER A CLAIM FOR SUCH LIABILITY, LOSS, DELAY OR DAMAGES IS BASED UPON WARRANTY, CONTRACT, TORT OR OTHERWISE. RAIN BIRD SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, COLLATERAL OR INDIRECT DAMAGES OR DELAY OR LOSS OF PROFIT OR LOSS OF USE OR ANY DAMAGES RELATED TO THE CUSTOMER'S BUSINESS OPERATIONS, NOR FOR THOSE CAUSED BY ACTS OF NATURE. IN NO CASE AND UNDER NO CIRCUMSTANCES SHALL RAIN BIRD'S LIABILITY EXCEED THE RAIN BIRD CORPORATION'S NET SALE PRICE OF THE PUMP STATION.

Laws concerning customer warranties and disclaimers vary from state to state, jurisdiction to jurisdiction, province to province or country to country and therefore some of the foregoing limitations may not apply to you. The exclusions and limitations set out above are

not intended to, and should not be construed so as to contravene mandatory provisions of applicable law. If any part or term of this Policy is held to be illegal, unenforceable or in conflict with applicable law by a court of competent jurisdiction, the validity of the remaining portions of this Policy shall not be affected, and all rights and obligations shall be construed and enforced as if this Policy did not contain the particular part or term held to be invalid.

Pump Station Professional Customer Satisfaction Policy January 26, 2016

Pump Data Sheet - SIMFLO

Company:
Name:
Date: 09/16/2025

SIMFLO

Pump:

Size:	SW12L (stages: 5)	Dimensions:	
Type:	VERTTURBINE	Suction:	8 in
Synch Speed:	1800 rpm	Discharge:	8 in
Dia:	9.325 in	Vertical Turbine:	
Curve:	SW12L.05.O.4646.1022	Eye Area:	16.3 in²
Impeller:	SW12L	Bowl Size:	12 in
Specific Speeds:	Ns: 1577	Max Lateral:	1.13 in
	Nss: 7994	Thrust K Factor:	6.5 lb/ft

Search Criteria:

Flow:	600 US gpm	Near Miss:	---
Head:	305 ft	Static Head:	0 ft

Fluid:

Name:	Water		
SG:	1	Vapor Pressure:	0.256 psi a
Density:	62.4 lb/ft³	Atm Pressure:	14.7 psi a
Viscosity:	1.1 cP		
Temperature:	60 °F	Margin Ratio:	1

Pump Limits:

Temperature:	---	Sphere Size:	0.66 in
Wkg Pressure:	1140 psi g	Power:	376 hp

Motor:

Standard:	US	Size:	60 hp
Enclosure:	TYPE 1	Speed:	1800 rpm
Frame:	----		
Sizing Criteria:	Max Power on Design Curve		

Pump Selection Warnings:

None

--- Duty Point ---

Flow:	603 US gpm
Head:	308 ft
Eff:	83.3%
Power:	56.2 hp
NPSHr:	10.7 ft
Speed:	1770 rpm

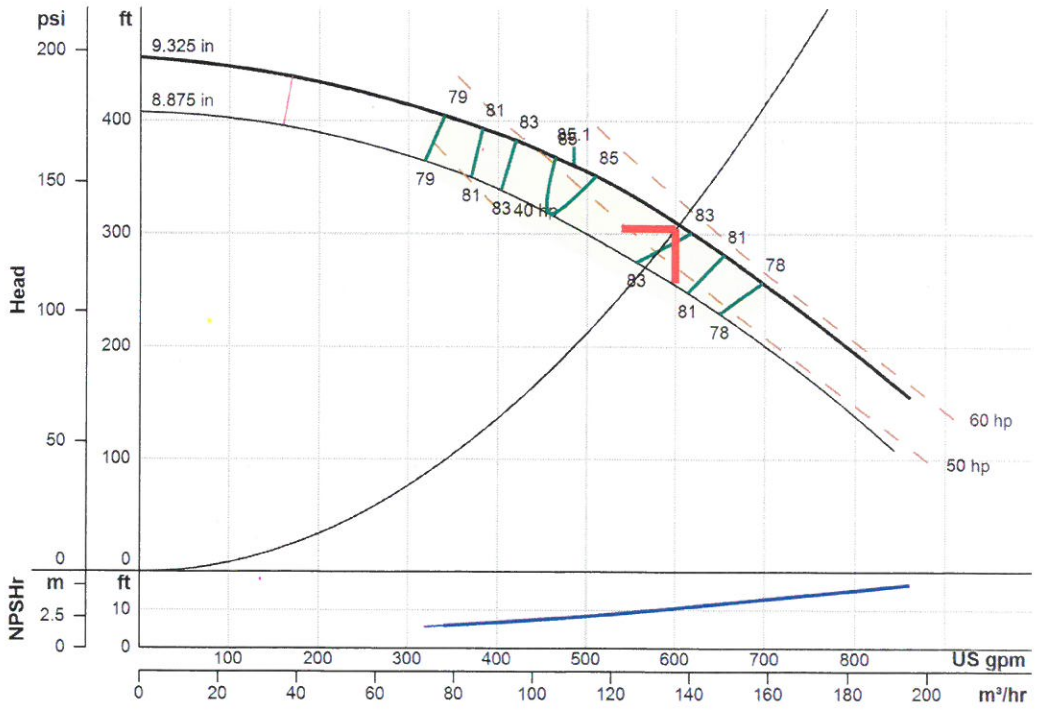
--- Design Curve ---

Shutoff Head:	456 ft
Shutoff dP:	197 psi
Min Flow:	170 US gpm

BEP: 85.1% @ 486 US gpm
NOL Power:
58 hp @ 697 US gpm

--- Max Curve ---

Max Power:
58 hp @ 697 US gpm



Nominal performance complies to ANSI/HI 14.6 2B/3B acceptance criteria and may be derated for materials of construction and/or specified acceptance grade. Consult factory. www.simflo.com / pump-flo@simflo.com

Performance Evaluation:

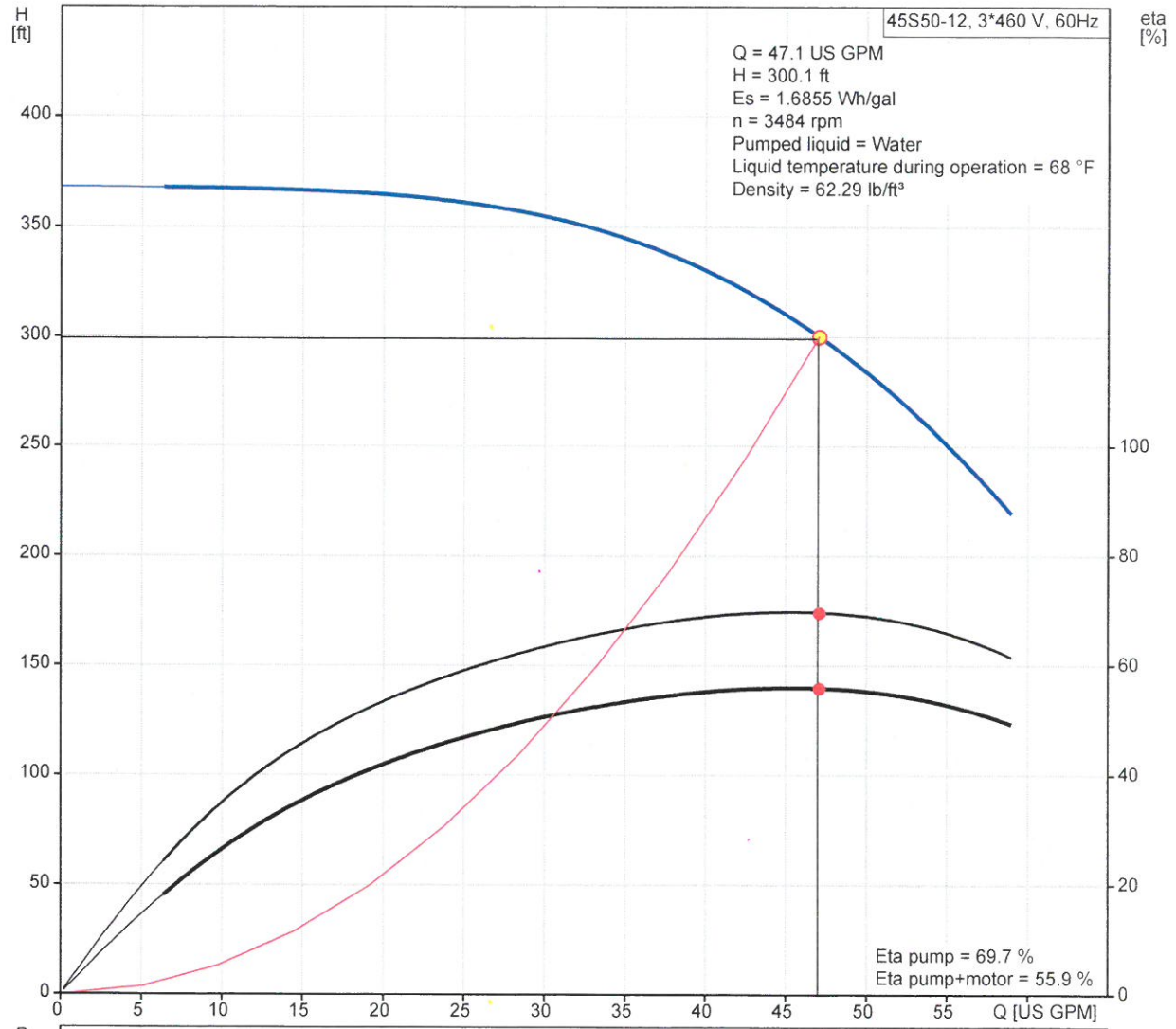
Flow	Speed	Head	Efficiency	Power	NPSHr
US gpm	rpm	ft	%	hp	ft
720	1770	243	75.3	57.9	13.4
600	1770	310	83.3	56.1	10.7
480	1770	363	85.1	51.7	8.18
360	1770	400	79.9	45.4	6.3
240	1770	420	74.3	37.2	5.37

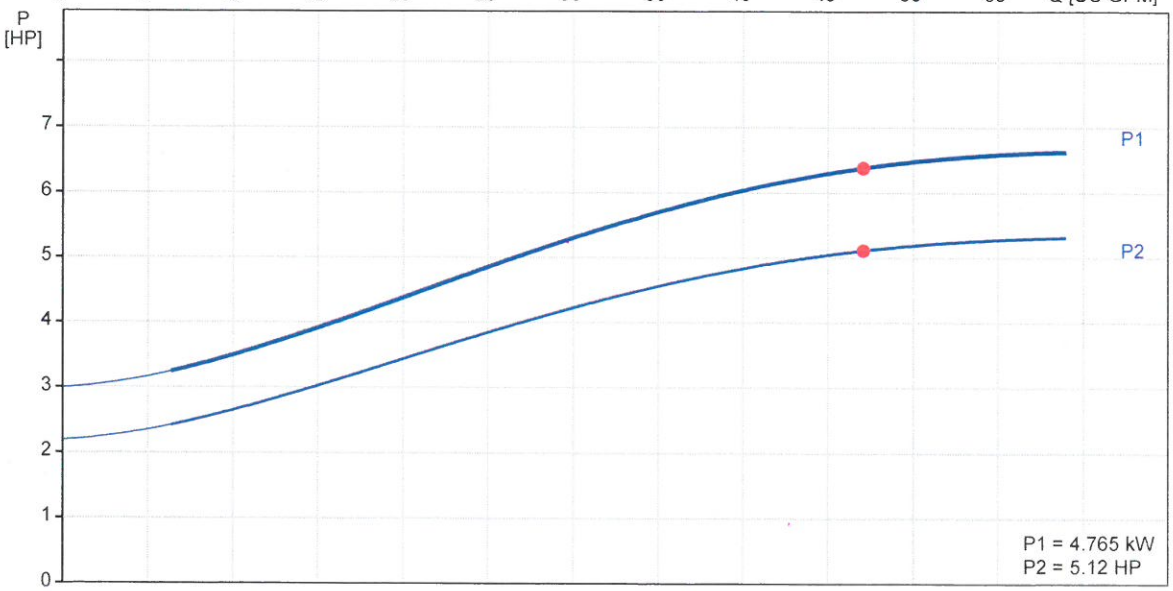
GRUNDFOS

Company name: Rain Bird
Created by:
Phone:

Date: 28/07/2020

98924591 45S50-12 60 Hz



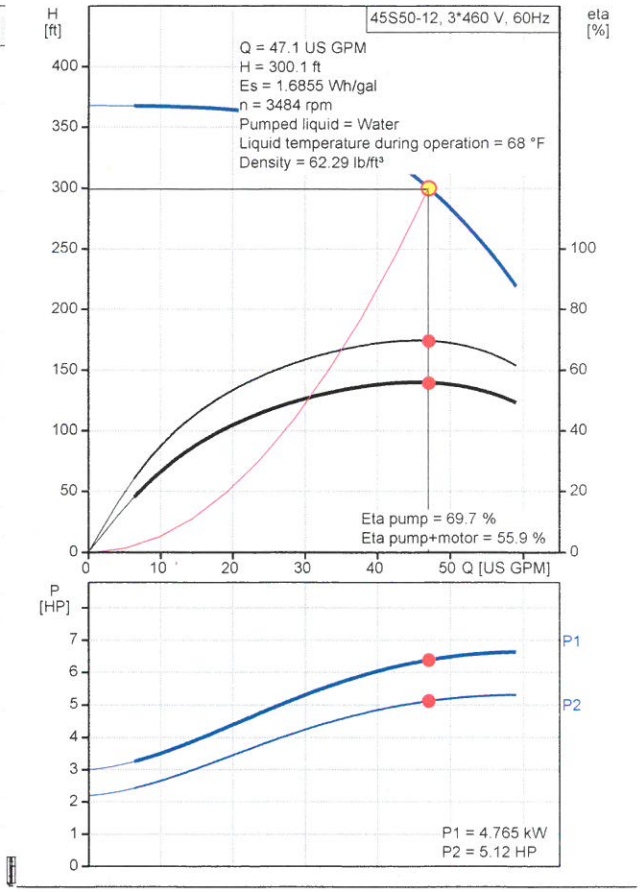


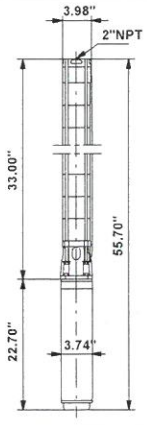
GRUNDFOS

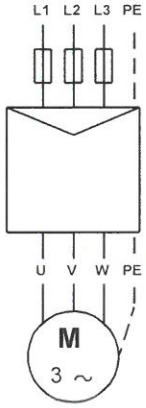
Company name: Rain Bird
Created by:
Phone:

Date: 28/07/2020

Description	Value
General information:	
Product name:	45S50-12
Product No:	98924591
EAN number:	5712603665573
	5712603665573
Technical:	
Pump speed on which pump data are based:	3450 rpm
Actual calculated flow:	47.1 US GPM
Resulting head of the pump:	300.1 ft
Actual impeller diameter:	2.87 in
Stages:	12
Impeller reduc.:	NONE
Shaft seal for motor:	HM/CER
Curve tolerance:	ISO9906:2012 3B
Model:	A
Valve:	YES
Motor version:	T40
Materials:	
Pump:	Stainless steel
	EN 1.4301
	AISI 304
Impeller:	Stainless steel
	EN 1.4301
	AISI 304
Motor:	Stainless steel
	DIN W.-Nr. 1.4301
	AISI 304
Installation:	
Maximum ambient pressure:	870.23 psi
Pump outlet:	2"NPT
Motor diameter:	4 inch
Liquid:	
Pumped liquid:	Water
Maximum liquid temperature:	104 °F
Selected liquid temperature:	68 °F
Density:	62.29 lb/ft³
Electrical data:	
Motor type:	MS4000
Applic. motor:	NEMA
Rated power - P2:	5 HP
KVA code:	J
Mains frequency:	60 Hz
Rated voltage:	3 x 440-460 V
Service factor:	1.15
Rated current:	8.65-8.65 A
Starting current:	550-590 %
Cos phi - power factor:	0.83-0.80
Rated speed:	3460-3470 rpm
Axial load max:	992 lb
Enclosure class (IEC 34-5):	IP68
Insulation class (IEC 85):	F
Motor protec:	NONE
Thermal protec:	external
Built-in temp. transmitter:	no
Motor No:	96405811
Others:	
DOE Pump Energy Index CL:	0.84







GRUNDFOS

Company name: Rain Bird
Created by:
Phone:

Date: 28/07/2020

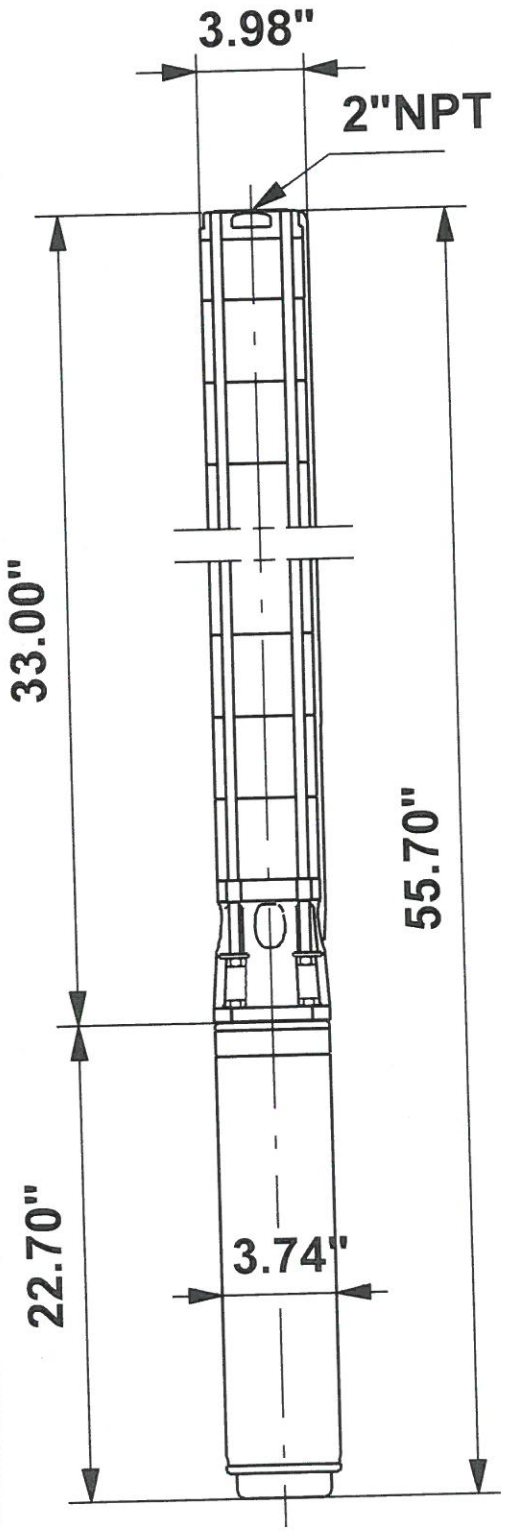
Description	Value
ErP status:	EuP Standalone/Prod.
Net weight:	71.2 lb
Gross weight:	127 lb
Shipping volume:	7.06 ft³
Country of origin:	US
Custom tariff no.:	8413.70.2004

GRUNDFOS

Company name: Rain Bird
Created by:
Phone:

Date: 28/07/2020

98924591 45S50-12 60 Hz



Note! All units are in [in] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

City of Carthage Parks and Recreation Department
Request for Proposals

Carthage Golf Course Chemicals for 2025-2026

Carthage Parks and Recreation Department

521 Robert Ellis Young Drive

Carthage, MO

64836

The Carthage Parks and Recreation Department is seeking qualified suppliers to provide bulk chemical products for the Carthage Municipal Golf Course. The purpose of this Request for Proposal (RFP) is to solicit competitive bids from qualified vendors to meet the golf course's chemical needs.

1. **BACKGROUND**

   Carthage Golf Course is interested in establishing a contract for the supply and delivery of bulk chemicals to be used in maintaining the Carthage Municipal Golf Course. The chemicals will be used for various purposes, including but not limited to fertilization, pest control, and turf maintenance.

2. **CONTACT FOR INFORMATION**

   Companies responding to this solicitation should direct all inquiries to:

   Cody Gray
   521 Robert Ellis Young Drive
   Carthage, MO 64836
   Office: 417-237-7035

   Site visits will be schedules as requested.

3. **SCOPE OF SERVICES**

   The selected vendor will be responsible for:

   - Providing high-quality bulk chemicals suitable for golf course maintenance.
   - Delivering the chemicals to the Carthage Municipal Golf Course as per the agreed-upon schedule.
   - Offering competitive pricing for the requested chemicals listed.
   - Providing technical support and expertise as needed.
   - Ensuring compliance with all relevant environmental regulations.

4. **CONTENT OF PROPOSAL**

   - Company information: Provide a brief overview of your company, including its history, experience, and relevant qualifications.
   - Product information: Detail the chemical products you can supply, including specifications, packaging, and minimum order quantities.
   - Pricing: Provide a comprehensive pricing schedule for the listed chemical products. Include any applicable discounts, terms, and conditions.
   - Delivery Schedule: Outline your proposed delivery schedule and any associated delivery fees.

Note: The Parks and Recreation Department reserves the right to increase or decrease to scope of work based on available funds.

5. RATING CRITERIA

The proposals will be evaluated according to the following criteria in order of relative importance:

- Price competitiveness and overall value.
- Quality and suitability of the chemical products offered.
- Delivery schedule and reliability

6. SELECTION PROCESS

An award may be given to the responsible company whose proposal is determined to be the most advantageous, taking into consideration cost and the elevation factors set forth above to determine the lowest and best bidder.

Carthage Parks and Recreation Department reserve the right to reject any and all bids and is not obligated to award a contract to any bidder. If it determined that no acceptable proposal has been submitted, all proposals nay be rejected and at the City's discretion, new proposals may be solicited.

7. SCHEDULE

To be considered, the copies of the proposal must be received at the Carthage City Hall at 326 Grant Street Carthage, MO 64836, on or before October 20, 2025, by 2:00 p.m. local time. All proposals shall be in a sealed package marked: **BID / GOLF COURSE CHEMICALS**

Carthage Golf Course Chemical List 2026

Product	Quantity Needed
Foliar Pak 18-3-4 |2.5 gal	8
Foliar Pak Colonise Bio |2.5 gal	3
Foliar Pak Armament Concentrate |2.5 gal	2
Foliar Pak Base Calcium |2.5 gal	2
Foliar Pak Amperage A |2.5 gal	4
Folair Pak Armament K |2.5 gal	9
Foliar Pak Armament P |2.5 gal	9
Folaiar Pak Calcium 7-0-0 |2.5 gal	5
Foliar Pak Carbosential Fe |2.5 gal	3
Foliar pak Csi L |2.5 gal	2
Foliar Pak Foundation 40(40% aminos) |2.5 gal	6
Foliar Pak Minors / 5% aminos |2.5 gal	5
Foliar Pak Gold Standard |2.5 gal	4
CLT 720 |2.5 gal	8
ArmorTech Becton |64oz	2
Kalida |64 fl oz	2
ArmorTech Rotator |1 gal	4

ArmorTech Zoxy 2F |1 gal	4
ArmorTech CYA 345 |1.2 Qt	5
Sertata | 35 fl oz	10

Product	Quantity Needed
Insignia SC | 30.5 fl oz	3
ArmorTech Kade 4L |2.5 gal	4
Dimension 2EW |2.5 gal	6
Microyl Oil | 1 gal	4
Q Ball |64 fl oz	6
ArmorTech PGR 113 MC | 2.5 gal	2
Anuew EZ |2.5 gal	7
ArmorTech Balata |32 fl oz	2
Solarous | 1 gal	6
Optimizer |1 gal	5
Knockdown |1 Qt	12
HydroPak Percolate | 20 gal	1
HydroPak Aqueous | 2.5 gal	14
Captain XTR |2.5 gal	4
Sonar 1 | 10 Lb	1

46-0-0 Ultra-N Prilled |50 Lb	30
ATS 22-3-11 50% XCU w/Armament |50 Lb	50
EC 5-0-30 50% SOP w/Amrament & 2% Mn |50 Lb	60
LEB 28-0-4 70% MESA / 220 SGN |50 Lb	60
Genesis RX 5-7-5 / SGN 100 |50 Lb	46

Product	Quantity Needed
StriCore | 1 gal	4
SeClear |2.5 gal	4
Celero 1lb	4

BID TABULATION
Golf Chemicals

Bids opened on October 20, 2025
2:00 P.M.
Carthage City Hall
326 Grant St
Carthage MO 64836

Company	Price			
Advanced Turf	$53,046.73			
Greens Pro	$20,713.72 bid list not complete			
Harrell's Max	$59,352.67			

Bid Committee:

ADVANCED TURF SOLUTIONS

12955 Ford Dr, Fishers, IN 46038

Advanced Turf Solutions

SALES QUOTE #

Quote Date: Oct 3, 2025 | Quote Expires:

CUSTOMER INFORMATION	SALES REP INFORMATION
Account: 173713-CARTHAGE PARKS & REC. PO #: Contact Name: Cody Grey Phone: 9134240498 Email: cgrey@carthagemo.gov Pay Type: NET 45 Ship Type: TR	Name: Austen Gearheart Email: agearheart@advancedturf.com Phone Number: (417) 527-7928 Warehouse: 790 | ATS - Springfield

Delivery Dates Requested: 10/31/2025 -

BILL TO ADDRESS	SHIP TO ADDRESS
407 S. GARRISON AVE CARTHAGE, Missouri 64836	407 S. GARRISON AVE CARTHAGE, Missouri 64836

COMMENTS

Free Shipping on this order

Product Name	Sku	Qty	Unit Price	Total
Foliar-Pak 18-3-4 | 2.5 Gal	ENP2003-2.5GL	8	$72.56	$580.48
Foliar-Pak Colonise Bio 2-0-0 | 2.5 Gal	ENP1350-2.5GL	3	$254.27	$762.81
Foliar-Pak Armament Concentrate | 2.5 Gal	ENP1245-2.5GL	2	$274.61	$549.22
Foliar-Pak Base Calcium | 2.5 Gal	ENP1265-2.5GL	2	$153.27	$306.54
Foliar-Pak Amperage 5-0-0 | 2.5 Gal	ENP1201-2.5GL	4	$170.87	$683.48
Foliar-Pak Armament K 0-0-24 | 2.5 Gal	ENP1310-2.5GL	9	$131.71	$1,185.39
Foliar-Pak Armament P 3-12-2 | 2.5 Gal	ENP1300-2.5GL	9	$127.54	$1,147.86
Foliar-Pak Calcium 7-0-0 with L-Amino Acids | 2.5 Gal	ENP1021-2.5GL	5	$103.13	$515.65
Foliar-Pak Carbosential Fe Turbo | 2.5 Gal	ENP1115-2.5GL	3	$281.92	$845.76
Foliar-Pak CSi L 2-0-0 | 2.5 Gal	ENP1225-2.5GL	2	$380.17	$760.34
Foliar-Pak Foundation Forty 4-0-8 | 2.5 Gal	ENP1320-2.5GL	6	$314.88	$1,889.28

This quote is not your final invoice, and may not reflect taxes, shipping, or other charges.
Prices are subject to change based on market conditions.

Foliar-Pak Minors 1-0-0 with L-Amino Acids | 2.5 Gal	ENP1071-2.5GL	5	$100.99	$504.95
Foliar-Pak Gold Standard 45 10-0-0 | 2.5 Gal	AT1011-2.5GL	4	$207.27	$829.08
ArmorTech CLT 720 FL | 2.5 Gal	AT1015-2.5GL	8	$105.70	$845.60
ArmorTech Becton | 64 Oz	AT1150-64OZ	2	$1,075.00	$2,150.00
Kalida Fungicide | 64 Fl Oz	FMC1080-64OZ	2	$866.40	$1,732.80
ArmorTech Rotator II | 1 Gal	AT1075-1GL	4	$335.00	$1,340.00
ArmorTech Zoxy 2F II | 1 Gal	AT1115-1GL	4	$223.89	$895.56
ArmorTech CYA 345 | 1.2 Qt	AT1122-39.2OZ	5	$350.00	$1,750.00
Serata Fungicide | 35 Fl Oz	FMC1085-35OZ	10	$474.81	$4,748.10
Insignia SC Intrinsic Fungicide | 30.5 Fl Oz	BA-30.5OZ	3	$575.84	$1,727.52
ArmorTech Kade 4L | 2.5 Gal	AT1045-2.5GL	4	$198.89	$795.56
Dimension 2EW Herbicide | 2.5 Gal	DOW1015-2.5GL	6	$643.63	$3,861.78
Microyl | 1 Gal	PL1009-GL	4	$44.51	$178.04
Q-Ball | 64 Fl Oz	RV1177-64OZ	6	$41.23	$247.38
ANUEW EZ - 2.5GL	RV1116-2.5GL	7	$760.25	$5,321.75
ArmorTech Balata | 32 Fl Oz	AT2015-32OZ	2	$675.00	$1,350.00
Solarous | 1 Gal	PL1105-1GL	6	$183.50	$1,101.00
Optimizer Green Shade | 1 Gal	AT2000-1GL	5	$112.00	$560.00
Knockdown | 1 Qt	PL1010-QT	12	$26.90	$322.80
HydroPak Percolate | 20 Gal	PL10821-20GL	1	$1,582.54	$1,582.54
HydroPak Aqueous | 2.5 Gal	PL10811-2.5GL	14	$160.00	$2,240.00
Captain XTR | 2.5 Gal	SE1022-2.5GL	4	$120.00	$480.00
Sonar One | 10 Lb	SE1080-10LB	1	$538.40	$538.40
46-0-0 Ultra-N Prilled Urea | 50 Lb	MC1068-50LB	30	$27.47	$824.10
ATS 22-3-11 with Foliar-Pak Armament, 50% XCU | 50 Lb	MC10096-50LB	50	$23.28	$1,164.00
LEB 28-0-4 70% MESA - (ST) 50LB	LEB1207-50LB	60	$31.08	$1,864.80
Genesis Rx 5-7-5 | 50 Lb	AN1950-50LB	46	$73.10	$3,362.60
StriCore Herbicide | 1 Gal	SE1010-1GL	4	$205.00	$820.00

SeClear | 2.5 Gal	SE1020-2.5GL	4	$45.39	$181.56
ArmorTech PGR 113 MC | 2.5 Gal	AT1060-2.5GL	2	$250.00	$500.00

Unit Total: 368
Product Total: $53,046.73
Shipping Charges $
Discount: $ 0.00
Quote Total: $ 53,046.73

This quote is not your final invoice, and may not reflect taxes, shipping, or other charges.
Prices are subject to change based on market conditions.

GreensPro, Inc.
110 TRW Industrial Ct.
High Ridge, MO 63049

QUOTE

QTE002175

BILL TO:

Carthage Municipal Golf Course

BILL TO
521 Robert Ellis Young Dr.
c.gray@carthagemo.gov
Carthage, MO 64836
P:(417) 237-7035
F:(417) 237-7002

SHIP TO:

Carthage Municipal Golf Course

SHIP TO
Cody Gray
521 Robert Ellis Young Dr.
Carthage, MO 64836

Purchase Order #	Customer ID	Shipping Method	Payment Terms	Req'd Ship Date
N/A	CAR500	DELIVERY	NET 30	10/16/2025

Quantity Ordered	Quantity Backordered	UOM	Item #	Description	Price	Extended Price
0.5	0	CS	FMC11013671	Kalida Fungicide 4x64oz	$3,465.60	$1,732.80
2.5	0	CS	FMC11014245	Serata Fungicide 4x35oz	$1,899.24	$4,748.10
0.75	0	CS	BAS59012451	Insignia SC Intrinsic 4x30.5fl oz	$2,303.36	$1,727.52
3	0	CS	DOW278317	Dimension 2EW 2x2.5g	$1,200.25	$3,600.75
1	0	CS	PR402-01T	Microyl 4x1gal	$175.00	$175.00
3.5	0	CS	NU10849225	Anuew EZ 2x2.5gal	$1,524.50	$5,335.75
1	0	CS	PR742-QT	Knockdown Defoamer 12x1qt	$250.00	$250.00
2	0	CS	SE1082.225	Captain XTR 2x2.5gal	$247.50	$495.00
1	0	EA	SE1173.20	SonarOne Aquatic 20lb pail	$820.00	$820.00
1	0	CS	SE1590.41	StriCore Herbicide 4x1gal.	$820.00	$820.00
2	0	CS	SE1010.225	SeClear 2x2.5gal	$80.00	$160.00
1	0	CS	NU10701401	Celero 4x1lb	$848.80	$848.80

Subtotal	$20,713.72
Misc	$0.00
Tax	$0.00
Freight	$0.00
Trade Discount	$0.00
Total	$20,713.72

GreensPro, Inc.

Tyler Fishel

Cell: (417) 844-1122
Email: tyler.fishel@greenspro.com

ver Copy - Not an Invoice

Harrell's
Growing a Better World®

5105 New Tampa Highway
Lakeland, FL 33815
863.687.2774
800.282.8007
contact@harrells.com
www.harrells.com

October 15, 2025

City of Carthage, Parks & Recreation
407 South Garrison Avenue
Carthage, MO 64836

COVER LETTER for Request for Proposals: Carthage Golf Course Chemicals for 2025-2026

To Whom it May Concern:

We appreciate your time in evaluating Harrell's as a potential provider for your fertilizer and pesticide needs. Harrell's, LLC was established in Lakeland, Florida in 1941 and over the past 84 years has grown into a worldwide producer and distributor of customized, agronomic solutions. This includes nutritional solutions in both granular and liquid form to help your turf, landscape and plants grow and thrive. Harrell's manufacturing and distribution facilities are strategically located across America. With 34 locations across the United States, Harrell's has built an infrastructure to ensure timely and efficient shipments to over 40 states coast to coast, and an international network that currently ships to 9 countries on 3 continents.

The Harrell's distribution site that will be handling your deliveries is located at:

4800 Doughery Place
Oklahoma City OK 73179

Harrell's has over 130 Territory Managers who specialize is their agronomic field, and 6 Directors of Agronomy who conduct research, product trials, product development, and assist Territory Managers in creating customized solutions for customers to protect against pests, environmental threats, and climate extremes. Below is the contact information for your Harrell's Territory Manager and Sales Director:

Jed Spencer, Territory Manager
Cell: (501) 743-0543
Email: jspencer@harrells.com

Matt Gregg, Sales Director Turf Coastal Plains
Cell: (863) 698-4008
Email: mgregg@harrells.com

POLYON® fertilizer from Harrell's has been America's premier controlled-release fertilizer for turfgrass applications since 1992. POLYON® innovation is a proprietary process that includes multiple monomers to establish a physical bond to the substate. Using our proprietary POLYGRAPH® program, Harrell's can

develop the right prescription for the need. In fact, POLYON® is so predictable its performance can be mapped out and evaluated even before applying the product. POLYON® fertilizers do not leach or volatilize into the atmosphere. The controlled release technology is engineered to release a specific amount of nutrients for plant uptake. This eliminates unnecessary leaching into waterways.

Harrell's ProtectMAX® is a broad-spectrum line up of chemistry formulations including contact and systemic fungicides and herbicide. Harrell's SprayMAX® is a complete line of adjuvants, colorants, and essential utility products. Harrell's MAX® line is our liquid foliar nutritionals that include over 30 different products with specific engineered formulations for turfgrass and ornamentals. In addition, Harrell's EarthMAX® Organic Foliar and Soil Additive is intended for use on trees, shrubs, grass, vegetables, flowers, and crops. Applying this product to in-ground and container plants may aid in micronutrient uptake and increase water retention. EarthMAX® is OMRI certified for organic use.

Harrell's is also an Authorized Distributor for (but not limited to): ENVU (formally Bayer and FMC), Syngenta, Nufarm, BASF, Corteva (formally DOW Agroscience), PBI Gordon, SEPRO, PURE SEED, Mountain View Seed.

Harrell's was awarded a Cooperative Contract with OMNIA Partners for the second time in 2023. This new contract will extend through 2026 and possibly 2028. Please see the included press release for more information on how the City of Carthage can benefit from Harrell's services through OMNIA.

Harrell's Core Values are non-negotiable and cover all aspects of what we do, from our employees to our customers, friends and communities. Harrell's is the leading producer and distributor of customized agronomic solutions, but our success is completely dependent on the success of our customers. We want to contribute to your success any way we can, helping you succeed regardless of a sale. These Core Values define us as a company and provide our employees a guide for conducting business with our partners for success:

1. Serve, Honor and Glorify God
2. Take Care of People
3. Grow our Financial Strength

Thank you for your time, we hope to be selected as your provider of turf pesticide and fertilizer products for the City of Carthage.

Sincerely,

Ella Kimbrel
Senior Vice President, Human Resources

City of Carthage Parks and Recreation Department

Request for Proposals - Carthage Golf Course Chemicals for 2025-2026

Submitted by: Harrell's, LLC
Contact Name: Jed Spencer
Phone: 501-743-0543
Email: Jspencer@Harrells.com or Bids@Harrells.com

DELIVERY: 2 - 5 Days, No additional Shipping Charg

Total - $59,352.67

PRODUCT	PRODUCT BID	PKG/UOM	QT	UNIT PRICE	TOTAL PRICE
FOLIAR PAK 18-3-4	Harrell's Max 18-3-6 w/ UMAXX	2.5 gal	8	$ 55.00	$ 440.00
FOLIAR PAK Colonise BIO	Harrell's BioMax Mycorrhizea Pro	32 oz	5	$ 205.00	$ 1,025.00
FOLIAR PAK Armament Concentrate	Harrell's Bio EarthMax Organic	2.5 gal	2	$ 94.00	$ 188.00
FOLIAR PAK Base Calcium	Harrell's Max Cal Plus	2.5 gal	2	$ 193.00	$ 386.00
FOLIAR PAK Amperage AP	Harrell's BioMax 7-0-7	2.5 gal	2	$ 180.00	$ 360.00
FOLIAR PAK Armament K	Harrell's Max Stress Relefe 0-0-25	2.5 gal	9	$ 70.00	$ 630.00
FOLIAR PAK Arament P	Harrell's Max Phosphorus Plus	2.5 gal	9	$ 58.00	$ 522.00
FOLIAR PAK Calcium 7-0-0 7% Ca	Harrell's Max Calcium 8.25%	2.5 gal	5	$ 41.00	$ 205.00
FOLIAR PAK Carbosential Fe	Harrell's BioMax Root Enhancer	2.5 gal	3	$ 65.00	$ 195.00
FOLIAR PAK CSi L	Harrell's Max Potassium Silicate	2.5 gal	2	$ 75.00	$ 150.00
FOLIAR PAK Foundation Forty (40% Aminos)	Harrell's BioMax Amino ProV	2.5 gal	6	$ 295.00	$ 1,770.00
FOLIAR PAK Minors/5% Aminos	Harrell's Max Minors	2.5 gal	5	$ 37.00	$ 185.00
FOLIAR PA Gold Standard	Harrell's Max 0-0-30 Title Phyte	2.5 gal	4	$ 160.00	$ 640.00
Armortech CLT 720	Harrell's ProtectMax Chlorothalonil 6	2.5 gal	8	$ 140.00	$ 1,120.00
ArmorTech Becton	Harrell's ProtectMax Fluoxastrobin	64 oz	2	$ 1,190.00	$ 2,380.00
Kalida Fungicide		64oz	2	$ 866.40	$ 1,732.80
Armortech Rotator	Harrell's ProtectMax Fluazinam	2.5 gal	4	$ 1,275.00	$ 5,100.00
Armortech Zoxy 2F	Harrell's ProtectMax Azoxy	1 gal	4	$ 410.00	$ 1,640.00
Armortech CYA 345 -	Harrell's ProtectMax Cyazo	39.2 oz	5	$ 400.00	$ 2,000.00
Serata Fungicide		35oz	10	$ 474.81	$ 4,748.10
Insignia SC Intrinsic		30.5oz	3	$ 575.84	$ 1,727.52
Amortech Kade 4L	Resolute 4L	2.5 gal	4	$ 195.00	$ 780.00
Dimension 2 EW		2.5 gal	6	$ 643.63	$ 3,861.78
Microyl Oil	Crop Oil	2.5 gal	2	$ 111.00	$ 222.00
Qball		2.5 gal	2	$ 275.00	$ 550.00
Armortech PGR 113	Podium	1 gal	5	$ 130.00	$ 650.00
Anuew EZ		2.5 gal	7	$ 760.25	$ 5,321.75
ArmorTech Balata	Durentis	64 oz	1	$ 2,126.34	$ 2,126.34
Solarous	Activator + SA	1 gal	6	$ 192.00	$ 1,152.00
Optimizer Green Shade	Par SG	1 gal	5	$ 200.00	$ 1,000.00
Knockdown	Flumigard SC	1 gal	3	$ 304.46	$ 913.38
HYDRO Pak Percolate	Harrell's HydroMax Symphony	2.5 gal	8	$ 195.00	$ 1,560.00
HYDRO PAK Aqueous	Harrell's Max HydroMax Fleet	2.5 gal	14	$ 190.00	$ 2,660.00
Captain XTR		2.5 gal	4	$ 105.00	$ 420.00
Sonar 1		20lb pail	1	$ 794.40	$ 794.40
MC 46-0-0 Ultra Prilled	46-0-0	50lb bag	30	$ 23.50	$ 705.00
ATS 22-3-11 50% XCU w Armament	28-3-10 w/ Polyon	50lb bag	50	$ 27.00	$ 1,350.00
EC 5-0-30 50% SOP w/ Armament & 2% Mn	5-10-31 w/ 10% Fe	50lb bag	60	$ 22.30	$ 1,338.00
LEB 28-0-4 70% MESA / 220 SGN	32-0-7 w/ Polyon	50lb bag	60	$ 27.00	$ 1,620.00
Genesis RX 5-7-5 SGN 100	Lebanon 3-3-4 Root Reviver	50lb bag	46	$ 73.00	$ 3,358.00
StriCore		1 gal	4	$ 205.00	$ 820.00
SeClear		2.5 gal	4	$ 39.20	$ 156.80
Celero		1 lb	4	212.2	$ 848.80

25,416.9

32,110.17

14,975.6

5105 New Tampa Highway
Lakeland, FL 33815
863.687.2774
800.282.8007
contact@harrells.com
www.harrells.com

FOR IMMEDIATE RELEASE

Contact
Mike Hess, Content Specialist
863-220-7330
mhess@harrells.com
www.harrells.com

Harrell's Awarded New Cooperative Contract

Lakeland, Florida, February 16, 2024 – Employee-owned Harrell's LLC has a new competitively solicited public sector contract with the City of Rochester Hills, Michigan providing public sector agencies access through OMNIA Partners. OMNIA Partners services both private and public sector organizations, improving the way their members find, buy, and obtain the goods and services they need to be successful. Participating agencies of OMNIA Partners gain access to a community of thoroughly vetted vendors, industry experts, and data that make the purchasing process seamless and efficient.

Harrell's new cooperative purchasing contract, available through OMNIA Partners, is competitively solicited and publicly awarded. Public sector agencies and non-profit organizations can save time and money by skipping the RFP and bidding process to quickly access competitive pricing.

Greg Nicoll, Harrell's VP of Turf Sales, has worked with OMNIA Partners for many years at Harrell's and helped customers take advantage of their benefits in multiple organizations. Greg had this to say, "Harrell's is thrilled to announce our new contract through OMNIA Partners, continuing our commitment to providing streamlined and efficient product solutions for public agencies."

Over its 23 years, OMNIA Partners have developed a portfolio of over a thousand contract solutions with 94% of the population served through agencies using OMNIA Partners. Harrell's is excited to continue their partnership with OMNIA Partners and deliver even more value, purchasing power, connection, and service to customers alongside OMNIA Partners for years to come. Organizations can register for free here. Please reach out to your local Harrell's Representative with questions about Harrell's cooperative contract with OMNIA Partners and how it can provide added value to your organization.

5105 New Tampa Highway
Lakeland, FL 33815
863.687.2774
800.282.8007
contact@harrells.com
www.harrells.com

Contract Details:

Groundskeeping Materials – Fertilizer, Pesticide, Herbicide, Grass Seed and Related Items

City of Rochester Hills, MI

Contract Number: RH-23-037

Initial Term: December 1, 2023, through November 30, 2026

Renewal Options: Option to renew for one (1) additional two-year period through November 30, 2028

About Harrell's, LLC- In addition to being one of the nation's largest distributors of branded fungicides, herbicides, and insecticides, Harrell's produces top-quality, custom-blended fertilizers, specialty liquids, and wetting agents. Harrell's guarantees stringent quality control procedures, tight manufacturing specifications, and careful selection of raw materials for each product that carries the Harrell's name. Additionally, Harrell's is proud to be the exclusive United States owner, formulator, and distributor of all POLYON® branded products.

For more information about Harrell's, including the company's core values to serve, honor, and glorify God, take care of people, and grow in financial strength, visit www.harrells.com.

About OMNIA Partners- As your ally in the purchasing process, OMNIA Partners is dedicated to optimizing procurement for your organization. Our goal is to improve the way your organization identifies, evaluates, and procures what they need at the best value. Your free membership provides full access to our portfolio of value-driven contracts, spend visibility, analytics, and subject matter experts. Join thousands of members who are discovering a better way to buy.

Visit www.omniapartners.com

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 10/14/2025

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 have ADDITIONAL INSURED provisions or 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: Rebecca Oberpriller
The Baldwin Group Southeast, LLC 1115 Bartow Rd Lakeland FL 33801	PHONE (A/C, No, Ext): 713-463-2120 FAX (A/C, No): E-MAIL ADDRESS: Rebecca.Oberpriller@baldwin.com
License#: L002281	

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : MS Transverse Specialty Insurance	41807
INSURER B : National Union Fire Insurance	19445
INSURER C : New Hampshire Insurance Compan	23841
INSURER D : AIU Insurance Company	19399
INSURER E : Markel American Insurance Comp	28932
INSURER F : Gemini Insurance Company	10833

INSURED
Harrell's LLC, Harrell's, Inc.
Harrell's Coatings Solutions, LLC
P. O. Box 807
Lakeland FL 33802
HARRLLC-01

COVERAGES **CERTIFICATE NUMBER:** 1076294635 **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 INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			TSENEC000000402	3/1/2025	3/1/2026	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
							MED EXP (Any one person)	$ 25,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY X PRO-JECT X LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:						POLLUTION LIABILITY	$ 1,000,000
B	AUTOMOBILE LIABILITY			AL4489811 (AOS)	3/1/2025	3/1/2026	COMBINED SINGLE LIMIT (Ea accident)	$ 2,000,000
B	X ANY AUTO			AL4489812 (MA)	3/1/2025	3/1/2026	BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
	X PIP						PIP	$ 10,000
A	UMBRELLA LIAB X OCCUR			TSENXS000001102	3/1/2025	3/1/2026	EACH OCCURRENCE	$ 15,000,000
	X EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 15,000,000
	DED X RETENTION $ 0							$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N			WC025893850 (AOS)	3/1/2025	3/1/2026	X PER STATUTE / OTH-ER	
D	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N	N / A		WC025893851 (CA)	3/1/2025	3/1/2026	E.L. EACH ACCIDENT	$ 1,000,000
	(Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
A	Pollution Liability			TSENEC000000402	3/1/2025	3/1/2026	Occurrence	$1,000,000
E	Rented/Leased Equipment			MKLM2IM0002363	3/1/2025	3/1/2026	Per Item/Occurrence	$500,000
F	Professional Liability			VGPL001958	3/31/2025	3/1/2026	Each Claim/Aggregate	$1,000,000

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

The General Liability and Auto Liability policies include blanket automatic additional insured, blanket automatic waiver of subrogation and blanket automatic primary, non-contributory wording endorsements that provides these features to the certificate holder only when there is a written contract between the named insured and the certificate holder that requires such status. The Workers' Compensation policy includes a blanket waiver automatic waiver of subrogation endorsement that provides this feature only when there is a written contract between the named insured and the certificate holder that requires it. Excess Liability is follow form of primary General Liability, Pollution, Auto Liability and Employer's Liability policies listed herein.

Re: Bid / Carthage Golf Course Chemicals for 2025-2026

CERTIFICATE HOLDER

City of Carthage Parks and Recreation Department
521 Robert Elllis Young Drive
Carthage MO 64836

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

BID TABULATION
Tree Removal

Bids opened on October 7, 2025
2:00 P.M.
Carthage City Hall
326 Grant St
Carthage MO 64836

Company	Price			
Hodges	$13,800			

Bid Committee:

ESTIMATE

HODGES
TREE TRIMMING

Prepared For

Carthage Parks And Recreation Department
521 Robert Ellis Young Drive
Carthage , Mo 64836
(417) 237-7035

Hodges Tree Trimming LLC

PO Box 115
Fair Grove, MO 65648
Phone: (417) 343-5679
Email: chrishodges123456@gmail.com

Estimate # 1616-1253
Date 10/06/2025

Description	**Total**

Ash Tree Removal — $9,100.00

FID	DBH
142 Green Ash	30
491 Green Ash	26
492. Green Ash	23
494. Green Ash	19
511. Green Ash	24
515. Green Ash.	22
526. White Ash.	26
535. White Ash.	28.04
545. White Ash.	25
556. Green Ash	18
560. Green Ash.	24
562. Green Ash	20
566. Green Ash	20

Cost per tree is $800 per tree

Stump removal — $2,600.00

Grind the stumps 6 inches deep and grind all roots 6 inches deep. This price is for grinding only.

Cost per stump is 200 per stump

top soil — $2,100.00

7 pallets of top soil

Cost - 300 per pallet of top soil

Project Experience

$0.00

Contractor for green county -Jeff 417-860-7707

City of springfield contractor - Travis Stokes 417-299-3308

Christian county Contractor - Brent - 417-840-7514

Equipment List

$0.00

2 buckets trucks
Chip truck
Two chippers
Two mini skids
Stump grinder
Grapple truck

Scan to Pay Online

Subtotal	$13,800.00
Total	**$13,800.00**

BID TABULATION
Tree Purchase/Planting

Bids opened on October 7, 2025
2:00 P.M.
Carthage City Hall
326 Grant St
Carthage MO 64836

Company	Price			
Outer Oaks	$12,245.00			

Bid Committee:

Outer Oaks Forestry Consulting
Lauren Copple
ISA MW6225A
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Park Tree Purchase and Planting

08/26/25

Proposal

Carthage, MO

Prepared For:
The City of Carthage
By: Lauren Copple
Outer Oaks LLC

This proposal of work is in response to the RFP for tree purchase and planting by the City of Carthage Parks and Recreation department.

Nursery stock selection, purchase, evaluation, and planting will be completed by Lauren Copple: Outer Oaks LLC owner and ISA certified arborist (MW 6225A).

Planting experience:
City of Joplin
Small container- large B&B tree installation
Contact information:
Paul Bloomberg- parks director
417-624-0820

Missouri Department of Conservation
Reforestation post tornado project
Small container- Large B&B tree installation
Contact information:
Jon Skinner
417-629-3423

Lynott property management
Large tree installation
Contact information:
Bill Lynott
1501 oak mont lane
Joplin, Mo

Land Innovations
Tree installations at a variety of size and species
Contact information:
Brandon Hunter
417-609-1385

Tree List

Common name	Scientific name	Quantity	Cost per tree
Fall Fiesta sugar	Acer saccharum 'Bailsta"	15	$275

maple			

Cost Table

Description	Cost
Tree cost	$4,125
Installation Equipment (including relocation)	$5,120
Labor/ Arborist evaluation	$2,575
Mulch	$425
Total	**$12,245**

September 2025
Golf Report

September 2025 Rounds – | Revenue - $135,187.49

September 2024 Rounds – 3,023| Revenue - $101,652.95
September 2023 Rounds – 3,009 | Revenue - $95,576.22

Green Fee	Membership	Cart Fee	Driving Range	Event Services	Golf Gift Certificate	Merchandise Gift Certificate (Club Credit)	Pro Shop	Food & Beverage	Pre Paid Rounds	Golf Rentals
$45,252.38	$9,214.90	$35,470.56	$6,438.21	$11,876.82	$353.51	$5,793.57	$16,482.12	$4,153.21	$0	$152.20

September 2025 Summary

SEPTEMBER GOLF MAINTENANCE

- Waiting for rain
- Mowed fairways
- Watered rough for germination
- Water greens more then usual
- Added dirt to rough and seeded areas
- Mowed surrounds
- Fertilized and fungicide on greens
- Raked bunkers
- Repaired leaking irrigation heads
- Mulched leaves
- Blew leaves off fairways , greens, and rough daily
- Repaired rough mower
- Repaired 9 fw so that the whole fw waters from the satellite box
- Aerified greens and topped dressed with sand
- Verticut greens
- Wrote up a rfp for chemicals
- Ota meeting
- Serviced all the equipment
- Plugged bad areas on greens
- Fixed the large holes on 11 green from fox for a week straight every morning

September 2025 Parks Maintenance

General:

- Cleaned restrooms in all parks.
- Trash pickup in all parks.
- Inspected playground equipment in parks.
- Mowed all parks.
- Mower maintenance.
- Sprayed weeds.
- Watered flowers and trees.

Municipal Park:

- Water maintenance at Carl Lewton Stadium.
- Worked on irrigation.

Central Park:

- Patched hole at playground.
- Bathroom maintenance.

Griggs Park:

- Playground equipment maintenance.

Kellogg Lake Park:

- Dug trench for fountain.
- Dirt work for fountain.
- Installed fountain.

Fair Acres:

- Softball lights maintenance.
- Rake/drag baseball fields.

Other:

- Cut limestone for Vision Carthage tree memorials.
- Food Truck Friday.
- Worked on roundabout statue project.
- Moved tables for events around city.
- Paint Memorial Hall.
- Picked up trees from Forest Releaf.
- Anchored statue at roundabout.

2025 Food Truck Friday Season

Revenue	Notes	Expenses	Vendors	Notes
$5,101	April 11th (H-64 L-46)	$2,803.69	20 FT & 21 vendors	Best turnout according to vendors
$5,354	May 9th (H-75 L-51)	$2,813.14	21 FT & 27 vendors	Great turnout-hired Marcus for drone footage to use for marketing
$5,704	June 13th (H-80 L-66)	$3,118.56	22 FT & 28 vendors	Carthage Stampede
$5,371	July 11th (H-92 L-77)	$3,133.78	19 FT & 25 vendors	Lunch was down and Dinner was also slow but same as previous years
$5,171	August 8th (H-96 L-76)	$2,823.81	20 FT & 23 vendors	Allowed the vendors to come later due to the heat
$3,986	September 12th (H-94 L-65)	$2,037.29	12 FT & 22 vendors	Amazing turnout especially with heat and Football and Concerts in the area

31 different Food Truck
11 food beverage tents
21 vendors (non profit and retail)

$9801.41 (Electricty) $4150 (Entertainment)
$1250 (Porta-Lets) $1184.70 (Security)
$175 (Drone Footage) & $169.16 (Trash Liners)

$30,687	**Total Revenue**	$16,730.27	**Total Expenses**

CIVIL WAR MUSEUM

ATTENDANCE

September 2025

DATE	CARTHAGE	TOURIST	GRAND TOTAL		CASH		CARDS
8/30/2025					$75.00		
8/31/2025							
9/1/2025	CLOSED	CLOSED	CLOSED		CLOSED		CLOSED
9/2/2025	0	5	5		$28.00		
9/3/2025	1	14	15		$8.00		
9/4/2025	6	11	17		$81.00		$12.00
9/5/2025	1	13	14				
9/6/2025	0	15	15				
9/7/2025	0	5	5		$21.00		
9/8/2025	CLOSED	CLOSED	CLOSED		CLOSED		CLOSED
9/9/2025	0	8	8				
9/10/2025	2	14	16				
9/11/2025	0	14	14				
9/12/2025	1	25	26		$45.00		
9/13/2025	4	21	25		$8.00		
9/14/2025	0	5	5				$38.00
9/15/2025	CLOSED	CLOSED	CLOSED		CLOSED		CLOSED
9/16/2025	1	4	5				
9/17/2025	2	9	11				
9/18/2025	3	18	21		$9.00		
9/19/2025	4	14	18		$94.00		
9/20/2025	4	25	29		$60.00		$43.00
9/21/2025	0	4	4				
9/22/2025	CLOSED	CLOSED	CLOSED		CLOSED		CLOSED
9/23/2025	2	16	18		$36.00		
9/24/2025	2	18	20		$6.00		$36.00
9/25/2025	1	18	19		$44.00		$49.00
9/26/2025	5	20	25		$35.00		$14.00
9/27/2025	0	12	12		$22.00		$10.00
9/28/2025	5	8	13				
9/29/2025	CLOSED	CLOSED	CLOSED		CLOSED		CLOSED
9/30/2025	0	7	7				
TOTAL	**44**	**323**	**367**		**$ 572.00**		**$ 202.00**

Civil War Museum Performance Report

2023–2025

Prepared by **Melissa Little, Tourism Director & Public Information Officer**

Overview

This report provides a complete summary of the Civil War Museum's performance data for 2023–2025.
It includes projections for the remaining months of 2025 (October–December).

The Civil War Museum continues to serve as a cornerstone of Carthage heritage and tourism, welcoming thousands of visitors annually. While overall sales and donations dipped slightly in 2024, projections for 2025 show a positive rebound nearing pre-decline levels. Strategic focus on high-traffic seasons and consistent community engagement remain key to sustaining this momentum.

Yearly Totals & Averages

Year	Total Sales	Total Donations	Total Visits	Avg. Sales	Avg. Donations	Avg. Visits
2023	**$9,545**	**$5,112**	**4,602**	795	426	383
2024	$8,266	$4,409	4,291	689	367	358
2025 (Projected)	$8,668	$4,088	4,072	722	341	339

Key Insights

Sales

- 2023 remains the museum's strongest year, peaking at $9,545.
- 2024 saw a modest decline, largely due to reduced early-year activity.
- 2025 is projected to rebound slightly, approaching 2023 levels.

Donations

- Donation totals dropped in 2024, with several zero-donation months recorded.
- The 2025 projection suggests gradual stabilization but remains ~20% below 2023 levels.
-

Visits

- Visitor traffic continues a gentle downward trend.
- 2025 projections indicate ~12% fewer visitors than in 2023.

Performance Summary

Overall, the Civil War Museum shows steady engagement with strong seasonal trends. Continued emphasis on marketing during spring and summer, paired with targeted winter programming, could offset slower months and strengthen donation consistency.

Civil War Museum 2023-2025

Jan	2023	2024	2025
Sales	646.1	239.5	331
Donations	222.5	0	100
Visits	201	125	130

Feb	2023	2024	2025
Sales	673.9	491	329
Donations	395	0	50
Visits	258	247	213

March	2023	2024	2025
Sales	897.75	582	731.5
Donations	609	289	240
Visits	410	328	425

April	2023	2024	2025
Sales	849.4	748	1059.5
Donations	441.24	318	349
Visits	357	364	327

May	2023	2024	2025
Sales	766.75	795	1074
Donations	449.78	418	586
Visits	556	590	498

June	2023	2024	2025
Sales	867.65	1250	864
Donations	0	577	542
Visits	587	615	495

July	2023	2024	2025
Sales	1217.9	750.5	1115
Donations	656	563	433
Visits	480	442	492

August	2023	2024	2025
Sales	824.5	452	847
Donations	445	348	283
Visits	424	331	421

Sept	2023	2024	2025
Sales	997.2	1147	699
Donations	469	629	611
Visits	437	477	367

Oct.	2023	2024	2025
Sales	511.2	945	
Donations	0	527	
Visits	413	456	

Nov	2023	2024	2025
Sales	637	467	
Donations	539	242	
Visits	285	103	

Dec	2023	2024	2025
Sales	656	399	
Donations	200	270	
Visits	194	213	