FINANCE COMMITTEE

Monday, April 13, 2026 4:30 PM

Administration Conference Room, City Hall

1. **Call to Order**

2. **Financial Updates**

3. **Action Items**
   - A. Approve the minutes for the March 16, 2026, regular meeting
   - B. Approve a contract with Haven's Construction for the WWTF Repairs - 2026 project in the amount of $424,950. (Public Works)
   - C. Resolution No. 26-009, A Resolution demonstrating the City's commitment to public safety and intent to pursue a designation as a Blue Shield Community (Police)

4. **Non-Action Items**

5. **Unfinished Business (postponed from prior meetings)**

6. **Other Business**

7. **Adjourn**

Posted Date & Time: April 9, 2026 10:30 a.m. By: MB

Finance Committee Meeting
Monday, March 16, 2026 4:30 PM
Administration Conference Room, City Hall

Minutes

1. Call to Order

Chair Wylie called the March 16, 2026, meeting to order at 04:30 PM. A quorum was present.

Members Present: Ward 3 Alderman Douglas Wylie, Ward 2 Alderman Bob Bennett, Ward 1 Alderman Philip Wassmer

City Staff Present: City Administrator Alexa Barton, Deputy City Administrator Bryan Kidney, Assistant City Administrator Jeffery Rhodes, City Attorney John Mautino (via videoconference), Public Works Director Dan Harper, Parks & Recreation Director Brittanie Propes (via videoconference), Finance Director Cindy Gray, and City Clerk Melissa Bazert

2. Financial Updates

A. Year-end 2025 Budget and Investment Reports (unaudited)

Deputy City Administrator Bryan Kidney gave a review of the 2025 budget. Alderman Wassmer asked about the tracking on short-term rentals. Alderman Bennett asked about hiring temporary staff to track short-term rental transient guest.

3. Action Items

A. Approve the minutes for the February 23, 2026, regular meeting

Alderman Bennett moved to approve the minutes for the February 23, 2026 meeting. Alderman Wassmer seconded; motion passed 3-0.

B. Approve the semi-annual financial report for the second half of 2025 and direct City Administration to publish

Deputy City Administrator Bryan Kidney gave an overview of the semi-annual financial report.

Alderman Bennett moved to recommend that the Board of Aldermen approve the semi-annual financial report for the second half of 2025 and direct City Administration to publish. Alderman Wassmer seconded; motion Passed 3-0.

4. Non-Action Items

5. Unfinished Business (postponed from prior meetings)

6. Other Business

Assistant City Administrator Jeffery Rhodes gave an update on the storm damage from the event on March 10, 2026.
City Administrator Alexa Barton gave an update from the PACE dinner on Saturday night.

7. Adjourn

Chair Wylie adjourned the meeting at 05:06 PM.

Submitted by:

_____ _____

Melissa Bazert
City Clerk

Approval Date

CITY OF PARKVILLE
Policy Report

Date: March 24, 2026

Prepared By:
Daniel Harper, Public Works Director

Reviewed By:
Alexa Barton, City Administrator

ISSUE:
Approve a contract with Haven's Construction for the WWTF Repairs - 2026 project in the amount of $424,950. (Public Works)

BACKGROUND:
The Sewer system operates a single Wastewater Treatment Facility (WWTF) that treats on average 500,000 gallons of effluent flow daily received from the approximate 1,850 customers connected to the system. This plant was originally constructed in 1993 and underwent a larger overhaul project in 2004. Over all of these years multiple smaller projects have been performed to maintain the WWTF.

As the WWTF continues to treat flow received from the city, there are multiple mechanical and electrical systems that operate to provide the level of treatment required by the Missouri Department of Natural Resources (MDNR). While performing these operations the plant experiences wear on every system. This is caused from the movement of mechanical components wearing over time due to the movement, caustic gases encourage corrosion of many components, and the flow causes abrasion throughout the system wearing out components and connections.

In managing the WWTF all of these systems are monitored and repairs are planned in an effort to consolidate types of work for efficiency savings while working towards maximizing the life & value that can be gained from any component to replace as close to failure as possible. This project is intended to address the following issues that have been identified as the most critical to plant operations and to avoid costly emergency repairs from deferred maintenance: repairing and replacing including two blowers that force air into the activated sludge mixture, the associated variable speed drives for those motors, air diffuser membranes used to transfer oxygen in the aeration tanks, variable speed drives for the return sludge pumps, a failed submersible mixer used to stir the treatment tank, a rusted and leaking pipe that conveys raw sewage to the treatment tanks, and a broken water hydrant used for wash-down of tanks.

This project was competitively bid and a pre-bid meeting was held on March 17, 2026, that provided a verbal description of the project, questions and answers opportunities, and a plant tour explaining the work to better assist contractors in accurately bidding the project. This pre-bid meeting was attended by 16 members of the construction community representing 13 different construction companies and materials suppliers.

The bids were opened on March 30, 2026, when the City received two bids, with Haven's Construction being the lowest bidder. The city utilized our own experience as references for Haven's Construction as they have performed multiple projects for the City in recent years, such as the 59th Street Stormwater Improvements in 2025, the Sanitary Sewer Repair Project in 2024, and the

Sanitary Sewer Repair Project in 2025. All of these projects were completed with positive staff interaction and experience along with quality craftsmanship accompanied by successful outcomes.

Haven's original bid for the project was $457,900 as shown on the bid tabulation. However, a scrivener's error was discovered (in reviewing the bids after submission, there was an item that was input in duplicate on all bids which was that the AFD's for the RAS pumps were included twice), which lowered the cost. This occurred in line items 1, 9, and 10. This duplication was presented to Havens who agreed that it only needed to be completed once and the contract could be amended to reflect the true scope of work. This resulted in a reduction of the contract amount of $32,950 for a revised contract amount of $424,950 as shown on the contract document. Since this was done prior to the execution of the contract, no change order will be completed and instead, the original contract was modified for signatures.

STRATEGIC GOAL(S):

- Infrastructure and Public Facilities

BUDGET IMPACT:
The sewer fund included $155,000 for sewer plant improvements in the line item 30-501.04-51-00, $70,000 for pump station improvements in the line item 30-501.04-61-00, and $244,000 for line maintenance in the line item 30-501.06-42-00 all on page 65 of the 2026 budget.

Cumulatively, these lines provided a budget of $469,000 for capital improvements. The projects for this year were adjusted to reflect the need to rebuild the sewer fund reserve balance while prioritizing the needs of the sewer system through efficient utilization via the scope of work for related/needed projects. Therefore, this project ($424,950) and the CCTV & Clean Project ($26,762.50) are being performed this year for a total of $451,712.50.

ALTERNATIVES:

1. Approve the item.
2. Approve the item, subject to changes.
3. Do not approve the item.
4. Postpone the item.

STAFF RECOMMENDATION:
Staff recommends approval of the contract award to Havens Construction for the WWTF Repairs - 2026 project in the amount $424,950.

POLICY:
The Purchasing Policy, Resolution No. 23-016, requires Board of Aldermen approval for all expenses above $50,000, upon recommendation of the Finance Committee.

SUGGESTED MOTION:
I move to recommend that the Board of Aldermen approve a contract with Havens Construction for the WWTF Repairs - 2026 project in the amount of $424,950 and authorize the Public Works Director authority to approve change orders not to exceed 10% of the total value of the contract.

ATTACHMENTS:

1. Bid Tabulation
2. Description of Bid Items
3. Construction Plans
4. Blower Package Requirements
5. Adjustable Frequency Drive Requirements
6. Pre-Bid Meeting Sign In
7. Contract

BID TABULATION

WWTF REPAIRS – 2016
Bid Opening March 30, 2026
2:00 p.m., Parkville City Hall Boardroom

Bidder Name	BASE TOTAL
*Havens Construction Liberty, MO	$457,900
Dondlinger & Sons Const. Co., Inc. Wichita, KS	$689,632

(*) Recommended Award of Purchase

City of Parkville - WWTF Repairs - 2026

Description of Unit Prices:

NOTES:

a. The following unit price descriptions have been prepared by Engineer to summarize the work involved.
b. All items of work required for a complete installation with complete restoration are required, whether specifically mentioned or not. Items of work not specifically mentioned shall be merged into the remaining unit prices. All items of work shall include labor, equipment, and sequencing, whether specifically mentioned or not.
c. All unit prices shall include Contractor's allowances for supervision, general requirements, overhead, and profit.
d. Contractors costs, general requirements, overhead, and profilt shall be proportionally distributed among the unit prices.
e. Owner may reduce the quanities of work vs. those shown on the Bid Form, with no increase in the unit pricing.
f. The Bid Form provides the basis of payment for each pay item: Lineal Foot, Lump Sum, Each, Ton, etc.

1. Mobilization. ***Work Includes:***

Includes mobilization to project site.
Also includes general administrative costs and temporary facilities.
Unit: Lump Sump covering all items related to this task.

2. Temporary Pumping Equipment Rental. ***Work Includes:***

Includes delivery and rental of hydraulic submersible pump, power unit controls.
Includes delivery and rental of temporary pipe/hose, fittings, valves, etc.
Includes fuel, maintenance checks, also decommisioning and removal at end of project.
Contractor shall included in his bid the time required to accomplish the work.
Minimum duration shall be 4 weeks.
This price does NOT include Contractor's labor and equipment to move pumps and hoses.
Unit: Lump Sump covering all items related to this task.

3. Replace Bar Rack at Existing Headworks Platform. ***Work Includes:***

Includes fabrication and delivery of new stainless steel bar rack and drain plate.
Includes lifing out existing bar rack, also hauling off and disposal.
Includes anchoring and bracing of new drain plate and bar rack.
Unit: Lump Sump covering all items related to this task.

4. Drain Aeration Tank 2 and Use Inflatable Plug. ***Work Includes:***

Includes labor and equipment to set up temporary pump and hoses.
Includes drawing down level in Tank 2, placing inflatable plug with air hose and gage.
Includes pumping Tank 2 contents to existing digester and clarifier splitter box.
Unit: Lump Sump covering all items related to this task.

5. Drain Aeration Tank 1 and Replace Valve GV-3. ***Work Includes:***

Includes labor and equipment to set up temporary pump and hoses.
Includes drawing down level in Tank 1 and pumping to Tank 2.
Includes removing existing gate valve GV-3, furnishing and installing new gate valve.
Includes installing new flange adapter for gate valve.
Includes removal and disposal of old gate valve.
Unit: Lump Sump covering all items related to this task.

6. Remove and Replace Mixer in Aeration Tank 1. ***Work Includes:***

Lifting out the existing mixer and placing on site in location directed by Owner.
Using new mixer (furnished by Owner), which will be stored at the WWTF site.
Inspecting the existing mixer mast, including carriage and travel stop, review with Engineer.
Lifting mixer up onto concrete deck.
Installing the new mixer on the existing mast, and adjusting the horizontal angle as directed.
Contractor shall use exsting jib hoist at mast, for lowering mixer into Tank 1.
Note: Electrical work is covered under a separate unit price.
Unit: Lump Sump covering all items related to this task.

7. Remove and Replace Section of 12" DI Influent Pipe: ***Work Includes:***

Inspection of existing DI pipe, making preparations for demolition and lifting.
Scheduling removal and replacement time with Owner.
Lifting and preparing Owner's 3-inch self-primer pump for RAS service.
Removing plate at overflow notch at existing Headworks platform.
Setting slide plates and installing inflatable plug in headworks channels.
Operating gate valve GV-4 in pipe gallery.
Setting aside and re-setting existing aluminum box over access opening.
Demolition of existing section of 12" DI pipe.
Lowering new pipe section into pipe gallery, removing old pipe section.
Using mini-cam to explore existing pipe to Headworks platform, Engineer to witness.
Cutting and installing new 12" DI pipe, with pipe hangers and flange adapter.
Detaching and re-attaching sump pump discharge, installing new tap saddle.
Testing of existing sump pump after re-connection.
Hauling and disposal of demolished items.
Re-installing plate at overflow notch at existing Headworks platform.
Removing slide plates and inflatable plug at Headworks platform.
Lifting Owner's 3-inch self-primer pump back to gravel drive.
Unit: Lump Sump covering all items related to this task.

8. Demo & Haul Away Pump, Valves, Fittings in Pipe Gallery. ***Work Includes:***

Setting aside and re-setting existing aluminum box over east access opening.
Setting aside and re-setting existing aluminum plate over west access opening.
Un-bolting and disconnecting existing valves, fittings, and pump.
Installing four 14" ductile iron blind flanges, using new or existing bolts.
Lifting out demolished items, via the existing access openings.
Unit: Lump Sump covering all items related to this task.

9. Furnish Two Rotary Tri-Lobe Blowers (Section 11376). ***Work Includes:***

Furnish two blowers as specified.
Includes all items covered under Section 11376, including submittals, equipments, start-up, etc.
This item includes Contractor's mark-up and general requirements, but NOT installation.
Unit: Lump Sump covering all items related to this task.

10. Furnish Two AFD's for Blowers (Section 16420). ***Work Includes:***

Furnish two adjustable frequency drives for the blowers as, specified.
Includes all items covered under Section 16420, including submittals, equipments, start-up, etc.
Includes furnishing two new line reactors for blowers.
Includes coordination between blower supplier and AFD supplier, to ensure compatibility.
This item includes Contractor's mark-up and general requirements, but NOT installation.
Unit: Lump Sump covering all items related to this task.

11. Modify Existing Blower Piping for New Blowers: ***Work Includes:***

Reviewing the blower dimensions and required piping modifications prior to modifications.
Modifying existing welded steel air piping, on both the suction and discharge sides.
Installing two new 6" wafer style butterfly valves on the blower suction pipes.
Installing new wafer style butterfly valve BFV-11 in the existing 8" air discharge pipe.
Installing new pipe supports.
Surface preparation and painting of modified steel pipe, fittings, supports.
Includes hauling and disposal of demolished items.
Unit: Lump Sump covering all items related to this task.

12. Demo Existing Blowers, Install New Blowers: ***Work Includes:***

Reviewing the blower dimensions, locations, and required piping modifications prior to demolition.
Meeting with Engineer to review blower manufacturer's plan for unit disassembly/re-assembly.
Setting aside and re-setting existing aluminum box over east access opening.
Removing and lifting out existing blowers, using existing doorway or access opening.
Lowering new blowers into blower room, setting and anchoring blower skid unit.
Disassembly and re-assembly as required, subject to approval by manufacturer & Engineer.

Connection to blower suction and discharge piping.
Includes start-up and testing.
Includes hauling and disposal of demolished items.
Note: Electrical work is covered under a separate unit price.
Unit: Lump Sump covering all items related to this task.

13. Drain Aeration Tank 2, Place Aeration Tank 1 Into Service. ***Work Includes:***
Coordinate with Owner for gravity transfer of mixed liquor from Tank 2 to Tank 1.
Includes labor and equipment to set up temporary pump and hoses.
Includes pumping to drain Tank 2, by pumping to Tank 1.
Unit: Lump Sump covering all items related to this task.

14. Clean Aeration Tank 2, Haul Grit and Debris Off Site. ***Work Includes:***
Removing accumulated grit from grit chamber, including efforts to loosen grit and form a slurry.
Estimated depth is about 12 inches in bottom of Tank 2.
Includes the vac truck and crew hours set forth on the Drawings - to be used as basis for Bid.
Includes spraying off walls, floor, piping, and other intenal items to remove grease and debris.
Contractor may use Owner's water via the yard hydrant.
Includes hauling and disposal of removed solids, slurry, and liquids.
Unit: Lump Sump covering all items related to this task.

15. Replace Diffuser Membranes in Aeration Tank 2, Leak Test: ***Work Includes:***
Planning and scheduling date and time to begin work, coordinating with Owner.
Access provisions to enter existing basin.
Removal and disposal of existing diffuser membranes, including blank membranes.
Installation of new diffuser membranes, including blank membranes (all furnished by Owner.)
Inspecting diffuser bodies, pipe and clamp connections, pipe supports, tightening as required.
Meeting with Engineer and Owner on site to discuss findings and any deficiencies.
Filling tank over top of diffusers with clean water, performing leak test.
Addressing loose membranes and connections discovered during leak test.
Note: Owner will furnish new membranes, blanks, and lubricant.
Unit: Lump Sump covering all items related to this task.

16. Replace 8" Steel Elbow in Aeration Tank 2 Air Piping: ***Work Includes:***
Disassembling, inpspecting, and re-asssembling existing clamp coupling.
Verifying pipe measurements and extent of replacements.
Cutting away existing steel pipe elbow and drop pipe.
Welding new elbow and drop pipe in place.
Visually inspecting welds for soundness.
Grinding welds smooth.
Wire brushing and solvent cleaning new pipe.
Priming and painting new pipe and adjacent existing pipe, to concrete wall.
Unit: Lump Sump covering all items related to this task.

17. Modify Mixed Liquor Overflow Box in Aeration Tank 2: ***Work Includes:***
Surveying to match top elevation of Tank 1 overflow box.
Fabricating steel plate section to raise level of existing overflow box.
Sealing gaps.
Performing surface preparation and painting of new steel plate section.
Unit: Lump Sump covering all items related to this task.

18. Install new 6" Plug Valve in Clarifier / RAS Valve Pit.: ***Work Includes:***
Planning and scheduling date and time to begin work, coordinating with Owner.
Allowing Owner to keep one RAS pump in service during installation.
Includes cutting existing 6" DI pipe, furnishing and installing new plug valve.
Furnishing and installing one 6" plug valve.
Includes installing new flange adapter and victaulic-flange adapter for plug valve.
Includes removal and disposal of removed section of pipe.
Includes coring floor slab above, installing new cast iron valve box & lid, nameplate.

Unit: Lump Sump covering all items related to this task.

19. Demo Existing Yard Hydrant, Install New Hydrant & Valve: ***Work Includes:***

Excavation and backfill.
Clean rock bedding for new valve, pipe, hydrant.
Furnishing and installing new post hydrant.
Furnishing and installing new brass gate valve, with riser, frame and lid.
Grading and grass restoration.
Unit: Lump Sump covering all items related to this task.

20. Furnish Three AFD's for RAS Pumps (Section 16420). ***Work Includes:***

Furnishing three adjustable frequency drives for the existing RAS pump as, specified.
Includes all items covered under Section 16420, including submittals, equipments, start-up, etc.
Includes coordination with AFD supplier, to ensure compatibility with existing pumps.
This item includes Contractor's mark-up and general requirements, but NOT installation.
Unit: Lump Sump covering all items related to this task.

21. Electrical Work for Mixer Terminations: Work Includes:

At existing terminal box, disconnecting existing mixer power and status wires.
At existing terminal box, connecting new mixer power and status wires.
Referrign to documentation provided by Owner to verify wire connectivity.
Installing new SS kellems grips on two pump cords, hang from handrail.
Unit: Lump Sump covering all items related to this task.

22. Electrical Work for Blowers & Associated VFD's: Work Includes:

For existing blowers, identifying and marking existing wires, disconnect at blower, to allow demolition of blower.
Extending new conduit & wiring from existing disconnects to each new blower.
Installing new terminal boxes for motor thermal circuits, modifying support racks.
Conduit anchors and supports.
Completing all wiring terminations.
Examining existing wiring, existing schematics, and SCADA I/O points.
Removing two existing AFD's for existing blowers.
Installing two new AFD's for new blowers, modifying support struts as required.
Modifying existing flex conduits and junction boxes as required for each new AFD.
Programming and testing new AFD's.
Removing and replacing existing AFD line reactor for each blower.
Modifying existing MCC buckets for each blower.
Verifying connection of all associated SCADA I/O points.
Unit: Lump Sump covering all items related to this task.

23. Electrical Work for RAS Pump VFD's: Work Includes:

For existing RAS pumps, identifying and marking existing wires, disconnecting at VFD.
Examining existing wiring, existing schematics, and SCADA I/O points.
Removing three existing AFD's for existing RAS pumps.
Installing three new AFD's for RAS pumps, modifying support struts as required.
Completing all wiring terminations.
Programming and testing new AFD's.
Re-using existing wiring, modifying conduits as required.
Verifying connection of all associated SCADA I/O points.
Includes hauling and disposal of demolished items.
Unit: Lump Sump covering all items related to this task.

END OF DESCRIPTIONS

CITY OF PARKVILLE, MISSOURI

WWTF REPAIRS - 2026

SHEET LIST:

OVERALL SEQUENCE OF WORK.

1. The following sequence of construction is proposed by Engineer. Contractor may modify this sequence with the consent of City.
2. Shop drawing submittals and approvals.
3. Mobilize.
4. Use a hydraulic submersible pump to transfer mixed liquor between tanks, to allow work in Aeration Basin complex to progress in stages. Refer to detailed sequence of work on Sheet 2.
5. Complete clean-up and restoration.

TRANSFER PUMPING:

1. Contractor shall use a hydraulic submersible pump to transfer mixed liquor between tanks. Contractor shall provide all discharge hoses and adapters to accomplish these tasks, and shall set up, move, and take down discharge hoses.
2. Minimum pump capacity shall be 1,000 gallons per minute (gpm) at a discharge head necessary to accomplish the pumping tasks (TDH depends on hose size and length. Static head is less than 25 feet.)
3. Where called for by the Sequence of Work, or limited by Owner for process reasons, the discharge rate shall be reduced.
4. Contractor shall include in his Bid his number of weeks of rental time for pump with diesel power unit and hoses. (Minimum shall be set at 4 weeks.) Equipment shall be on hand continuously, including means to move the pump and power unit, until the work is Substantially Complete.

TIME LIMITATIONS

1. Contractor and City recognize that the Work must be completed expeditiously and with minimum delay and inconvenience to residents. Accordingly, the following limitations shall apply.
2. All Work shall be complete within 200 calendar days of City's written Notice to Proceed.
3. In addition, from the time the first existing WWTF aeration tank is taken off-line, all repairs to the WWTF shall be substantially complete and all systems operating within 45 days.
4. City will grant a time extension for days of inclement weather when Contractor is unable to work.
5. Refer to Contract Documents for liquidated damages provisions.

GENERAL NOTES.

1. This contract includes the repair of existing equipment, structures, piping, and electrical systems at the City of Parkville Wastewater Treatment Facility (WWTF). The Repairs shown herein will be constructed by a contractor for the City of Parkville, Missouri. Drawings have been prepared by North Hills Engineering, Inc. (Engineer).
2. Contractor is responsible for means and methods of construction, and for jobsite safety.
3. Permits: This project requires neither a City nor a County Building Permit. However, Contractor and all subcontractors shall obtain a City occupational license at City Hall. Estimated cost is $75.00 for a general contractor and $50.00 for each subcontractor.
4. The undergound pipe and utility locations shown on these plans are taken from utility company records and recent locates and are approximations only. The locations shown do not constitute actual field locations unless so noted on the plans. Neither the Engineer nor the City assumes any responsibility for the accuracy of these locations nor for any additional utilities not indicated on the plans. Contractor shall verify existing dimensions and utilities prior to constructing the repairs and improvements. Contractor shall pothole utilities where noted on the Plan Sheets. Contractor shall be responsible for all damage to utilities.
5. The Contractor shall not be allowed to work on Sundays. Holiday and Saturday work shall be approved by City or Engineer.
6. Contractor shall restore existing surfaces and conditions to conditions equal to or better than existing conditions. Contractor shall be responsible for damage to all public and private property, resulting from Contractor's operations.
7. The contractor shall be required to keep the existing WWTF operational during construction.

OPERATIONS COORDINATION:

1. Owner will retain responsibility for operation of the existing wastewater treatment facilities during Contractor's performance of the Work, including operation of equipment, valves, and electrical gear.
2. If these Drawings direct Contractor to operate valves, equipment, or electrical gear, it is understood that Contractor will coordinate with Owner's operations personnel prior to such operations.
3. Contractor shall coordinate and plan construction tasks with Owner's operations personnel.

Revisions

No.	Date	Description

NORTH HILLS ENGINEERING, INC., northhillseng@gmail.com,
1825 Sunrise Dr. Smithville, MO 64089, (816) 935-2777

CL#2012038740

STATE OF MISSOURI
JAY ELLIOT NORCO
NUMBER E-29748
REGISTERED PROFESSIONAL ENGINEER
02-26-26

Jay E. Norco E-29748

CITY OF PARKVILLE, MO
8880 CLARK AVE. - PARKVILLE, MO 64152

WWTF REPAIRS - 2026
TITLE SHEET & NOTES

Design:	Drawn: JEN
Date:	2-26-2026
Sheet:	1 of 19

SEQUENCE OF WORK: Contractor may revise with consent of Engineer and Owner.

1 In advance, Owner draws down mixed liquor concentrations to minimum values, by wasting and land applying of biosolids.

2 Contractor installs new manual stainless steel bar rack in headworks bypass channel.

3 Before transfer day, City drains large (West) digester and prepares to receive mixed liquor for storage:
Volume: 176,267 gal

4 Morning of transfer, City shuts down tank 2 (close GV-3, realizing that valve leaks) and directs influent to Basin 1, opens Mixed Liquor valve GV-11, Closes GV-12. PV-1 remains open, PV2-remains closed.
Then Contractor draws down Tank 2 a small amount by pumping to clarifiers splitter box.
Approximate pump time: *(Pump rate limited by downstream process.)*
18,644 gal / 650 GPM = 29 min
Contractor then quickly transfers mixed liquor from Tank 2 to to West Digester.
Approximate pump time:
175,747 gal / 1000 GPM = 176 min = 2.9 hours

5 Once Tank 2 is drawn down below 12" mixed liquor transfer pipe, Contractor installs inflatable plug in end of 12" pipe, secures with rope. Owner then closes PV-1, opens PV-2, directs influent flow to Tank 2. Owner closes mixed liquor valve GV-11, opens GV-12. Contractor transfers mixed liquor from Tank 1 to Tank 2, to fill up Tank 2.
Approximate pump time:
194,391 gal / 1000 GPM = 194 min = 3.2 hours

6 Contractor will set up submersible transfer pump to drain Tank 1, down to a depth of about 2 feet. (Depth as required for Contractor to install new mixer and inspect carriage and travel stop, set mixer orientation.)
Contractor pumps down Tank 1 over a period of 1 day, by transferring to Tank 2.
Approximate pump time: *(Pump rate limited by downstream process.)*
76,412 gal / 500 GPM = 152.82 min = 2.55 hours
As soon as the level drops below Elev. 742.5, Contractor will replace 12" manual gate valve GV-3, located in the pipe gallery. (This will allow Owner to permanently isolate each aeration basin.)
Contractor closes new valve GV-3, then removes inflatable plug in end of pipe, in Tank 2.
WWTF will now operate for 1-3 weeks on Tank 2, with Tank 1 out of service.

7 While Tank 1 is out of service, Contractor will remove failed submersible mixer in Tank 1, and install new submersible mixer (furnished by Owner) on existing mixer mast, using existing hoist.

8 With Tank 1 still out of service, perform the following sequence to replace the section of 12" DIP in lower level pipe gallery:
a Contractor prepares lifting eyes, hoists, and other means to prepare for demolition/lifting. Contractor uses crane to lift Owner's 3-inch self primer pump on top of clarifier deck.
b Owner shuts down RAS pumps, sets up Owner's 3-inch self primer pump to transfer RAS from wetwell to Tank 2.
c Contractor's transfer pump is still set up to pump from Tank 1 to Tank 2. The pump will be set up to keep the level in Tank 1 below 8 feet, by pumping influent from Tank 1 to Tank 2. (This will allow the influent pipe to drain into Tank 1).
d Contractor removes bolts and removes plate covering the headworks overflow notch. This allows inluent flow to be diverted directly to Tank 1, bypassing the screens.
e Contractor places 12" diameter inflatable plug in drop pipe from headworks, to isolate section of influent pipe.
f Owner closes plug valve PV-2 and opens PV-1, allowing influent pipe & RAS pipe to drain to tank 1. Owner places slide plates in front of automatic screen and manual bar rack, to divert flow to Tank 1.
g Contractor closes 6" gate valve GV-4, to isolate RAS pump discharge line.
h Influent pipe drains by gravity into Tank 1, then valve PV-1 may be closed.
j Contractor removes and replaces the 16-foot long section of 12" DIP, along with pipe hangers and sump pump connection. While pipe is open, Contractor uses mini-camera to inspect pipe between headworks platform and pipe gallery.
k Immediately after new 12" pipe is installed: Contractor opens RAS valve GV-4, Contractor re-installs plate at Headworks overflow notch and removes 12-inch plug in Headworks drop pipe. Owner removes slide plates at screens. This will direct flow into Tank 2 via the new 12" influent pipe. Note that PV-2 remains closed and PV-1 is opened.
l Contractor uses crane to lift Owner's 3-inch self primer pump from clarifier deck to gravel drive.

9 With Tank 1 still out of service, Owner closes air valve BFV-8, uses existing blower B-2 to aerate Tank 2. Contractor uses crane to remove existing blower B-1 and move new blower B-1 into blower room.

10 Contractor installs new blower B-1, new VFD-1, new line reactor for VFD-1, modifies inlet and discharge piping to fit new blower, terminates and tests new blower. Contractor completes controls wiring and VFD-1 programming. With Tank 1 partially full of liquid (left over from prior tasks), run blower to confirm rotation and SCADA control.

11 Contractor uses crane to lift out demolished items from lower level pipe gallery (pump, fittings,etc.) (Timing flexible on this task.)

12 Procedure to place Tank 1 into service and drain Tank 2:
a With BFV-8 closed and BFV-10 open, owner operates new Blower B-1 to aerate Tank 1.
b Owner opens PV-1 (slowly to avoid damaging diffusers) to gravity transfer from Tank 2 to Tank 1. This will place about 11 feet depth of mixed liquor in Tank 1, after levels equalize.
c Owner closes PV-2 (PV-1 remains open) to direct influent and RAS to Tank 1. Owner closes mixed liquor valve GV-12, opens GV-11. This will direct inflow and RAS into Tank 1.
d Contractor quickly pumps down Tank 2, by transferring to Tank 1, using submersible transfer pump.
Approximate pump time:
140,903 gal / 1000 GPM = 140.90 min = 2.35 hours
e Owner will now operate Aeration Tank 1 for treatment, With tank 2 out of service.

13 Contractor drains and cleans Tank 2, including removal of sludge and grit deposits.

14 Contractor demo's existing blower B-2,installs new blower B-2, new VFD-2, new line reactor for VFD-2, modifies inlet and discharge piping to fit new blower, terminates and tests new blower. Contractor completes controls wiring and VFD-2 programming.

15 Contractor installs new diffuser membranes (furnished by Owner) in Tank 2, then transfers effluent water for leak test, using submersible transfer pumps, then performs clean water diffuser leak test. Run blower B-2 to confirm rotation and SCADA control.

16 Contractor installs new welded elbow on existing steel air drop pipe in Tank 2, modifies overflow box. Contractor installs new air butterfly valve BFV-11, on the Tank 2 side of the air discharge line.

17 Owner opens PV-2 for a short time to transfer 3 feet of fluid into Tank 2. With Tank 2 partially full of to allow the two tanks to equalize levels. Then to resume normal operation, Owner closes PV-2, opens GV-3, opens GV-12, and closes GV-11.

18 Contractor installs new plug valve PV-31 in Clarifier Structure Valve Pit, Replaces three VFD's at RAS pumps, keeping one pump in service at all times for RAS pumping.

19 Contractor performs replacement of yard hydrant, and remaining minor work items.

Revisions

No.	Date	Description

NORTH HILLS ENGINEERING, INC., northhillseng@gmail.com,
1825 Sunrise Dr. Smithville, MO 64089, (816) 935-2777

CL#2012038740

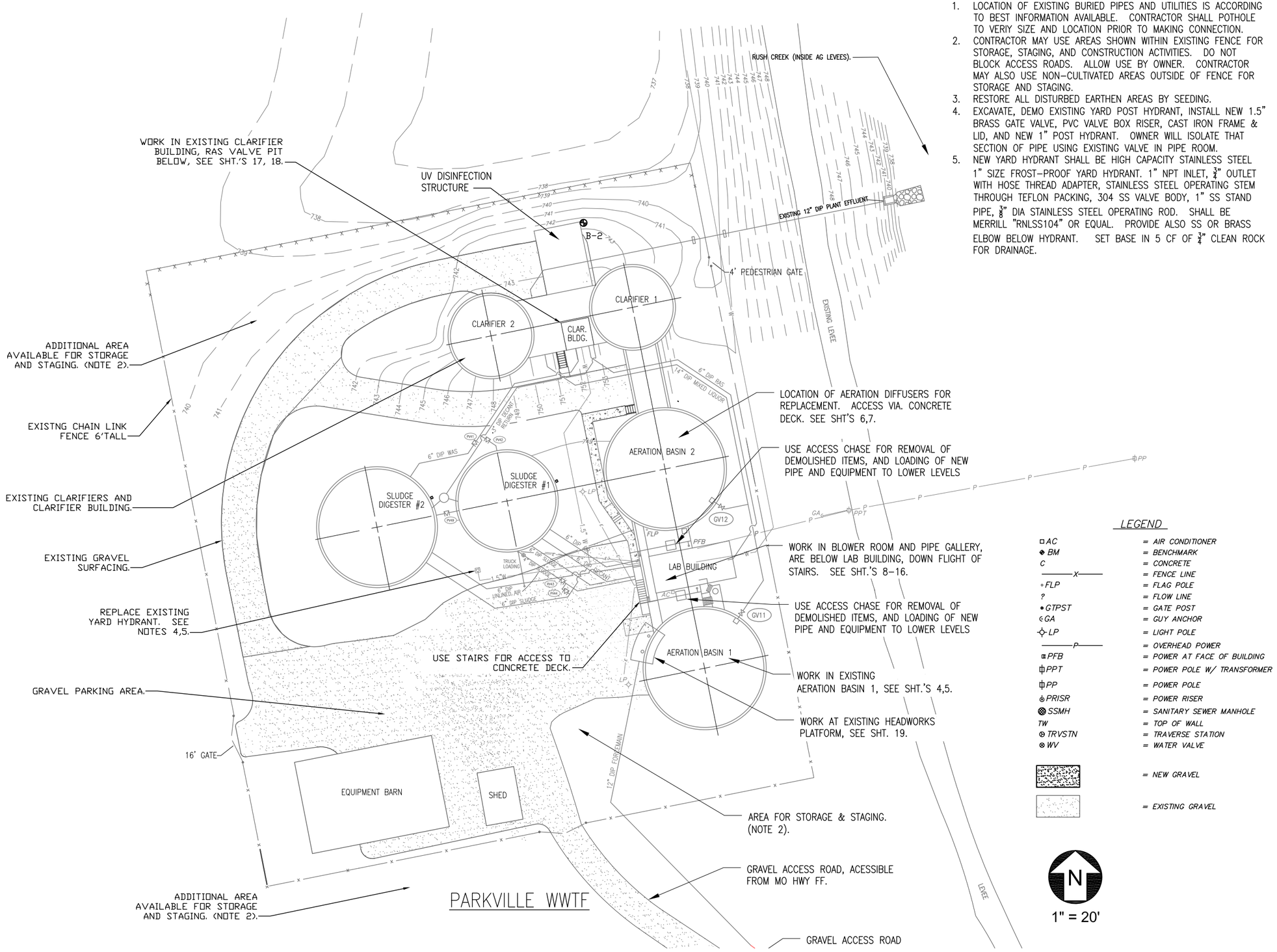
STATE OF MISSOURI
JAY ELLIOT NORCO
NUMBER E-29748
REGISTERED PROFESSIONAL ENGINEER
02-26-26

Jay E. Norco E–29748

CITY OF PARKVILLE, MO
8880 CLARK AVE. – PARKVILLE, MO 64152

WWTF REPAIRS – 2026
SEQUENCE OF WORK

Design:
Drawn: JEN
Date: 2–26–2026
Sheet: 2 of 19



NOTES

1. LOCATION OF EXISTING BURIED PIPES AND UTILITIES IS ACCORDING TO BEST INFORMATION AVAILABLE. CONTRACTOR SHALL POTHOLE TO VERIY SIZE AND LOCATION PRIOR TO MAKING CONNECTION.
2. CONTRACTOR MAY USE AREAS SHOWN WITHIN EXISTING FENCE FOR STORAGE, STAGING, AND CONSTRUCTION ACTIVITIES. DO NOT BLOCK ACCESS ROADS. ALLOW USE BY OWNER. CONTRACTOR MAY ALSO USE NON-CULTIVATED AREAS OUTSIDE OF FENCE FOR STORAGE AND STAGING.
3. RESTORE ALL DISTURBED EARTHEN AREAS BY SEEDING.
4. EXCAVATE, DEMO EXISTING YARD POST HYDRANT, INSTALL NEW 1.5" BRASS GATE VALVE, PVC VALVE BOX RISER, CAST IRON FRAME & LID, AND NEW 1" POST HYDRANT. OWNER WILL ISOLATE THAT SECTION OF PIPE USING EXISTING VALVE IN PIPE ROOM.
5. NEW YARD HYDRANT SHALL BE HIGH CAPACITY STAINLESS STEEL 1" SIZE FROST-PROOF YARD HYDRANT. 1" NPT INLET, ¾" OUTLET WITH HOSE THREAD ADAPTER, STAINLESS STEEL OPERATING STEM THROUGH TEFLON PACKING, 304 SS VALVE BODY, 1" SS STAND PIPE, ⅜" DIA STAINLESS STEEL OPERATING ROD. SHALL BE MERRILL "RNLSS104" OR EQUAL. PROVIDE ALSO SS OR BRASS ELBOW BELOW HYDRANT. SET BASE IN 5 CF OF ¾" CLEAN ROCK FOR DRAINAGE.

LEGEND

AC	= AIR CONDITIONER
BM	= BENCHMARK
C	= CONCRETE
X	= FENCE LINE
FLP	= FLAG POLE
?	= FLOW LINE
GTPST	= GATE POST
GA	= GUY ANCHOR
LP	= LIGHT POLE
P	= OVERHEAD POWER
PFB	= POWER AT FACE OF BUILDING
PPT	= POWER POLE W/ TRANSFORMER
PP	= POWER POLE
PRISR	= POWER RISER
SSMH	= SANITARY SEWER MANHOLE
TW	= TOP OF WALL
TRVSTN	= TRAVERSE STATION
WV	= WATER VALVE
	= NEW GRAVEL
	= EXISTING GRAVEL

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WWTF REPAIRS - 2026
SITE PLAN

Design:	Drawn: JEN
Date:	2-26-2026
Sheet:	3 of 19

NOTES

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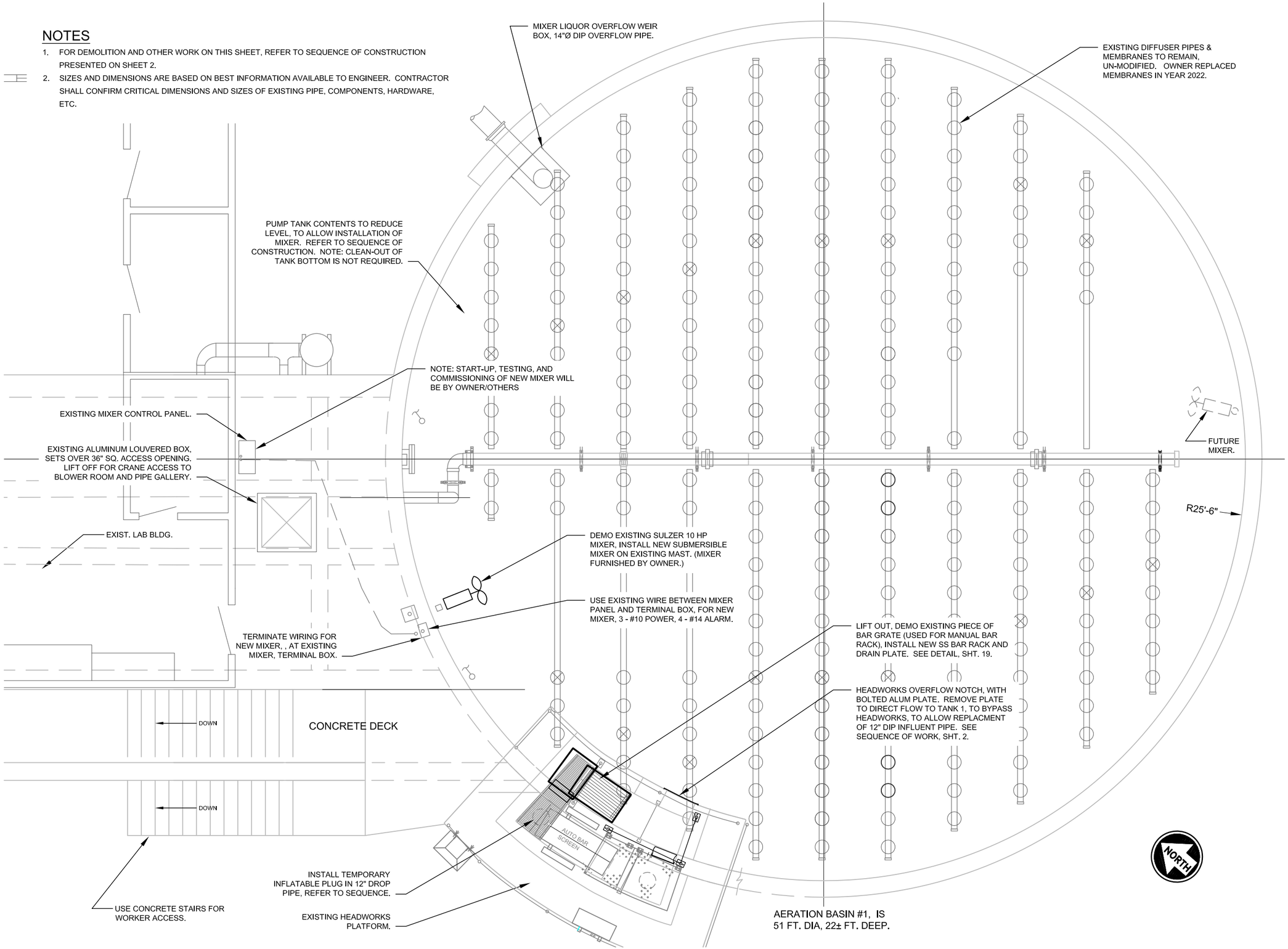

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WWTF REPAIRS – 2026
BASIN 1 TOP PLAN

Design:	Drawn: JEN
Date: 2–26–2026	
Sheet: 4 of 19	

NOTES

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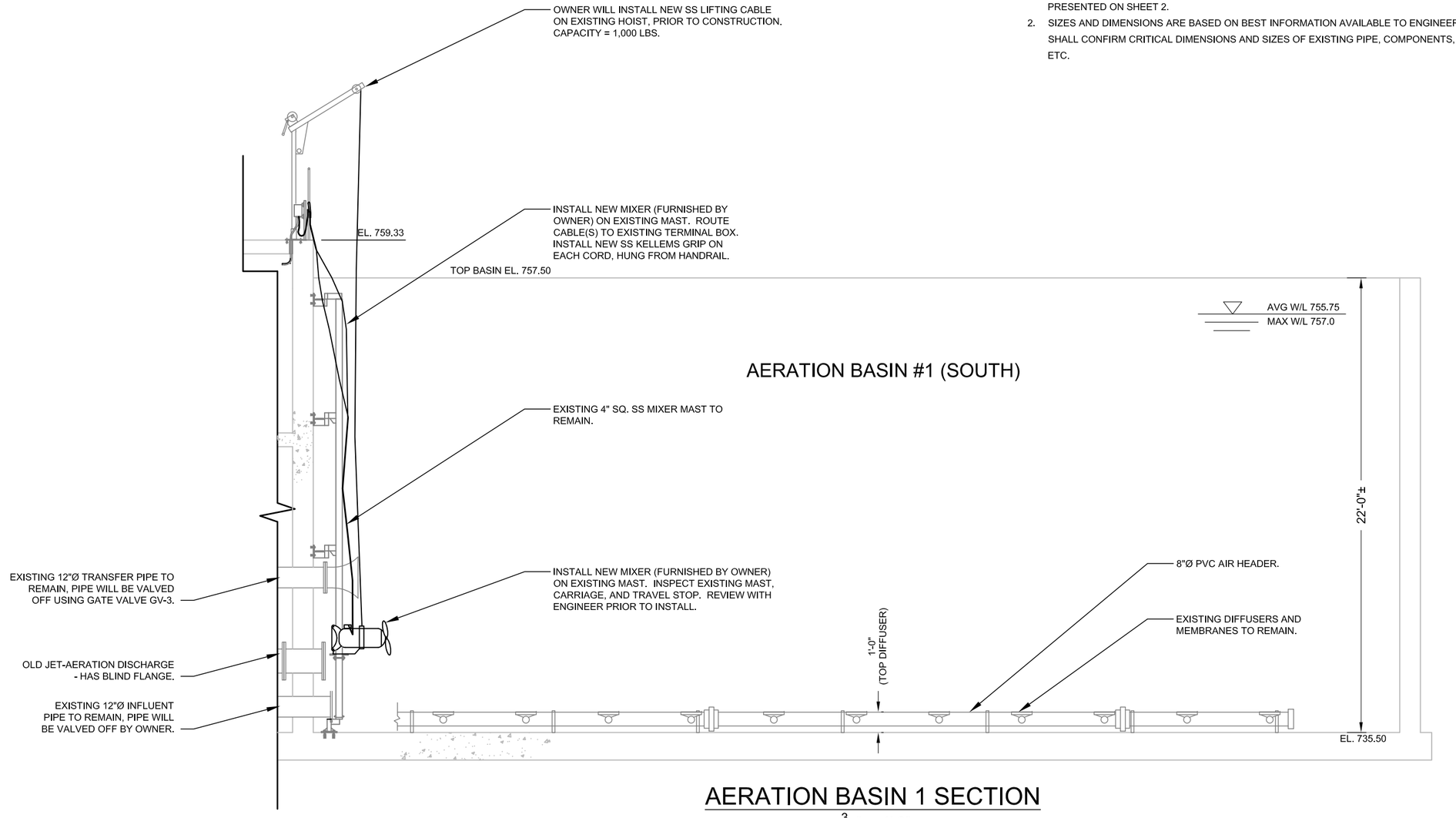

AERATION BASIN 1 SECTION

$\frac{3}{16}$" = 1'-0"

SEQUENCE OF WORK:

1. REFER TO SHEET 2 OF THE DRAWINGS.

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CITY OF PARKVILLE, MO
8880 CLARK AVE. - PARKVILLE, MO 64152

WWTF REPAIRS - 2026
BASIN 1 SECTION

Design:
Drawn: JEN
Date: 2-26-2026
Sheet: 5 of 19

NOTES

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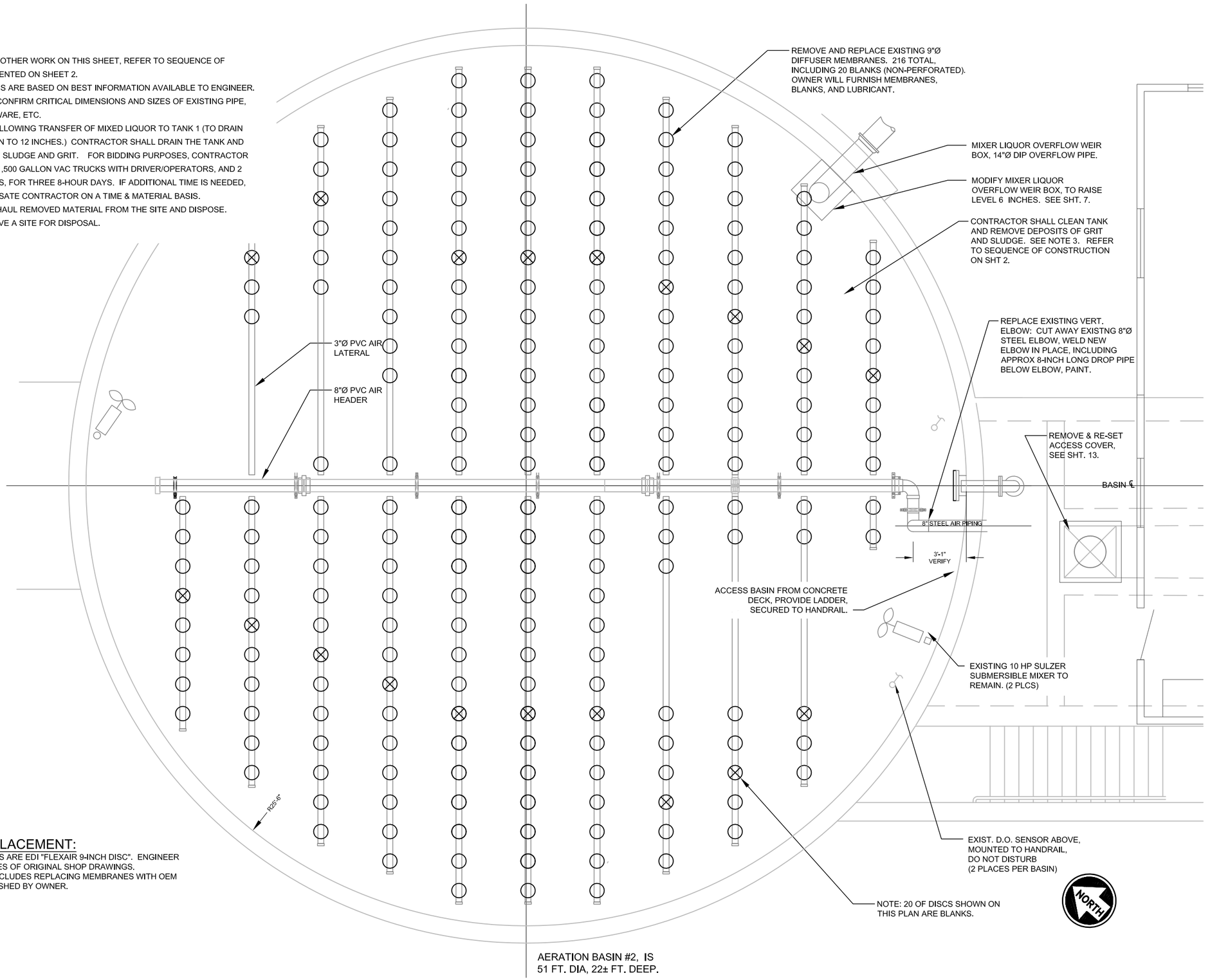
3. TANK 2 CLEANING: FOLLOWING TRANSFER OF MIXED LIQUOR TO TANK 1 (TO DRAIN THE TANK LEVEL DOWN TO 12 INCHES.) CONTRACTOR SHALL DRAIN THE TANK AND REMOVE DEPOSITS OF SLUDGE AND GRIT. FOR BIDDING PURPOSES, CONTRACTOR SHALL PROVIDE TWO 1,500 GALLON VAC TRUCKS WITH DRIVER/OPERATORS, AND 2 ADDITIONAL LABORERS, FOR THREE 8-HOUR DAYS. IF ADDITIONAL TIME IS NEEDED, OWNER WILL COMPENSATE CONTRACTOR ON A TIME & MATERIAL BASIS. CONTRACTOR SHALL HAUL REMOVED MATERIAL FROM THE SITE AND DISPOSE. OWNER DOES NOT HAVE A SITE FOR DISPOSAL.



DIFFUSER REPLACEMENT:

1. EXISTING DIFFUSERS ARE EDI "FLEXAIR 9-INCH DISC". ENGINEER CAN PROVIDE COPIES OF ORIGINAL SHOP DRAWINGS.
2. SCOPE OF WORK INCLUDES REPLACING MEMBRANES WITH OEM MEMBRANES FURNISHED BY OWNER.

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WWTF REPAIRS – 2026
BASIN 2 TOP PLAN

Design:	Drawn: JEN
Date: 2–26–2026	
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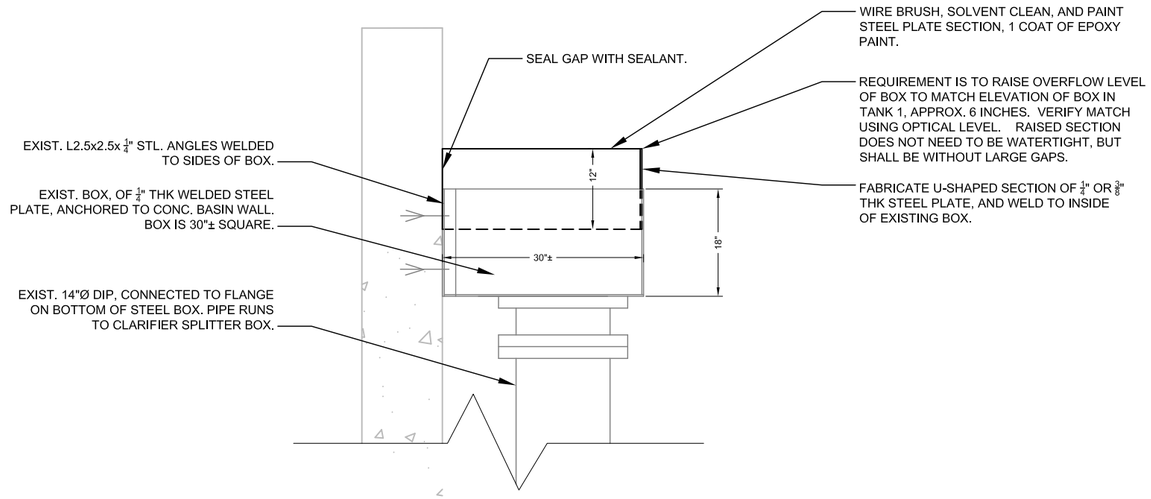
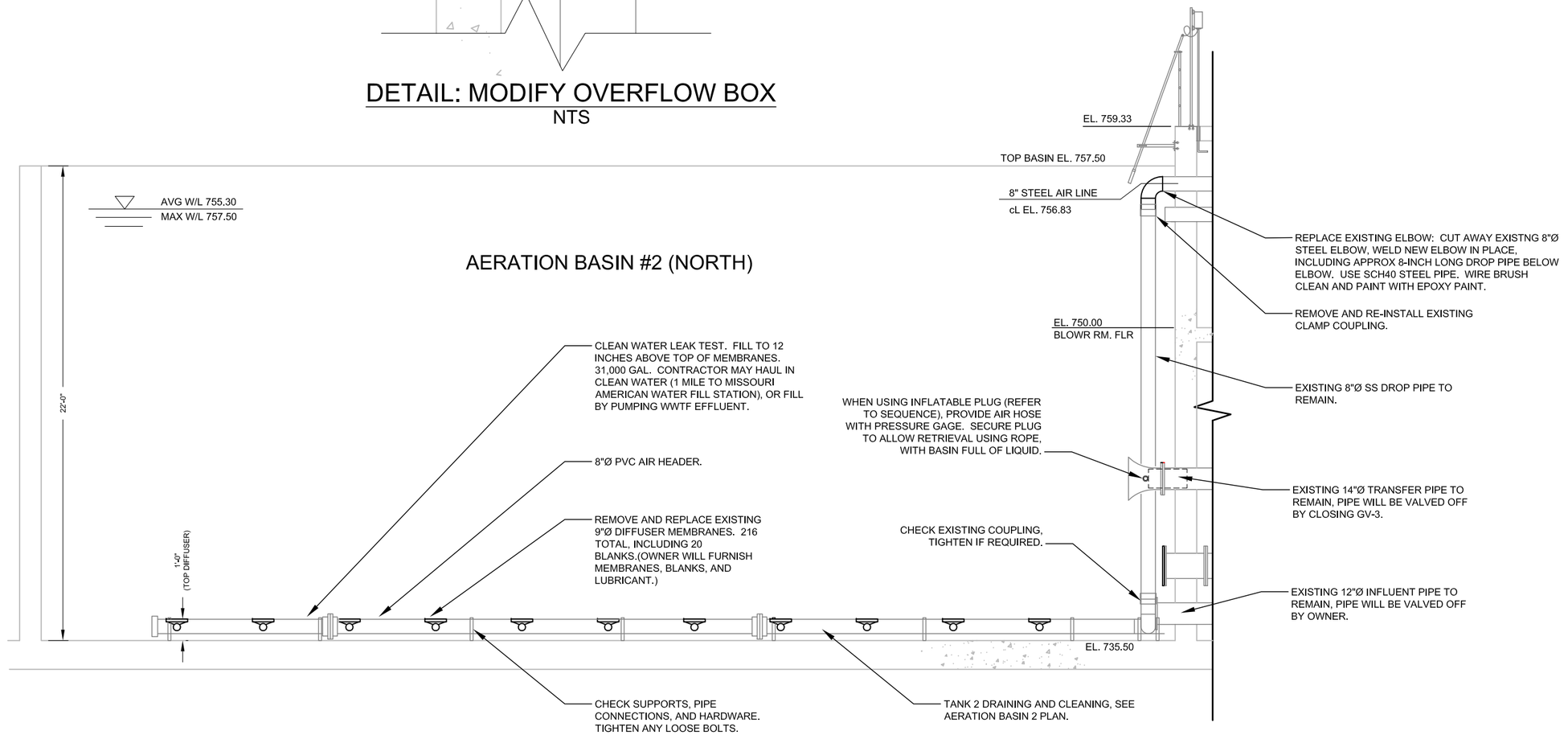


DETAIL: MODIFY OVERFLOW BOX

NTS



AERATION BASIN #2 (NORTH)

AERATION BASIN 2 SECTION

$\frac{3}{16}$" = 1'-0"

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WWTF REPAIRS – 2026
BASIN 2 SECTION

Design:	Drawn: JEN
Date:	2–26–2026
Sheet:	7 of 19

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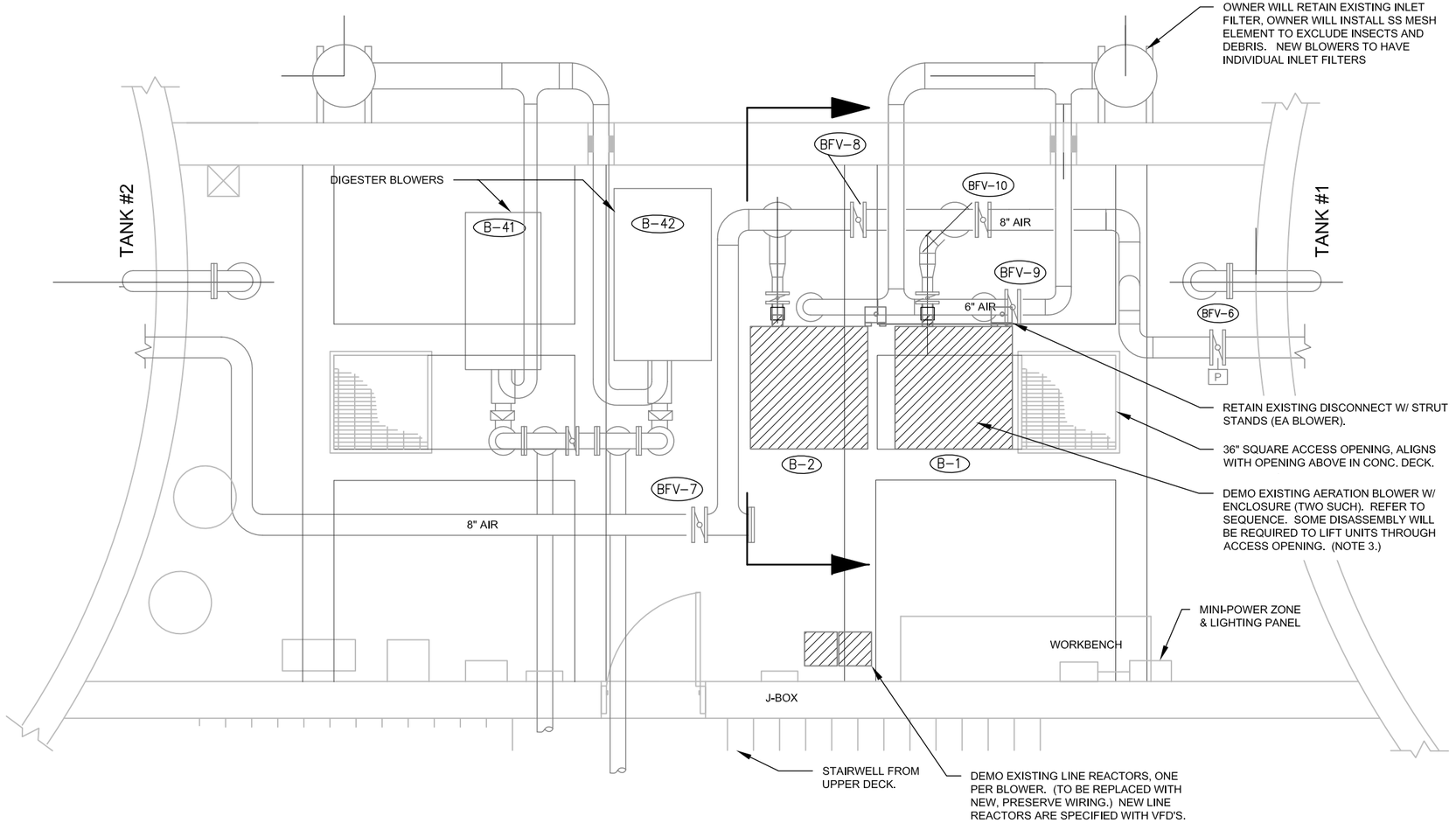
3. EXISTING BLOWERS ARE "ROBUSCHI", TRI-LOBE POSITIVE DISPLACEMENT TYPE, WITH 30 HP MOTOR AND MODULAR ENCLOSURE.



BLOWER ROOM PLAN - DEMOLITION

$\frac{1}{4}$" = 1'-0"

NORTH

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WWTF REPAIRS - 2026
BLOWER ROOM
DEMOLITION PLAN

Design:	Drawn: JEN
Date:	2-26-2026
Sheet:	8 of 19

AIR PIPE AND VALVE NOTES:

1. CONTRACTOR SHALL VERIFY ALL SIZES AND CRITICAL MEASUREMENTS PRIOR TO PERFORMING WORK.
2. BUTTERFLY VALVES SHALL BE WAFER-TYPE, ANSI CLASS 125, 230 PSI RATING, DUCTILE IRON BODY, 316SS DISC, 316 SS STEM, EPDM SEAT, WITH 10-POSITION LEVER ACTUATOR. PRATT "BF SERIES" OR ENGINEER APPROVED EQUAL. CONTACT: MID-AMERICA VALVE, 913-642-2442.
3. STEEL PIPE SHALL BE SCHEDULE 40 STEEL, ASTM A-53 TYPE E OR S, WITH BUTT-WELDED FITTINGS, ANSI/ASME B16.9, STANDARD WEIGHT. GRIND WELDS SMOOTH.
4. ALL NEW AND MODIFIED STEEL PIPE SHALL BE WIRE BRUSH CLEANED OF ALL RUST AND PRIMED WITH HIGH-SOLIDS ALKYD PHENOLIC PRIMER, TNEMEC "SERIES 37H" TO 3.0 MILS DFT. TOP COAT WITH EPOXY PAINT TO MATCH EXISTING COLOR, TNEMEC "SERIES 69", TWO COATS 4.0 MILS DFT EACH.

NOTES

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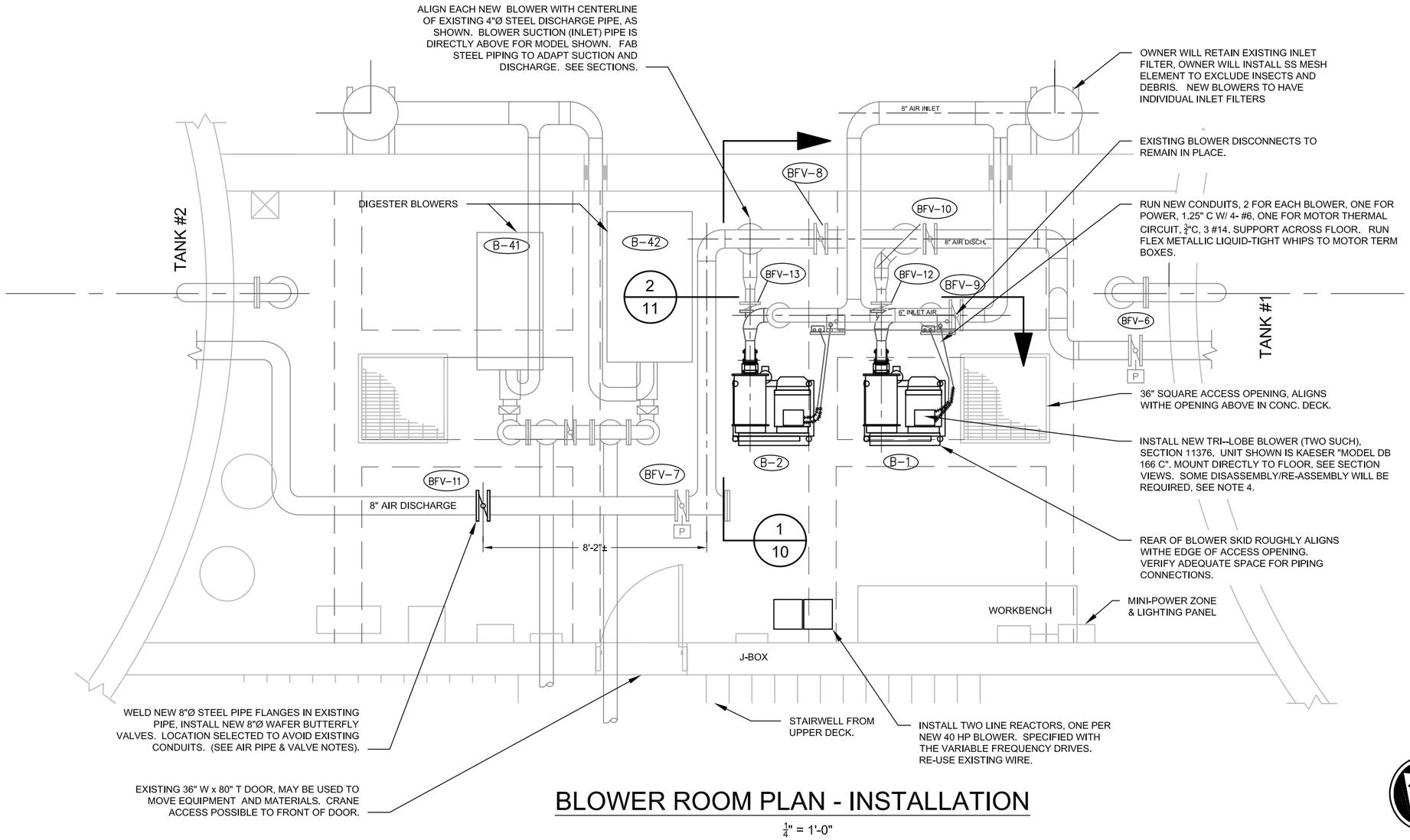
3. EXISTING BLOWERS ARE "ROBUSCHI", TRI-LOBE POSITIVE DISPLACEMENT TYPE, WITH 30 HP MOTOR AND MODULAR ENCLOSURE.
4. THE NEW BLOWER UNITS SHALL BE SHIPPED AS FACTORY-ASSEMBLED PACKAGES MOUNTED ON A STEEL FRAME. HOWEVER, THE EXISTING 36"-SQUARE ACCESS OPENINGS ARE NOT LARGE ENOUGH TO PASS THROUGH INTACT. CONTRACTOR WILL NEED TO REMOVE COMPONENTS AND RE-ASSEMBLE INSIDE BLOWER ROOM. FOR KAESER DB 166 C, ENGINEER WILL SHARE MANUFACTURER'S SUGGESTIONS FOR DISASSEMBLY. UPON RE-ASSEMBLY, CONTRACTOR SHALL HAVE MFR'S TECHNICIAN CHECK AND TEST UNIT PRIOR TO OPERATION. CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT BLOWER UNITS ARE CORRECTLY RE-ASSEMBLED AND TESTED.
5. PRIOR TO BLOWER PACKAGE DISASSEMBLY, CONTRACTOR SHALL MEET WITH ENGINEER TO REVIEW CONTRACTOR'S PLAN FOR RE-ASSEMBLY.



BLOWER ROOM PLAN - INSTALLATION

¼" = 1'-0"

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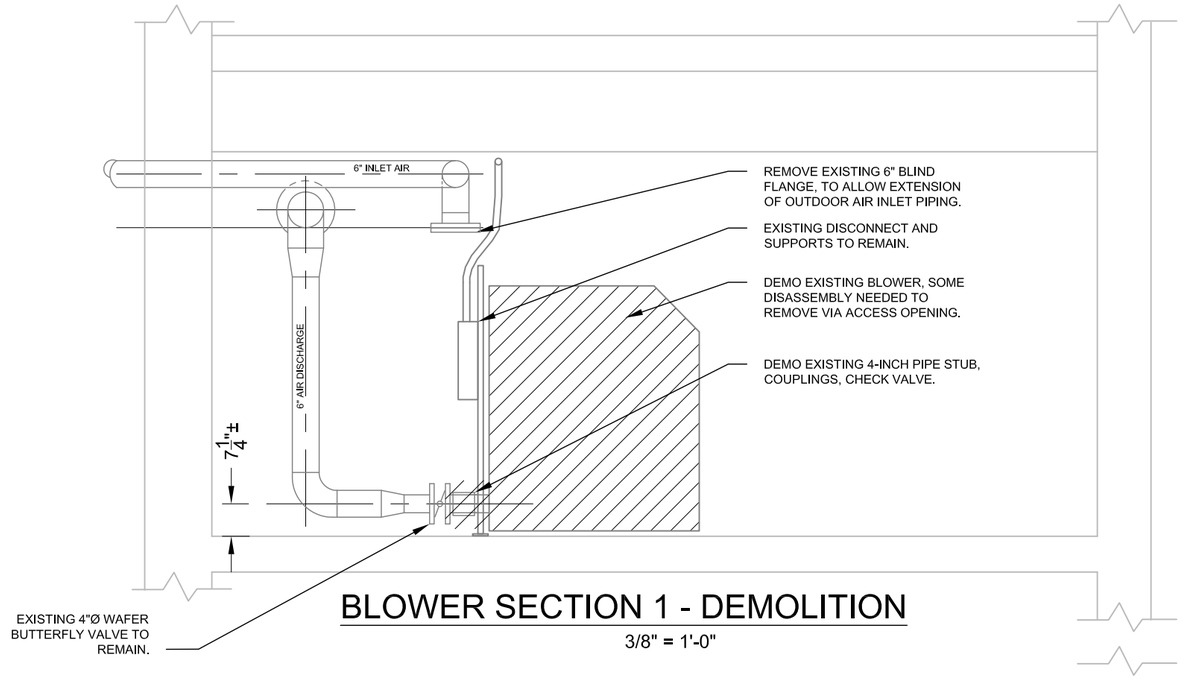
WWTF REPAIRS - 2026
BLOWER ROOM
INSTALLATION PLAN

Design:
Drawn: JEN
Date: 2-26-2026
Sheet: 9 of 19



BLOWER SECTION 1 - DEMOLITION

3/8" = 1'-0"

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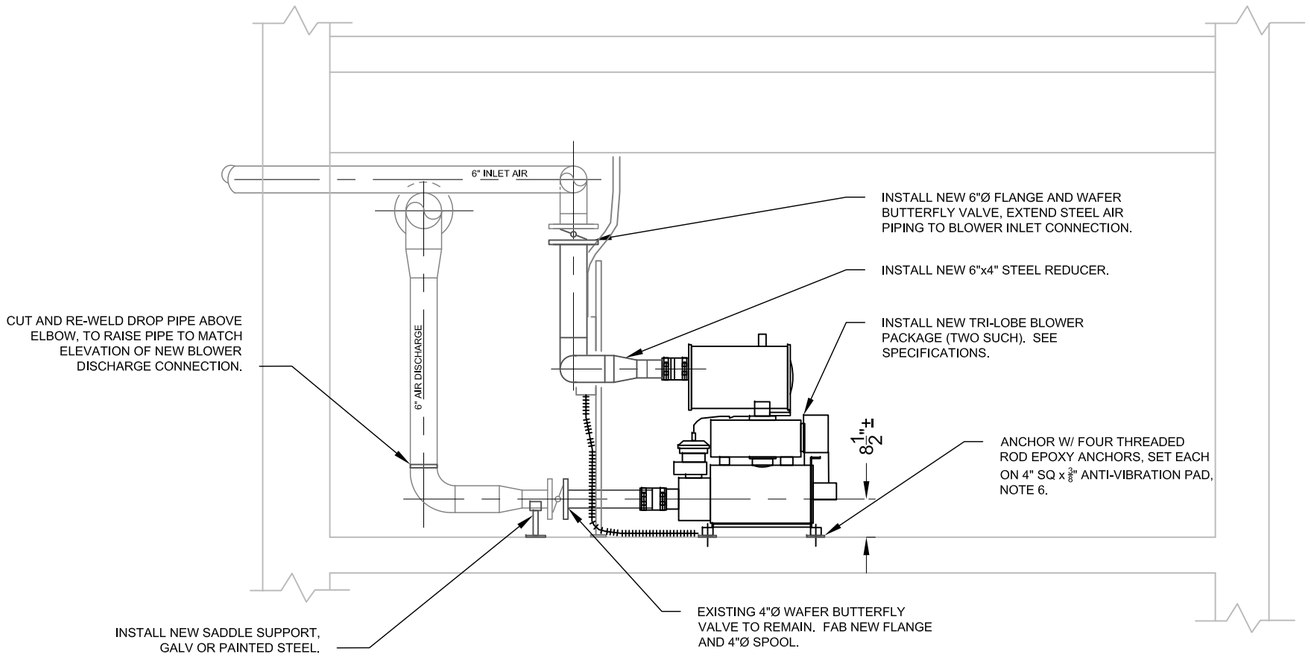
5. PRIOR TO BLOWER PACKAGE DISASSEMBLY, CONTRACTOR SHALL MEET WITH ENGINEER TO REVIEW CONTRACTOR'S PLAN FOR RE-ASSEMBLY.
6. RE: SUPPORT OF BLOWER SKID FRAME. IF RECOMMENDED BY MFR., PROVIDE CONTINUOUS PAD OF ANTI-VIBRATION MATERIAL BETWEEN SKID AND CONCRETE FLOOR.



BLOWER SECTION 1 - INSTALLATION

3/8" = 1'-0"

NOTE: THESE SECTIONS APPLY TO TWO BLOWER UNITS, WITH MINOR PIPING DIFFERENCES.

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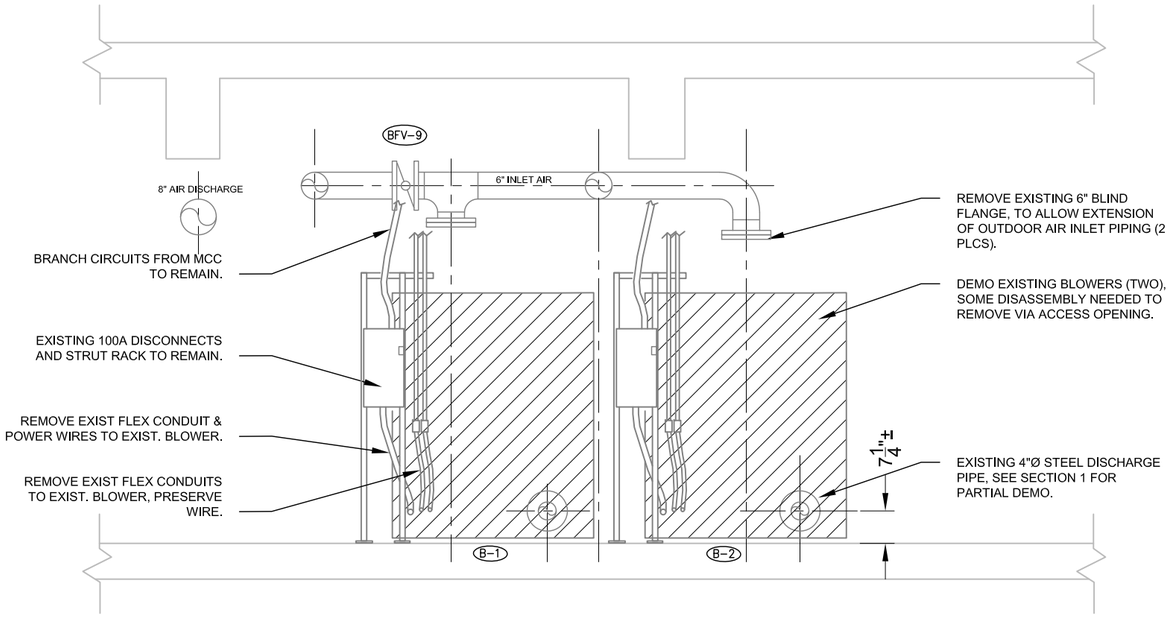
WWTF REPAIRS - 2026
BLOWER ROOM
SECTION 1

Design:
Drawn: JEN
Date: 2-26-2026
Sheet: 10 of 19



BLOWER SECTION 2 - DEMOLITION

3/8" = 1'-0"

NOTE: THESE SECTIONS DO NOT SHOW ALL CONDUITS, LIGHTS, SMALL PIPES, ETC. THE PURPOSE OF THIS SECTION IS TO SHOW WORK ON BLOWER PIPE THAT WILL CONNECT TO THE NEW BLOWERS. CONTRACTOR SHALL INSPECT THE SITE AND MAKE MEASUREMENTS PRIOR TO COMMENCING WORK. WORK SHOWN FOR ONE BLOWER SHALL APPLY TO BOTH.

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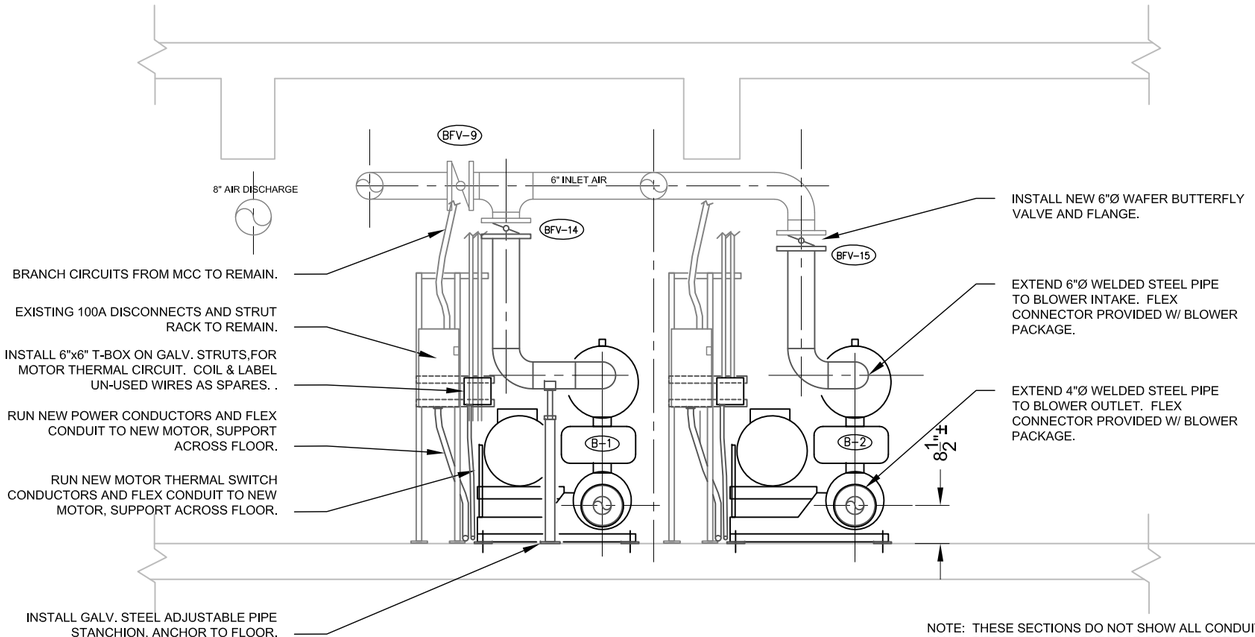

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WWTF REPAIRS - 2026
BLOWER ROOM
SECTION 2

Design:

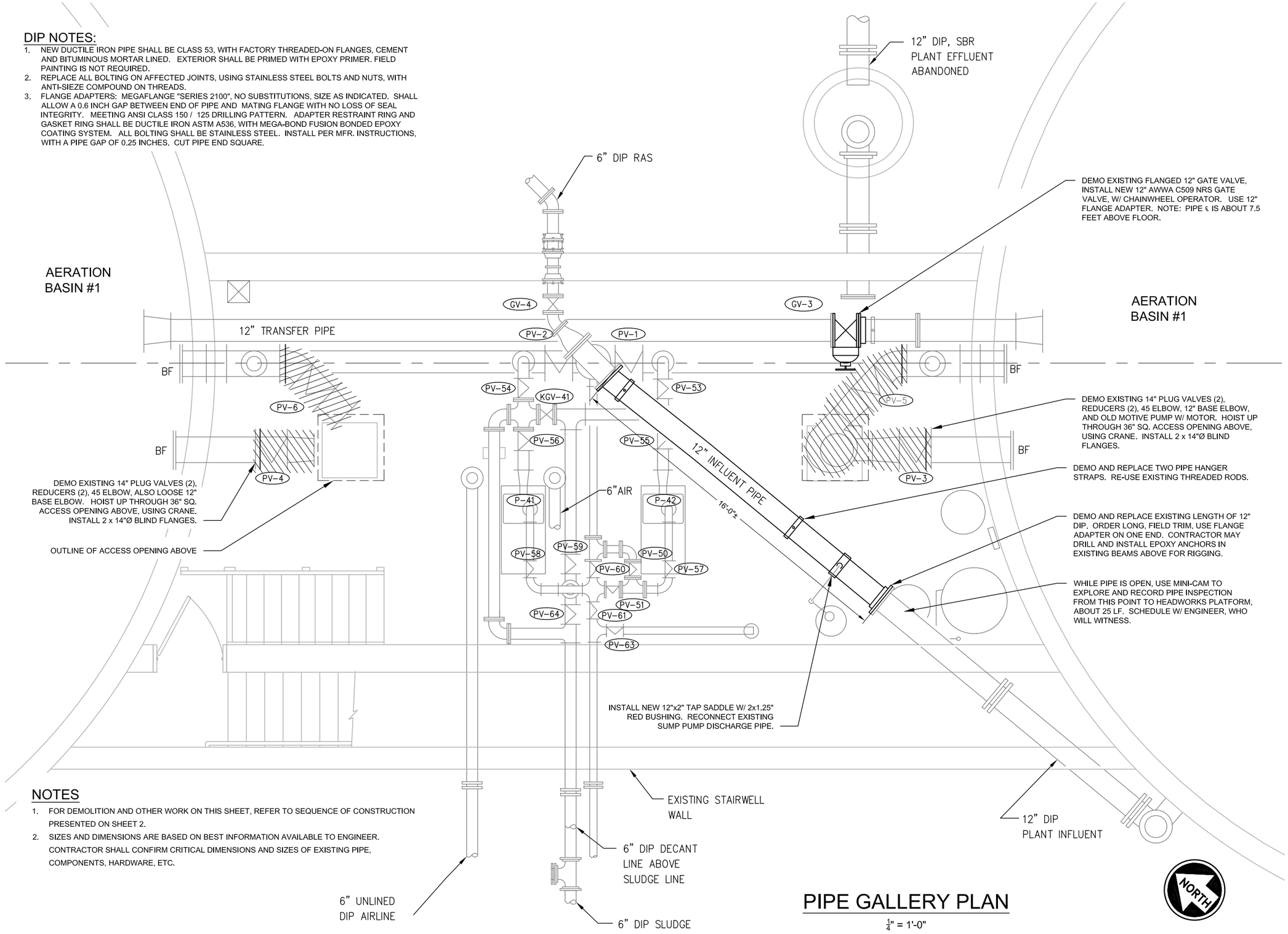
Drawn: JEN

Date: 2-26-2026

Sheet: 11 of 19

DIP NOTES:

1. NEW DUCTILE IRON PIPE SHALL BE CLASS 53, WITH FACTORY THREADED-ON FLANGES, CEMENT AND BITUMINOUS MORTAR LINED. EXTERIOR SHALL BE PRIMED WITH EPOXY PRIMER. FIELD PAINTING IS NOT REQUIRED.
2. REPLACE ALL BOLTING ON AFFECTED JOINTS, USING STAINLESS STEEL BOLTS AND NUTS, WITH ANTI-SIEZE COMPOUND ON THREADS.
3. FLANGE ADAPTERS: MEGAFLANGE "SERIES 2100", NO SUBSTITUTIONS, SIZE AS INDICATED. SHALL ALLOW A 0.6 INCH GAP BETWEEN END OF PIPE AND MATING FLANGE WITH NO LOSS OF SEAL INTEGRITY. MEETING ANSI CLASS 150 / 125 DRILLING PATTERN. ADAPTER RESTRAINT RING AND GASKET RING SHALL BE DUCTILE IRON ASTM A536, WITH MEGA-BOND FUSION BONDED EPOXY COATING SYSTEM. ALL BOLTING SHALL BE STAINLESS STEEL. INSTALL PER MFR. INSTRUCTIONS, WITH A PIPE GAP OF 0.25 INCHES. CUT PIPE END SQUARE.



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PIPE GALLERY PLAN

$\frac{1}{4}$" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER
02-26-26

Jay E. Norco E-29748

CITY OF PARKVILLE, MO
8880 CLARK AVE. - PARKVILLE, MO 64152

WWTF REPAIRS - 2026
PIPE GALLERY PLAN

Design:
Drawn: JEN
Date: 2-26-2026
Sheet: 12 of 19

DIP NOTES:

1. NEW DUCTILE IRON PIPE SHALL BE CLASS 53, WITH FACTORY THREADED-ON FLANGES, CEMENT AND BITUMINOUS MORTAR LINED. EXTERIOR SHALL BE PRIMED WITH EPOXY PRIMER. FIELD PAINTING IS NOT REQUIRED.
2. REPLACE ALL BOLTING ON AFFECTED JOINTS, USING STAINLESS STEEL BOLTS AND NUTS, WITH ANTI-SIEZE COMPOUND ON THREADS.
3. FLANGE ADAPTERS: 1. MEGAFLANGE "SERIES 2100", NO SUBSTITUTIONS, SIZE AS INDICATED. SHALL ALLOW A 0.6 INCH GAP BETWEEN END OF PIPE AND MATING FLANGE WITH NO LOSS OF SEAL INTEGRITY. MEETING ANSI CLASS 150 / 125 DRILLING PATTERN. ADAPTER RESTRAINT RING AND GASKET RING SHALL BE DUCTILE IRON ASTM A536, WITH MEGA-BOND FUSION BONDED EPOXY COATING SYSTEM. ALL BOLTING SHALL BE STAINLESS STEEL. INSTALL PER MFR. INSTRUCTIONS, WITH A PIPE GAP OF 0.25 INCHES. CUT PIPE END SQUARE.

NOTES

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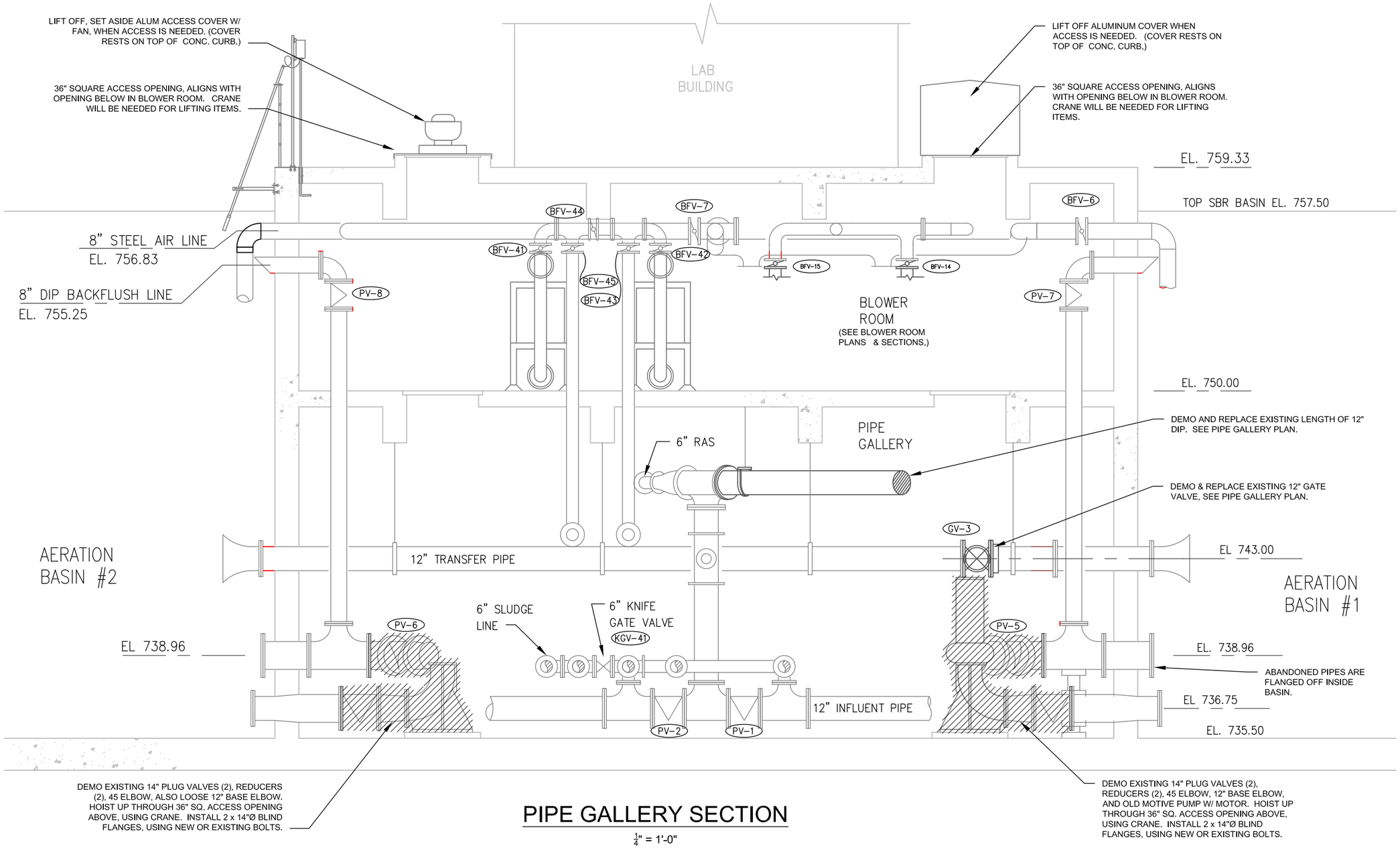
3.



PIPE GALLERY SECTION

$\frac{1}{4}$" = 1'-0"

Revisions		
No.	Date	Description

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1825 Sunrise Dr. Smithville, MO 64089, (816) 935-2777

CL#2012038740

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WWTF REPAIRS - 2026
PIPE GALLERY SECTION

Design:
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4. AS NOTED, OWNER WILL HIRE TECHNICIAN TO CHECK PLANT CONTROL SYSTEM TO VERIFY I/O DURING START-UP.

OFFICE
STORAGE
EXISTING PC WITH HMI SOFTWARE FOR PLANT CONTROL SYSTEM (PCS). OWNER WILL HIRE OTHERS TO VERIFY I/O AND MADE ANY MODIFICATIONS NEEDED.
AHU
WASHER
DRYER
LABORATORY
EXISTING MIXER CONTROL PANEL, TO BE RETAINED.
AERATION TANK #2
AERATION TANK #1
VENT HOOD
REST ROOM
EXISTING TANK #2 MIXER 1
EXISTING CONDUITS BELOW SLAB, RE-USE.
DEMO EXISTING SULZER 10 HP MIXER, INSTALL NEW SUBMERSIBLE MIXER ON EXISTING MAST. (MIXER FURNISHED BY OWNER.)
TERMINATE NEW MIXER AT EXISTING TERMINAL BOX. USE EXISTING WIRE BETWEEN MIXER PANEL AND TERMINAL BOX, FOR NEW MIXER, 3 - #10 POWER, 4 - #14 ALARM.
EXISTING SCADA CABINET, PLC I/O, AND HMI PROGRAMMING TO REMAIN.
MODIFY MCC. BUCKETS FOR 2 NEW BLOWERS. SEE SCHEMATIC.
DEMO EXISTING VFD'S, INSTALL TWO NEW VFD'S. MOUNT TO WALL SIDE-BY-SIDE, RE-USE EXISTING MOUNTING STRUTS, J-BOX, HARDWARE, CONDUIT & WIRE. MODIFY FLEX CONDUITS AS REQD.
EXIST TANK 2 MIXER PANEL
CONTROL CABINET
MCC
AERATION TIMER PANEL (NOT USED)
REPLACE EXISTING LINE REACTORS, LOCATED IN BLOWER ROOM BELOW.
EXISTING PLC1, I/O TERMINALS, AND RELAYS FOR PLANT CONTROL SYSTEM ARE INSIDE CONTROL CABINET. (RETAIN & RE-USE FOR BLOWERS AND NEW MIXER.) OWNER WILL HIRE OTHERS TO VERIFY I/O AND MADE ANY MODIFICATIONS NEEDED.

LAB BLDG. ELECTRICAL PLAN

$\frac{1}{4}$" = 1'-0"

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WWTF REPAIRS - 2026
LAB BUILDING
ELECTRICAL PLAN

Design:
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Date: 2-26-2026
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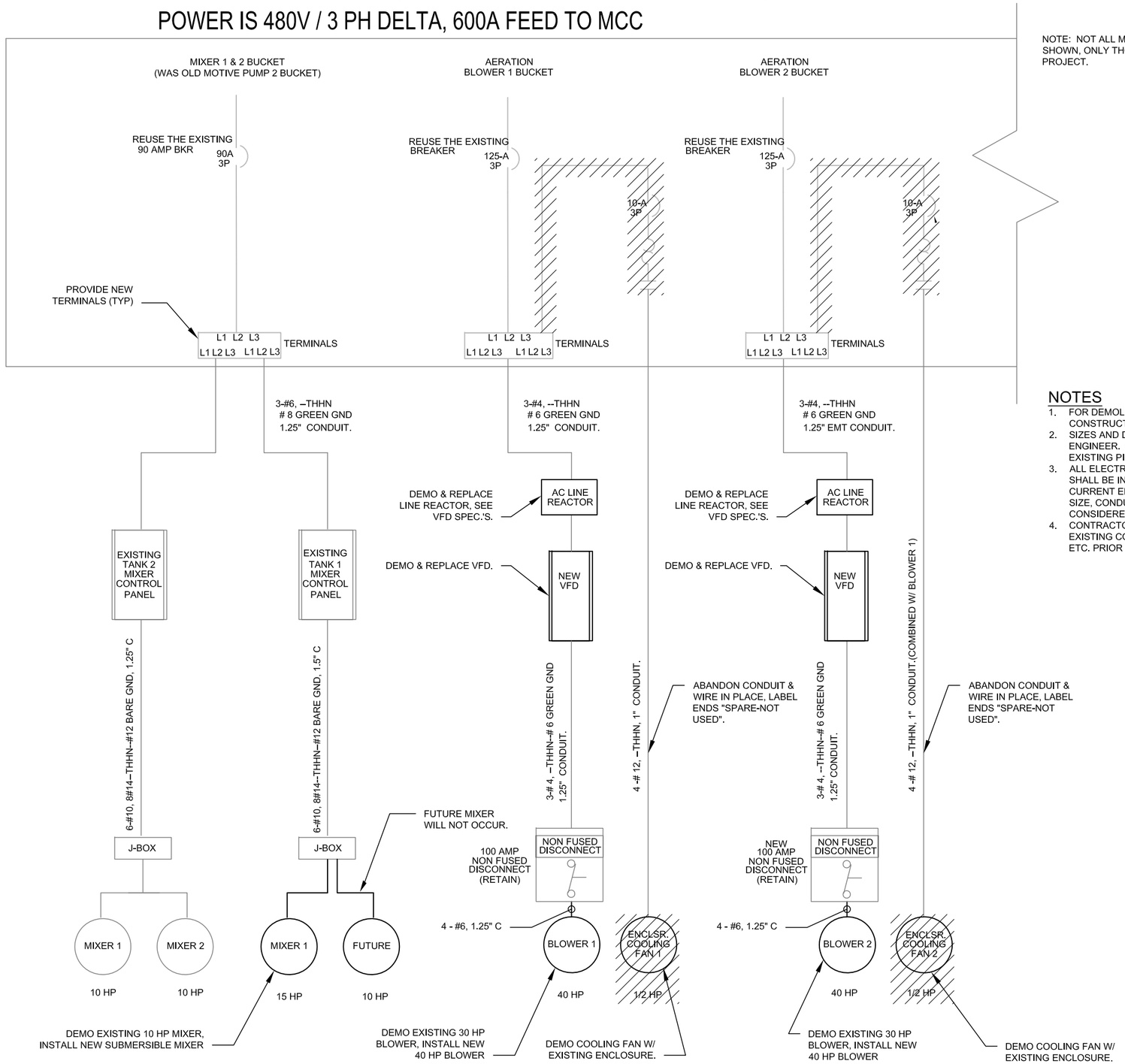
EXISTING MOTOR CONTROL CENTER (CUTLER-HAMMER SN# 6AF1434646-A)

POWER IS 480V / 3 PH DELTA, 600A FEED TO MCC



NOTE: NOT ALL MCC POWER CIRCUITS ARE SHOWN, ONLY THOSE AFFECTED BY THIS PROJECT.

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4. CONTRACTOR'S ELECTRICIAN SHALL PLAN ON SPENDING ONE WORK DAY VERIFYING EXISTING CONDITIONS: CONTROL & POWER, WIRE SIZING, ROUTING, CONNECTIVITY, ETC. PRIOR TO BEGINNING WORK.

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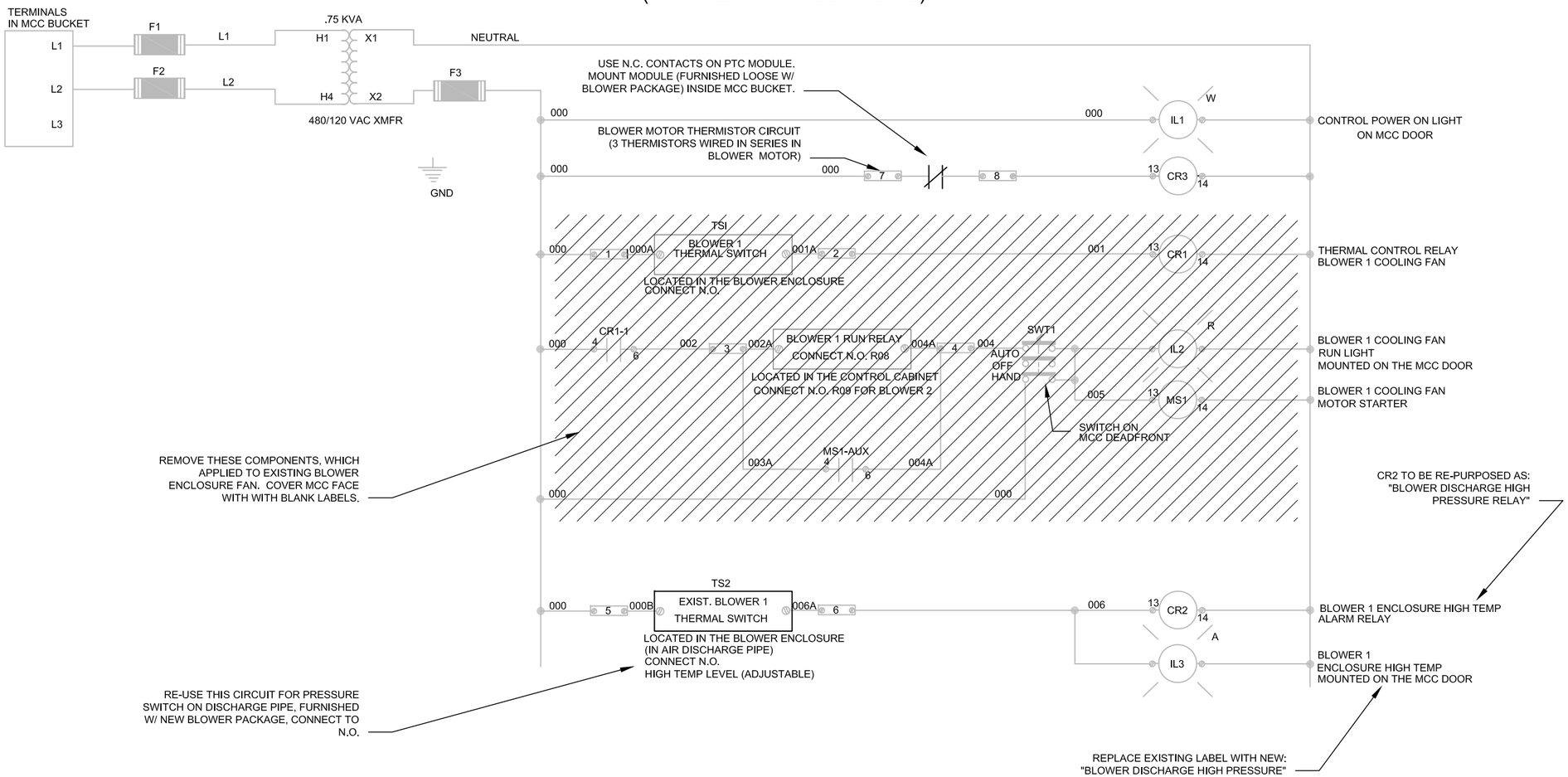
WWTF REPAIRS - 2026
BLOWER POWER DIAGRAM

Design:
Drawn: JEN
Date: 2-26-2026
Sheet: 15 of 19

NOTE: EXISTING SCHEMATIC BELOW FOR BLOWER 1, MODIFY AS SHOWN.
(IS SIMILAR FOR BLOWER 2)



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WWTF REPAIRS – 2026
BLOWER CONTROL DIAGRAM

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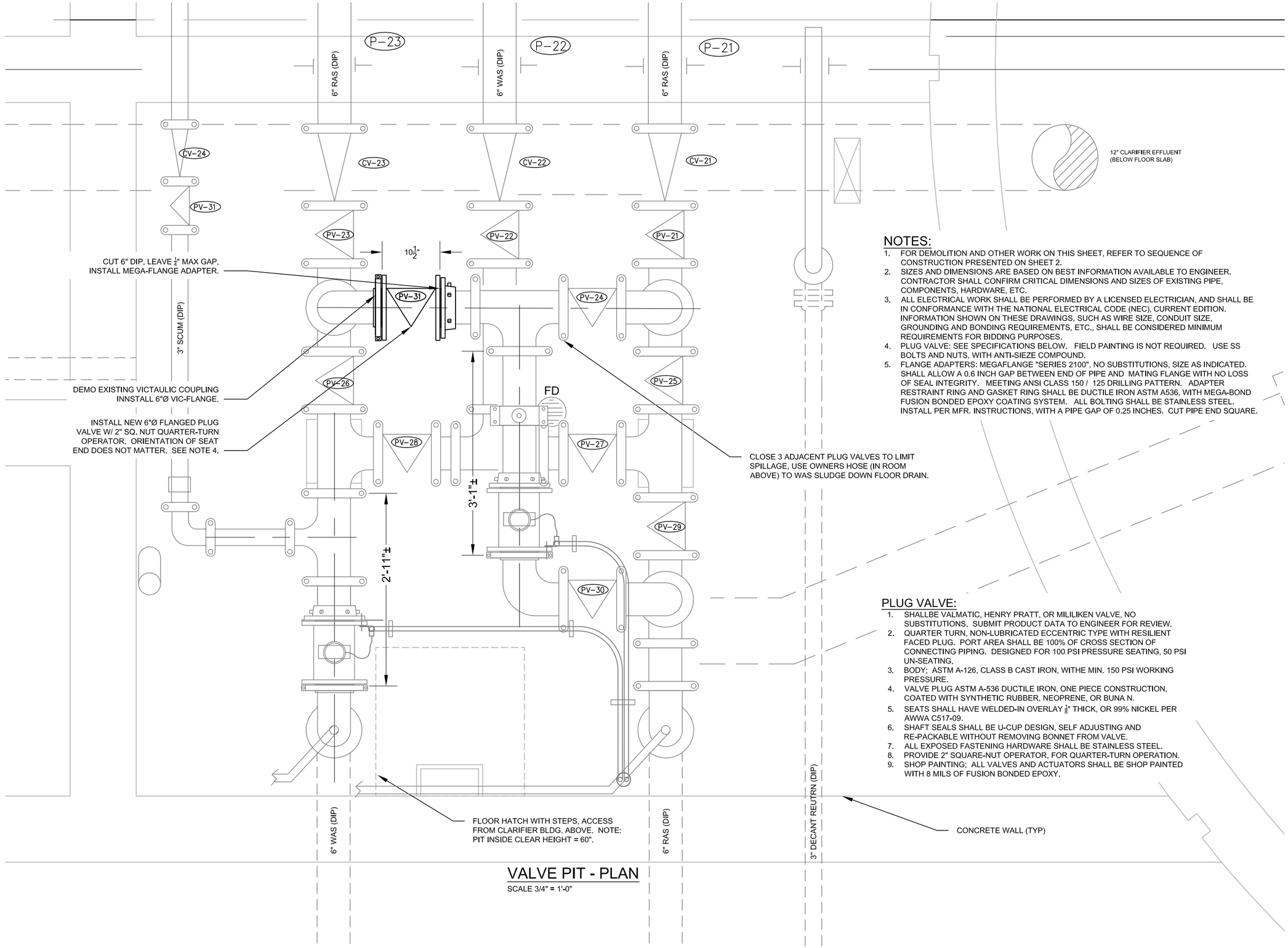

VALVE PIT - PLAN

SCALE 3/4" = 1'-0"

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4. PLUG VALVE: SEE SPECIFICATIONS BELOW. FIELD PAINTING IS NOT REQUIRED. USE SS BOLTS AND NUTS, WITH ANTI-SIEZE COMPOUND.
5. FLANGE ADAPTERS: MEGAFLANGE "SERIES 2100", NO SUBSTITUTIONS, SIZE AS INDICATED. SHALL ALLOW A 0.6 INCH GAP BETWEEN END OF PIPE AND MATING FLANGE WITH NO LOSS OF SEAL INTEGRITY. MEETING ANSI CLASS 150 / 125 DRILLING PATTERN. ADAPTER RESTRAINT RING AND GASKET RING SHALL BE DUCTILE IRON ASTM A536, WITH MEGA-BOND FUSION BONDED EPOXY COATING SYSTEM. ALL BOLTING SHALL BE STAINLESS STEEL. INSTALL PER MFR. INSTRUCTIONS, WITH A PIPE GAP OF 0.25 INCHES. CUT PIPE END SQUARE.

PLUG VALVE:

1. SHALLBE VALMATIC, HENRY PRATT, OR MILILIKEN VALVE, NO SUBSTITUTIONS. SUBMIT PRODUCT DATA TO ENGINEER FOR REVIEW.
2. QUARTER TURN, NON-LUBRICATED ECCENTRIC TYPE WITH RESILIENT FACED PLUG. PORT AREA SHALL BE 100% OF CROSS SECTION OF CONNECTING PIPING. DESIGNED FOR 100 PSI PRESSURE SEATING, 50 PSI UN-SEATING.
3. BODY; ASTM A-126, CLASS B CAST IRON, WITHE MIN. 150 PSI WORKING PRESSURE.
4. VALVE PLUG ASTM A-536 DUCTILE IRON, ONE PIECE CONSTRUCTION, COATED WITH SYNTHETIC RUBBER, NEOPRENE, OR BUNA N.
5. SEATS SHALL HAVE WELDED-IN OVERLAY ⅛" THICK, OR 99% NICKEL PER AWWA C517-09.
6. SHAFT SEALS SHALL BE U-CUP DESIGN, SELF ADJUSTING AND RE-PACKABLE WITHOUT REMOVING BONNET FROM VALVE.
7. ALL EXPOSED FASTENING HARDWARE SHALL BE STAINLESS STEEL.
8. PROVIDE 2" SQUARE-NUT OPERATOR, FOR QUARTER-TURN OPERATION.
9. SHOP PAINTING; ALL VALVES AND ACTUATORS SHALL BE SHOP PAINTED WITH 8 MILS OF FUSION BONDED EPOXY.

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WWTF REPAIRS - 2026
RAS / WAS VALVE PIT PLAN

Design:
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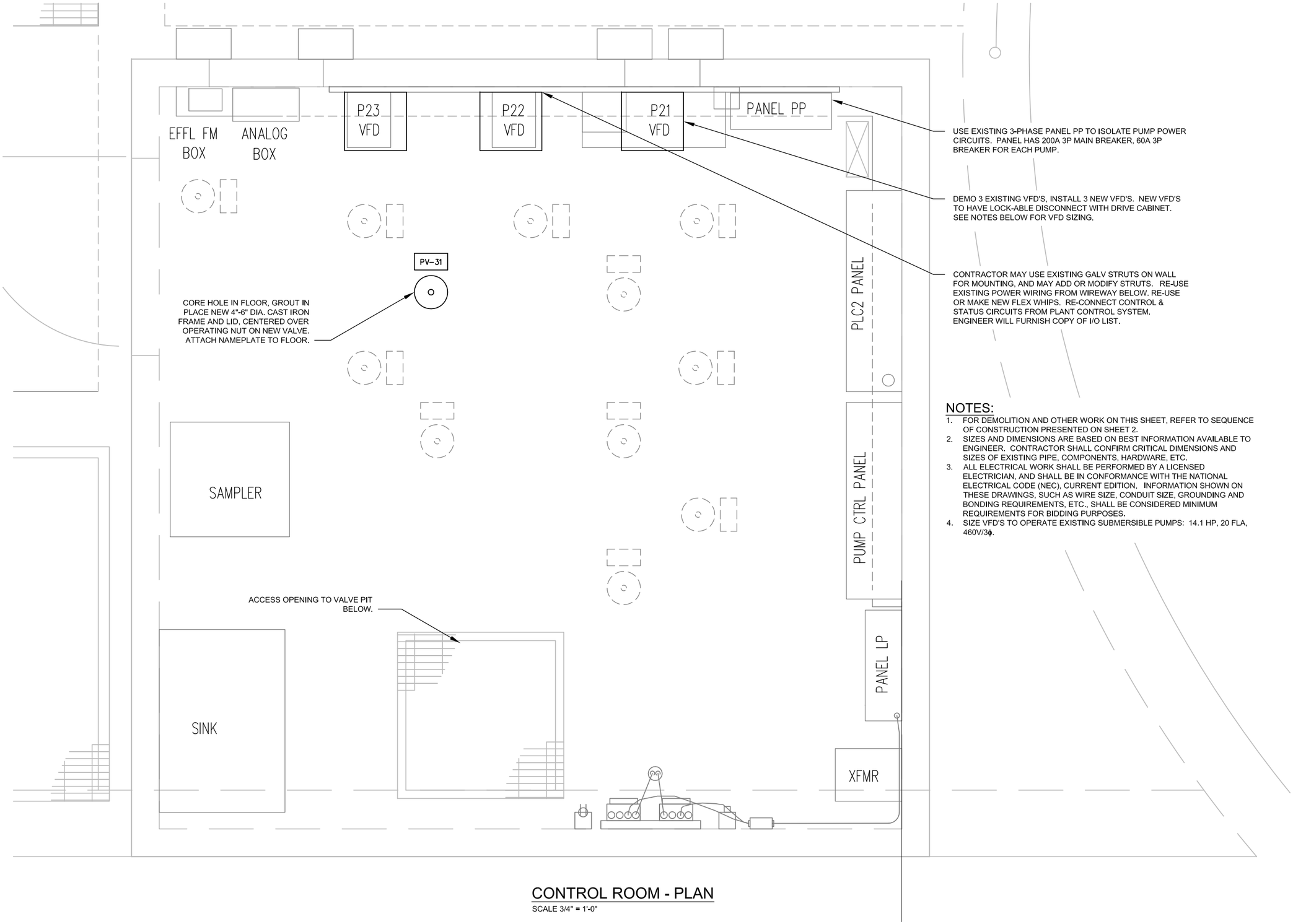
Sheet: 17 of 19



CONTROL ROOM - PLAN

SCALE 3/4" = 1'-0"

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4. SIZE VFD'S TO OPERATE EXISTING SUBMERSIBLE PUMPS: 14.1 HP, 20 FLA, 460V/3ϕ.

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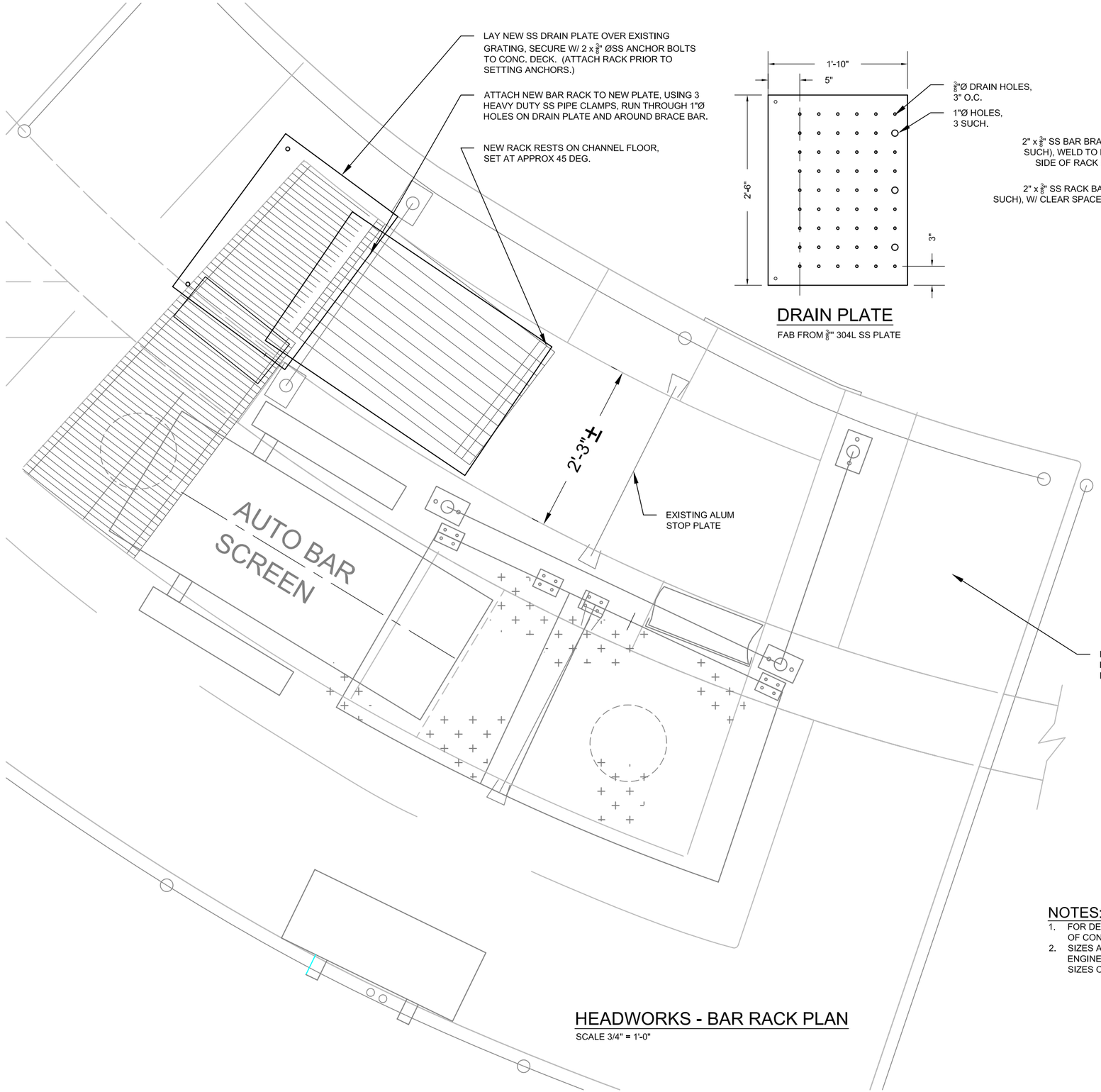
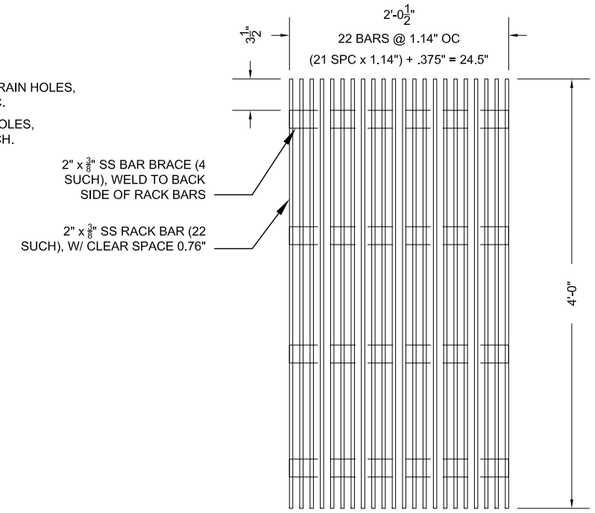


DRAIN PLATE

FAB FROM 3/8" 304L SS PLATE



BAR RACK

FAB FROM 3/8" 304L SS BARS

HEADWORKS - BAR RACK PLAN

SCALE 3/4" = 1'-0"

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WWTF REPAIRS – 2026
HEADWORKS
BAR RACK PLAN

Design:
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Sheet: 19 of 19

SECTION 11376

TRI-LOBE ROTARY BLOWER PACKAGE

PART 1 GENERAL

1.1 SUMMARY

A. Furnish and install two tri-lobe blower packages at the Parkville WWTF.

B. Provide a complete skid-mounted blower system including: blowers, motors, belt drive system, filters, silencers, pressure gages, relief valves, coatings, mounting frame, and all other accessories and hardware required for a complete and fully functional system. The blower system shall be an "open skid" design without an enclosure. Each blower shall connect to inlet piping to draw outside air into the blower inlet silencer assembly.

C. All equipment specified in this section shall be designed and furnished by the blower manufacturer, who shall be responsible for the suitability and compatibility of all equipment specified in this Section.

D. Adjustable frequency drives are furnished under a separate Section. Contractor shall ensure compatibility of the blowers and adjustable frequency drives. Contractor shall interface the blowers with the existing Plant Control System (SCADA), in a similar manner as the existing blowers.

1.2 RELATED SECTIONS

A. Section 16420 – Adjustable Frequency Drives

1.3 REFERENCES: The following publications form a part of these specifications, to the extent indicated by references thereto. The revision in effect at the time of the Bid Opening shall be applicable. If these publications conflict with the requirements of this Section, the Section requirements shall govern.

A. Anti-Friction Bearing Manufacturers Association (AFBMA).

B. National Electrical Code (NEC)

C. American Society for Testing and Materials (ASTM).

D. International Electrotechnical Commission (IEC)

E. Institute of Electrical and Electronics Engineers (IEEE).

F. National Electrical Manufacturer's Association (NEMA).

G. International Organization of Standardization (ISO)

H. German Institute for Standardization (DIN)

1.4 DEFINITIONS

A. SCFM: Standard cubic feet per minute is understood to be air at 68° F, 14.7 psia, and 36 percent relative humidity flowing at a rate of 1 cubic foot per minute.

1.5 SYSTEM DESCRIPTION

A. Design Requirements:
1. Blowers: Provide three (2) rotary tri-lobe, positive displacement blowers. Blowers shall be operated using adjustable frequency drives for adjustment of air flow. Blowers shall be sized so that upper end of capacity envelope is no greater than 95% of manufacturer's recommended maximum capacity range.
2. Assembly Requirements: Contractor and manufacturer must note that the blower equipment must pass through one of two openings: a 36-inch square opening in the roof of the blower room, and or a 36" wide by 80" tall doorway. Blower package shall be designed to be dis-assembled to the degree necessary to pass through these openings, and then re-assembled with a minimum of effort.

B. Performance Requirements:
1. Blowers: Requirements below are for each unit. Supplier shall submit inlet capacity and power calculations based on the criteria set forth below.

Rated capacity and discharge pressure:	493 scfm at 11.0 psig
Max blower speed at rated capacity:	4,540 rpm
Site elevation:	750 feet MSL
Site barometric pressure:	14.2 psia
Summer inlet conditions:	100 deg F & 85% RH
Winter inlet temperature:	0 deg F
Reduced speed capacity & pressure:	131 scfm at 9.8 psig
Maximum noise level (no-enclosure):	111 dB at 60 Hz
Motor nameplate	40 Hp
Motor power	460 V / 3 phase / 60 Hz

C. Sequence of Operation and Controls: Two blower units are provided. Normally two blowers will be operated. Each blower will be dedicated to one tank, and operated at variable speed using a VFD, based on input from dissolved oxygen sensors. On rare occasion, one blower will be used to supply air to both tanks and the air flow spit between the tanks.

1.6 SUBMITTALS: The Contractor shall submit the following items required by this division in accordance with Article 15 of the General Conditions. Contractor may submit the information in electronic PDF format directly to the Engineer.

A. Product Data for Review: Standard product literature, performance specifications, drawings and data. Product data shall include, but shall not necessarily be limited to the following:
1. Table of contents
2. A complete and detailed list of any and all variations to the specification
3. Descriptive literature, bulletins, and/or catalog cut sheets of the equipment.
4. Scope of supply
5. Blower package performance data sheets showing at least the following:
a. Package model name
b. Bare blower model name
c. Design conditions as listed in this section
d. Air flow in ICFM and SCFM for design conditions listed
e. Discharge pressure
f. Motor size
g. Brake horse power required for both blower
h. Bare blower speed with percentage of its maximum speed
i. Process air connection size.
j. Operating Voltage required for both main motor.

k. Sound pressure and power levels
l. Dimensions
m. Package weight
n. Discharge temperature
o. Accessories being supplied

6. Installation data sheets
7. Manufacturer's standard performance curve showing blower rpm, pressure differential, capacity in ICFM, blower shaft horsepower, temperature rise at standard conditions.
8. Blower package drawing showing all important details required for installation including dimensions, anchor bolt locations, size and location of connections to other works and weight of equipment.
9. Motor manufacturer's data sheet showing at least the following:
   a. Motor manufacturer's name and model number
   b. Efficiency class and %
   c. Efficiency at ½, ¾, and full load
   d. Amp draw
   e. Motor RPM
   f. Code letter
   g. Motor frame
   h. Motor thermistors.
10. Electrical connection diagram for motor and any blower accessory requiring an electrical connection.
11. Inlet filter documentation
12. Data sheets for supplied instrumentation and accessories, including thermistor control module.
13. Spare parts overview drawing
14. List of spare parts furnished.
15. Paint specification for blower package
16. Maintenance overview
17. Blower startup check list
18. Lubrication requirements
19. MSDS sheet (oil)
20. Warranty information
21. Manufacturer's standard for equipment standards
22. Compliance with Machinery Standards for sound and performance certificate.

1.7 OPERATIONS AND MAINTENANCE INSTRUCTIONS: The Contractor shall submit the following items required by this division in accordance with Article 15 of the General Conditions. Contractor may submit the information in electronic PDF format directly to the Engineer. The final data shall be delivered both in hardcopy format, with 2 copies assembled into binders, and in electronic PDF format on electronic media.

A. O&M Manual Data: Shall include, but shall not necessarily be limited to the following:
   1. All information specific the model furnished, including:
   2. Technical Data for the blower package
   3. Safety and Responsibility
   4. Design and Function
   5. Installation and Operating Conditions
   6. Installation
   7. Initial Start-up
   8. Operation
   9. Fault Recognition and Rectification
   10. Maintenance
   11. Spare parts, Operating Materials, Service
   12. Decommissioning, Storage and Transport
   13. Annex with Drawings and Diagrams

1.8 QUALITY ASSURANCE

A. Manufacturers' Qualifications:
   1. All equipment furnished under this section shall be manufactured in a plant whose quality management system is certified / registered as being in conformity with ISO 9001 and who shall assume complete responsibility for the design and performance of the blower package.
   2. All equipment furnished under this section shall be new, unused, and shall be the standard product of the manufacturer, who shall have a minimum of 10 years' experience in producing blower packages and be able to produce evidence of at least 5 installations of similar size in satisfactory operation in the United States, if requested.

B. Factory Tests:
   1. All cast parts to be manufactured in a plant whose quality management system is certified / registered as being in conformity with ISO 9001.
   2. All critical dimensions of the blower components provided by the manufacturer shall be verified and documented prior to assembly.
   3. Each blower provided by the manufacturer shall be tested per ISO 1217, Annex B.
   4. Each blower provided by the manufacturer shall be operated at its maximum rated speed and differential pressure for fifteen (15) minutes.
   5. On completion of final assembly of the packaged blower and prior to shipment, each packaged blower shall be mechanically run for a minimum of sixty (60) minutes.
   6. Each blower package provided by the manufacturer shall be guaranteed to provide performance to ISO 1217, Annex C.
   7. A report on each blower system, signed by an officer of the company, shall be furnished with the O&M manuals giving as a minimum the following readings taken at/or near the end of the one hour run time:
      Amperage draw, per leg.
      Voltage draw, per leg.
      Pressure.
      Housing surface temperatures of motor bearings, blower bearings, and blower discharge air.
      Noise level in dbA measured at 3 ft from the blower system in (6) locations.
      Vibration levels in in/sec of blower and motor bearing housing in horizontal, vertical and axial direction and in (6) locations on the common base.
   8. A document certifying that the supplied blowers conform to the design specifications shall be provided.

1.9 MANUFACTURER'S FIELD SERVICES: In accordance with Section 01750 - Starting of Systems, an authorized representative of the manufacturer shall provide the following:

A. Start-up Services: As required, with a minimum of one 8-hour day. This includes the installation inspection and verification of re-assembly. This time may be divided between the two blowers, as required by the project sequence of construction.

B. Demonstration and Training: One 4-hour session shall be provided, to be scheduled on a day following start-up, as acceptable to Owner's operations personnel. This time may be divided between the two blowers, as required by the project sequence of construction.

1.10 WARRANTY

A. The manufacturer shall warrant the bare blower being supplied against all defects in workmanship and materials for a period of sixty (60) months from date of startup, not to exceed sixty-six (66) months from date of shipment from the manufacturer of the blowers. All other package components shall be warranted for a period of twelve (12) months from date of startup, not to exceed eighteen (18) months from the date of shipment.

B. The manufacturer's warranty period shall run concurrently with the contractor's warranty period.

C. The contractor shall be responsible for proper storage of the equipment so as to remain in "as shipped" condition. If the equipment remains in storage at the job site for longer than six (6) months before installation, the contractor shall provide factory service personnel for a complete inspection of the equipment. Any work necessary to restore the equipment to "as shipped" condition shall be the responsibility of the Contractor.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Base Bid Manufacturers: The following manufacturers' equipment will be acceptable, subject to the requirements set forth in this section.
1. Kaeser Compressors, Inc.
2. Atlas Copco USA, Inc.

B. No substitution will be permitted for base bid equipment items. Equivalent products of other manufacturers shall be approved by Engineer before the Bid. To be considered as an equivalent product, the equivalent supplier shall submit a qualification package to Engineer prior to the bid date, in accordance with the Instructions to Bidders. Engineer will determine if the proposed equivalent product is acceptable, and if acceptable Engineer will publish the equivalent product by addendum.

2.2 BLOWER UNIT:

A. Blower Type:
1. The bare blower shall be mounted for vertical air flow, be of the oil-free, positive displacement, rotary three lobe type, designed for air or other inert gas service, and belt driven via electric motor.
2. The bare blower assembly must operate at the effective value for vibration velocity in frequency range A and B, according to VDI 3836.

B. Material: AISI, ASTM, GJL, GLS, DIN, etc…, numbers, types, and grades specified are typical of material composition and quality, equivalent materials will be considered.

C. Casing/Housing:
1. The casing shall be made of high strength, close grained, cast iron, and shall be adequately ribbed to prevent casing deflection and facilitate cooling. Casing shall be of EN GG 20 material.
2. The casing shall be precision machined to allow for minimum clearances.
3. The casing shall include channels integrated on the discharge to reduce blower pulsation and dampen noise.
4. The casing shall include threaded atmospheric vent ports between its air-side and oil-side labyrinth seals for safe separation of the conveying and oil chamber.
5. Inlet and discharge ports shall be drilled and tapped for studs to allow solid connection of mating surfaces. Through bolting shall not be allowed. Flange style blower ports, which may be subject to loading, causing cylinder distortion, shall not be allowed.
6. Bearing fits shall be precision machined to ensure accurate positioning of the rotors in the casing.

D. Rotor Assemblies:
1. The rotors shall be precision machined out of a one-piece casting made of EN GGG 50 material. Stub shafts or two-piece impellers shall not be allowed.
2. The rotor assemblies shall be statically and dynamically balanced to ISO standard 1940/1- Q2.5 (turbine rotor). Modifications to the face of the rotors for balancing purposes are not acceptable.
3. The rotors shall be a tri-lobe design in order to minimize pulsation and noise.
4. The rotor must be solid or closed-end to prevent build-up of contaminants inside the rotor causing imbalance.
5. Cored rotors must be closed using threaded iron plugs which are permanently fixed. Impeller end caps of stamped sheet metal shall not be allowed.
6. The rotors shall have an integral sealing strip for improved efficiency.
7. The rotors shall operate without rubbing, liquid seals or lubrication in the air chamber.

E. Cover Plates:
1. The gear-end and drive-end cover plates shall be high strength, close grained, cast iron made of EN GG 20 material. Aluminum cover plates shall not be allowed.
2. The cover plates shall have a precision machined sealing face.
3. The drive-end cover plate shall include at least two precision machined holes to allow for the use of fitting bolts to accurately align the opening for the input shaft seal.

F. Timing Gears:
1. The rotor timing gears shall be precision machined and ground from alloy steel made from case hardened 16 MnCr5 material.
2. Each timing gear shall be straight cut and beveled to quality standard 5f 21, which will eliminate axial bearing loads and ensure long life as well as quiet operation. Helical gears, which cause axial loading, shall not be allowed.
3. Each timing gear shall be manufactured in accordance with:
   a. DIN 3960, Specifications for Spur Gear Sets
   b. DIN 3961 & DIN 3962, Tolerances for Spur Gear Mesh
   c. DIN 3964, Specifications for Shaft Centering
4. The timing gear set shall be taper-mounted on the rotors. Keyed, hub mounted, taper-pinned, or splined shaft timing gear mounting designs are not acceptable.

G. Bearings:
1. All four rotor shaft support locations shall incorporate large, heavy-duty, full complement, cylindrical roller bearings with PEEK cages, designed with at least 5-times the dynamic capacity of ball bearings. Ball bearings shall not be allowed.
2. The bearing maximum speeds must be at least two times the maximum recommended blower speed.
3. The bearings minimum acceptable L10 design life shall be as follows;
   a. At least 40,000 hours at blower's maximum rated speed and maximum rated differential pressure.
   b. At least 100,000 hours at design conditions.

H. Lubrication:
1. Both the gear end and the drive end of the blowers shall be oil splash lubricated via a disc slinger for minimal maintenance and long service life. Grease lubricated bearings in the blower are not acceptable.
2. The lubrication design shall ensure adequate lubrication of the timing gears and bearings.
3. The drive-end and gear-end oil chambers must not be interconnected and each oil chamber shall have a domed design sight glass to allow visual inspection of oil level and oil condition, viewable from the front of the blower.
4. Blower to be factory filled with a synthetic lubricating fluid that is rated for the design conditions specified.

I. Rotor Seals: Each rotor shall include one labyrinth seal assembly on each end, four assemblies in total per blower. Each seal assembly shall consist of the following;

2. Oil splash guard ring.
3. Shaft guide wear sleeve with vent holes located between the dual air and oil ring seals. Wear sleeve shall protect the blower casing.
4. Four piston ring type labyrinth seals made from heat treated GG/42CrMo4 material. Two seals located on the air side and two seals located on the oil side of the grooved rotor sleeve. The use of rubber lip seals shall not be allowed.
5. Grooved rotor sleeve which will protect the rotor shaft and be used to hold the four piston ring seals.

J. Input Shaft Seal Assembly:

1. The input drive shaft seal shall be a high temperature radial lip type seal made from Viton elastomer. The seal shall prevent oil leakage from where the input shaft goes thru the drive end cover.
2. The seal design shall incorporate a replaceable wear sleeve on the input drive shaft.
   a. The sleeve exterior to be tungsten carbide coated to reduce friction and wear.
3. The input shaft seal design must allow for the lip seal and the shaft sleeve to be replaced without removing the drive end cover plate.

2.3 DRIVE MOTOR:

A. Drive Motor:

1. Motor shall be designed, manufactured, and tested in accordance with the latest revised editions of NEMA MG-1, IEC, DIN, ISO, IEEE, ANSI, and AFBMMA standards as applicable and shall be capable of continuous operation.
2. Motor must meet or exceed Energy Independence and Security Act (EISA 2007) standards for NEMA Premium efficiency. It shall also be marked with a Department of Energy Certification Compliance Number to assure compliance.
3. Motor shall comply with Low Voltage Directive 2006/95/EC or equivalent and be UL listed.
4. Motor must be inverter rated with impulse peak resistance in accordance with IEC 60034-1:2010 or equivalent for operation with an IGBT frequency converter or equivalent.
5. Motor horsepower nameplate rating shall not be exceeded at the design discharge pressure when operating at 60hz.
6. The temperature rise of the motor windings shall not exceed IEC and NEMA standards when the motor is operated continuously at the rated horsepower, rated voltage, and frequency in ambient conditions at 104ºF / 40ºC.
7. Motor shall be suitable for Full Load/Direct On-line starting, Solid State Ramp starting, VFD, and/or Wye-Delta reduced current starting.
8. Motor to be supplied, mounted and aligned by the blower package manufacturer.
9. VFD controlled motor (=>100HP) shall have an isolated non drive end “B-side” bearing. Methods of shaft insulation by means of brushes and/or grounding rings are not acceptable.
10. Motor shall confirm to the following:
    a. Motor voltage: 460v/ 3ph/ 60hz
    b. Type: Squirrel cage induction
    c. Speed: Single
    d. Torque: Constant
    e. Service factor: 1.15
    f. Enclosure: TEFC
    g. Mounting: Horizontal
    h. Speed: up to 3,600 rpm @ 60 hz (maximum)
    i. Design: A
    j. Duty cycle: continuous (24 hours a day)
    k. Winding insulation: F
    l. Temperature rise: B
    n. Conduit box location: Top

o. Wiring Connection: Terminal strip inside conduit box. Use of wire nuts for connection of motor wiring to power source shall not be allowed.
p. Bearing L10 life: >40,000 hours
q. Bearing lubrication: Grease
r. Bearing type:
1) ≤ 40HP: Permanently greased
2) ≥ 50HP: Re-greaseable,
a) Lubrication fittings must be located towards the front of the blower package so that both bearings can be safely lubricated while the blower package is running.
b) Grease drain holes to be closed for protection of the environment. A spent grease cavity in the bearing cover should be large enough to hold spent grease required for 40,000 operating hours.
s. Bearing design: Cantilever forces (belt drive)
t. Condensation winding 110v heater: Not required.

11. Motor shall be as manufactured by Siemens, or equal.

B. Each motor shall be provided with Positive Temperature Coefficient (PTC) thermistors embedded in each winding, and the three thermistors shall be wired in series and connected to terminals in the motor conduit connection box. Blower supplier shall furnish (loose), for each blower, a thermistor control module with N.O. and N.C. contacts. Contractor shall mount the thermistor control module for each blower in the MCC bucket and shall wire the module into the blower controls, so that the blower will stop when the motor thermistors sense a high motor temperature condition.

2.4 BLOWER PACKAGES:

A. Drive:
1. The blower shall be driven by the drive motor through a V-belt drive assembly designed to meet the blower conditions specified with a 1.2 or larger service factor.
a. V-belts shall have a XPZ/XPB profile with embedded low-stretch polyester tension cords. The v-belts shall be designed for high rotational speeds and be heat and oil resistance. Ribbed, banded, or multi groove belts shall not be allowed.
b. Sheaves shall have a SPZ/SPB profile and be balanced to G16 for below 30m/s and G6.3 for sheaves above 30m/s.
c. Keyed taper bushing shall be used for easy installation and removal. QD type bushings shall not be allowed.
2. The blower drive must have a fully enclosed guard which protects the operator when the blower package enclosure is open while in operation.
a. Belt guard shall be OSHA approved.
b. The belt guard made from the manufacturer's standard sheet metal, shall be designed to duct the cooling air flow from the drive motor fan across the front of the blower to supplement blower input shaft seal cooling.
c. The mounting fasteners for the belt guard shall be retained on the housing to prevent loss during maintenance.
3. Belt tension shall be accomplished by the use of a motor swing base and automatic tensioning assembly.
a. The drive motor shall be mounted on a pivoting swing base with an axial adjustment for proper alignment of the v-belts. The weight of the drive motor shall provide the primary belt tension. The use of a sliding motor mount shall not be allowed.
b. A tensioning assembly consisting of a threaded rod with spring shall be used to adjust the v-belt tension to prevent belt slippage and efficiently transmit power to the blower. It shall include a visual indication
c. Adjustment of the tensioning assembly shall be accomplished without removal

of the guard or loosening of the motor mounting bolts.

d. The design of the swing base with tensioning assembly shall prevent the swing base from falling and creating a personnel hazard in the event of a belt failure. The tensioning assembly adjusting nut shall raise the motor swing base facilitating v-belt changes without the use of pry bars or jacks.

B. Inlet Silencer:

1. An inlet silencer designed for the frequency range of the blower, shall be provided to reduce the noise of the blower package as specified.
   a. The inlet silencer shall be of carbon steel construction and be of the wear-free absorptive type, directly connection to the inlet port of the blower, and shall be mounted horizontally.
   b. The inlet connection shall be configured to connected to piped outdoor air.
   c. The inlet silencer shall be lined with replaceable polyether absorptive material.
   d. The inlet silencer shall have an integral filter designed to protect the blower from particulates. It shall be located between the absorptive material and the blower inlet.
      1) The filter element shall be a washable and reusable polyester element for minimal pressure drop.
      2) The filter efficiency shall meet ASHRAE 52.2 MERV7 50-70%% @ 3-10 microns corresponding to EN779 G4.
      3) The filter element shall be removable without disconnecting the inlet duct.
   e. The filter maintenance cover and element must be removable by hand (without the use of tools).
   f. The pressure loss thru the inlet silencer assembly shall be accounted for in the motor horsepower selection of the blower package. A pressure allowance shall also be made for inlet piping external to the blower package.

C. Base frame with integrated discharge silencer:

1. The blower base frame with integrated discharge silencer shall be designed for the frequency range of the blower, shall be provided to reduce the noise of the blower package as specified.
   a. The blower base frame shall be of formed steel construction and designed for horizontal mounting of blower with vertical air flow. Flange-mounting only of the bare blower to the blower base frame shall not be allowed, additional support by use of the base frame shall be required; preventing the loading of the blower casing and discharge silencer shell.
   b. The blower base shall incorporate the pivoting motor swing base and tensioning assembly to insure proper alignment of the drive assembly.
   c. The discharge silencer shall be an integral part of the base frame.
   d. The discharge silencer type shall be a combination of absorption, reflection and diffusion.
      1) The design of the discharge silencer shall incorporate a solid outer and perforated inner cylinder with absorptive material in between the cylinders. Absorptive material shall be long, flexible, knotted polyester fibers to allow for lowering the noise and heat emissions inside the sound enclosure. The use of mineral wool shall not be allowed.
      2) The discharge silencer shall have connections ports for pressure relief, discharge pressure, and discharge temperature. Unused ports shall be capped or plugged.
   e. The pressure loss thru the discharge silencer assembly shall be accounted for in the motor horsepower selection of the blower package.

D. Filter / Silencers:

1. The inlet filter shall be integral to the inlet silencer and shall include a washable and

reusable polyester element for minimal pressure drop. Total pressure drop through the filter shall not exceed 6" water column.

2. The inlet silencer shall be of the absorptive type, directly connected to the inlet port of the blower, and shall be mounted horizontally.
3. The discharge silencer shall be of the absorptive type with an integral pulsation dampener and directly connected to the outlet port of the blower. The discharge silencer shall be mounted horizontally and shall be integral to the base frame.

E. Sound Enclosure:
1. Not required. Blower package shall be "open", allowing full access to the blower, motor, and other components.

F. Blower Package Accessories: Provide the following:
1. Pressure Relief Valve
   a. The relief valve(s) shall be factory installed on the frame-mounted piping. Relief valve may not be shipped loose for field installation in the discharge piping.
   b. The relief valve(s) shall be spring type and must be sized for 100% of the design flow specified. Weighted relief valves shall not be used without consent of Engineer.
   c. The relief valve(s) shall be set to protect the blower from excessive differential pressure based on the design conditions specified. A seal shall be affixed that must be broken if set point is changed.
   d. The relief valve(s) shall not relieve air or make noise until the high-pressure setpoint is reached. Blower manufacturer shall adjust or change out the relief valve(s) to accomplish this.
   e. The relief valve shall be ASME Section IIIV, UV, CE, and PED certified.
   f. The relief valve shall be manufactured by Kunkle.
2. Check Valve
   a. A check valve to prevent back flow through the blower shall be factory installed and not shipped loose for field installation in the discharge piping.
   b. The check valve flapper shall be swing type made from a steel disc embedded in a high temperature silicone elastomer. The valve shall be designed so that, in the event of failure, the valve element is retained in the valve housing. Split disc or center hinged designs shall not be used.
   c. The check valve capacity shall exceed the blower package's maximum discharge pressure and temperature.
3. Flexible Connector
   a. An elastomeric compensator/flex connector shall be provided to isolate the connection of the blower package to the self-supporting system piping. Restraining rods shall not be used. Flex connectors located between the bare blower and silencers shall not be allowed.
   b. The flexible connector capacity shall exceed the blower package's maximum discharge pressure and temperature.
   c. Discharge connection:
      1) 4" and smaller connection, a web reinforced silicone rubber sleeve with corrosion resistant clamps shall be provided.
      2) 6" and larger connection, an ANSI/DIN flanged arch-type EPDM web reinforced connector shall be provided.
   d. Piped Inlet connection:
      1) 6" or smaller connection, a web reinforced silicone rubber sleeve with corrosion resistant clamps shall be provided.
      2) 8" and 10" piped inlet connection, an arch-type EPDM web reinforced sleeve with corrosion resistant clamps shall be provided.
      3) 10" ANSI/DIN flanged inlet connection, an ANSI/DIN flanged arch-type EPDM web reinforced connector shall be provided.
4. Blower instrumentation gauges: The following gauges shall be pre-piped and panel

mounted on the front of the sound enclosure. Gauges shall not be shipped loose for field installation.

a. Filter differential pressure gauge: The filter differential pressure gauge shall measure the pressure difference from ambient to the back side of the filter that is integral to the blower package's inlet silencer. When the filter starts to become dirty, the resistance shall be shown on a resettable red dial indicating when the filter shall be changed.

b. Discharge pressure gauge

1) The discharge pressure gauge shall measure the pressure at the discharge of the blower.

2) The discharge pressure gauge shall be dual unit (English – PSI / Metric – Bar) with a range of 0 – 23 psi (0 – 1.6 bar). Minimum dial diameter shall be 2 ½", made with a stainless-steel case and be glycerin filled for pulsation dampening.

5. Discharge pressure switch:

a. The blower package shall include an installed discharge pressure switch that shall measure discharge pressure of the blower.

b. The discharge pressure switch shall be field adjustable.

c. The discharge pressure switch shall be a SPDT switch, Voltage rating up to 250v, 1A

d. The high pressure set point shall be as recommended by the blower manufacturer. Contractor shall wire the pressure switch to the blower control system. The switch shall be wired to shut down the blower package when actuated.

5. Oil Drains

a. An oil drain from the blower drive-end and gear-end lubricating oil sumps shall be separately piped to the front of the blower base with flexible tubing. Common fill and drain shall not be allowed.

b. Each oil drain shall include a drain valve installed for ease of maintenance. The drain valves shall be 90° stainless steel ball valves and include a fully retained gasketed threaded cap to prevent accidental discharge of the blower lubricant.

6. Vibration isolators

a. Vibration isolators shall be provided between the base frame with integrated discharge silencer and sound enclosure skid to prevent transmission of vibration to the foundation.

b. A ground wire shall be installed by Contractor between the blower base and the sound enclosure base to allow for grounding of the complete blower package.

7. Instrumentation junction box: The blower package shall include an instrumentation junction box where all the provided instrumentation is wired to a terminal strip making for a central electrical connection point (except for the blower drive motor).

G. Nameplates: The blower package shall have at least two weather proof corrosion resistant type nameplates which includes the manufacturer name, phone number, model number, year, capacity, max end pressure, max pressure difference, blower speed, equipment number, part number, serial number, voltage, phase, HP, motor Hz/ rpm, and FLA attached on the outside and inside of the blower package.

H. Anchor bolts and hardware: Anchor bolts, washers, hex nuts, and all other fastening hardware shall be stainless steel and be supplied by the contractor, and shall be the size recommended by the blower manufacturer.

I. Paint Specifications:

1. The blower manufacturer is responsible for surface preparation, priming and finish coating of the blower package and components requiring paint in accordance with the manufacture's standard procedures. Field painting of blower equipment or supplying components that are only prime painted is not acceptable.

a. Cast parts are to be painted with a two-part gray epoxy primer and two-part top coat.
b. Fabricated parts are to be painted with a two-part gray epoxy primer and two-part top coat.

2. The blower package to be painted the blower manufacturer's standard colors.

2.5 SPARE PARTS

A. The Contractor shall deliver the following spare parts for each blower system. All of the above parts shall be provided as spare parts, packaged for potential long-term, dry storage, and labeled.

1. Sufficient lubricants of all types required for the first two years of operation.
2. One set of blower gaskets and seals.
3. Two sets of drive belts.
4. Two filter elements for the air intake filter.

PART 3 EXECUTION

3.1 INSTALLATION, START-UP, AND TESTING: All Work shall conform to the Drawings, the manufacturer's recommendations, and the requirements of DIVISION 1.

3.2 BLOWER INSTALLATION

A. Contractor shall verify all dimensions and elevations. Make all electrical and control connections.

B. Provide all necessary lubrication for initial start-up, testing and as required for final acceptance. The blower package shall arrive on site ready for installation. Aligning, adjusting and filling the blower with lubrication shall not be required by the contractor.

C. Provide a complete unit with all materials, components and adjustments as required for successful operation.

D. Installation, start-up and testing of all equipment and associated construction shall conform to manufacturer's recommendations.

E. All piping shall be supported to prevent exerting undue forces and moments on the blower flanges. Single arch expansion joints shall be furnished to isolate the blower package from the piping system.

F. Each blower unit will be installed on a flat and level concrete floor, suitable for supporting the dead weight of the unit. Vibration isolation pads shall be placed between concrete pad and common base legs.

3.3 FIELD QUALITY CONTROL & TRAINING

A. Furnish the services of a manufacturer's authorized representative for proper installation to inspect and approve the installation, and to supervise a test run of the blower package.

B. After the installation and test run has been completed; the blower package shall be given a field test in the presence of the Engineer to verify that operation is satisfactory and in compliance with the Specification. If the blower package does not meet the Specification, corrective measures shall be taken or the package shall be removed and replaced with a package which satisfies the conditions of the Specifications.

C. Training: Furnish the services of a manufacturer's authorized representative, who will instruct plant personnel in the operation and maintenance of the blower package. All procedures shall be covered including preventive maintenance, method of controlling the blower package and troubleshooting.

END OF SECTION

SECTION 16420

ADJUSTABLE FREQUENCY DRIVES

PART 1: GENERAL

1.01 SUMMARY

A. This section provides specification requirements for solid-state, pulse-width modulated (PWM) Adjustable Frequency Drives, herein referred to as AC Drives, for use with NEMA® design NEMA B AC motors, or standard IEC motors.

B. The AC Drive supplier shall furnish, field test, adjust and certify all installed AC Drives for satisfactory operation.

C. The supplier of the adjustable frequency drives shall ensure compatibility between the existing and proposed motors and AC Drives furnished.

D. The supplier of the adjustable frequency drives shall ensure adequate enclosure ventilation for cooling in the proposed AFD mounting locations.

E. This section also provides requirements for AC line reactors, which shall be provided for use with AFD's where specifically required on the Drawings.

1.02 RELATED SECTIONS

A. Section 11376 – Tri-Lobe Rotary Blower Package

1.03 REFERENCES

A. National Fire Protection Association - NFPA 70 - US National Electrical Code.

B. International Electrical Code - IEC 146.

C. UL508C: Power Conversion Equipment

D. UL 61800-5-1 Adjustable Speed Electrical Power Drive Systems, Safety Requirements

E. IEEE 519-1992: Guide for harmonic content and control

F. Canadian Standards Association International – CAN/CSA-C22.2 No. 14-05.

G. NEMA ICS 7.0: Industrial Controls & Systems for AFD

H. EN 50082-1 and -2

I. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall govern.

1.04 SUBMITTALS

A. Submit product data to Engineer for review.

B. A submittal package shall be furnished for the Engineers' approval. This package shall consist of, at a minimum:

1. Elementary power and control wiring diagrams, showing also all inputs and outputs.
2. Outline drawings shall include front and side views of with overall dimensions and weights shown.
3. Standard catalog specification sheets showing voltage, horsepower and maximum current ratings.
4. Major components list.
5. Sizing and product data for AC line reactors.

6. Test procedures per manufacturer's standards.

1.04 WARRANTY

A. A 36-month warranty shall be provided on materials and workmanship from the date of start-up.

1.05 QUALITY ASSURANCE

A. The manufacturer of the AC Drive shall be a certified ISO 9001 facility.

B. The AC Drive and all associated optional equipment shall be UL Listed according to UL 508 C - Power Conversion Equipment. As verification, a UL label shall be attached on the nameplate.

C. The AC Drive shall be designed, constructed and tested in accordance with applicable UL, CSA, IEC, NEMA, and NEC standards.

D. Every power converter shall have serial number with traceability records maintained by the manufacturer.

E. The manufacturer of this equipment shall have produced similar electronic equipment for continuous minimum period of manufacturing and development of AC drives for ten (10) years.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Base Bid Manufacturers: The following manufacturers' equipment will be acceptable, subject to the requirements set forth in this section.
1. Eaton PowerXL DG1
2. Allen Bradley 755TS
3. Danfoss FC 202 VLT Aqua
4. Toshiba AS3

B. No substitution will be permitted for base bid equipment items. Equivalent products of other manufacturers shall be approved by Engineer before the Bid. To be considered as an equivalent product, the equivalent supplier shall submit a qualification package to Engineer prior to the bid date, in accordance with the Instructions to Bidders. Engineer will determine if the proposed equivalent product is acceptable, and if acceptable Engineer will publish the equivalent product by addendum.

2.02 GENERAL DESCRIPTION

A. The AC Drive shall convert the input AC mains power to an adjustable frequency and voltage, to provide microprocessor-based control for three-phase induction motors.

B. The input power section shall utilize a full wave bridge design incorporating diode rectifiers. The diode rectifiers shall convert fixed voltage and frequency, AC line power to fixed DC voltage.

C. The output power section shall change fixed DC voltage to adjustable frequency AC voltage.

D. The adjustable frequency drive package shall include input EMI/RFI filtering.

E. The AC drive shall have a user interface (keypad) that presents information in plain English text. The user interface shall include a Local / Remote button to switch between control at the terminal strip and the user interface (keypad). This button shall also switch between network control and the user interface (keypad). The keypad shall have Run and Stop keys and a manual speed potentiometer function.

F. An AC line reactor shall be provided with each AC drive, to prevent noise from occurring in the system. Line reactors shall be installed in the location shown on the drawings.

2.03 CONSTRUCTION

A. The AC Drive power converter shall be UL Plenum rated.

B. All heat sink fans shall be accessible from the front and shall not require the removal of the AC drive power converter for fan replacement.

C. All heat sink fans shall be cycled on only when required to cool the drive to maximize the life of the fan

D. The AC Drive shall have an enclosure rating detailed below: IP21, Type 1 with optional conduit kit. The AC drive shall have complete front accessibility with easily removable assemblies.

E. A UL Type 1 conduit entrance kit is required. The kit shall attach and be ground to the bottom of the AC drive and provide conduit landing for incoming line power cables, motor lead cable, control wiring, and network cabling.

F. All circuit boards shall have conformal coating, to meet standard 3C3 for harsh environments according to levels in IEC 61721-3-3.

2.04 APPLICATION DATA

A. The AC Drive shall be sized to operate a variable torque load.

B. The speed range shall be from a minimum speed of 1.0 Hz to a maximum speed of 72 Hz.

C. The AC Drive shall be capable of operating of operating any NEMA design B squirrel cage induction motor, regardless of manufacturer, with a horsepower and current rating within the capacity of the drive.

D. Incoming power: Three phase, 60 Hz, 480VAC, -15% to +10%.

2.05 ENVIRONMENTAL RATINGS

A. The AC Drive shall meet IEC 61800-5-1, IEC 60664-1 Annex A and NEMA ICS 1, UL, and CSA standards.

B. The AC Drive shall be designed to operate in an ambient temperature from -25 to 50 ˚C (-13 to 122 ˚F).

D. The storage temperature range shall be -25 to 65 ˚C (-13 to 149 ˚F).

E. The maximum relative humidity shall be 95%, non-condensing.

F. The AC Drive shall be rated to operate at altitudes less than or equal to 3300 ft (1000 m). For altitudes above 3300 ft (1000 m), the AC Drive should be de-rated per drive specifications.

G. The AC Drive shall meet the IEC 60721-3-3-3M3 operational vibration specification.

2.06 RATINGS

A. The AC Drive shall be designed to operate at the input line voltage indicated herein, or on the Drawings. Confirm with Engineer.

B. The AC Drive shall operate from an input frequency range of 60 Hz (±) 5%.

C. The AC Drive shall maintain the line side displacement power factor at no less than 0.96, regardless of speed and load.

D. The AC Drive shall have efficiency at full load and speed that exceeds 95% for drives below 15-HP and 97% for drives 15-HP and above. The efficiency shall exceed 90% at 50% speed and load.

E. The variable torque rated AC Drive over current capacity shall be not less than 110% for 1 minute.

2.07 PROTECTION

A. Upon power-up, the AC Drive shall automatically test for valid operation of memory, loss of analog reference input, loss of communication, DC-to-DC power supply, control power and pre-charge circuit.

B. The AC drive shall have a 65kAIC minimum short circuit withstand rating

C. The AC Drive shall be protected against short circuits, between output phases and to ground.

D. The AC Drive shall have under-voltage power-loss ride through performance per the SEMI F-47 voltage ride through standard and certified by a third party.

E. The AC drive shall have a programmable ride-through function, which will allow the logic to maintain control for a minimum of one-second (60 cycles) without faulting.

F. An auto restart function will provide selectable time for restart attempts after the fault has disappeared and other operating conditions permit the restart. The restart shall be performed by a series of automatic attempts separated by increasingly longer periods of time. This period of time shall be selectable.

G. Upon loss of the analog process follower reference signal, the AC Drive shall be programmable to display a fault.

H. The AC Drive shall have a solid-state UL 508C / UL 61800-5-1 listed overload protective device and meet IEC 60947.

I. The output frequency shall be software enabled to fold back when the motor is overloaded.

J. There shall be three skip frequency ranges that can be programmed to a bandwidth of ± 2.5 Hz.

2.08 ADJUSTMENTS & CONFIGURATIONS

A. The AC Drive shall be capable of storing the configuration in the keypad.

B. The acceleration and deceleration ramp times shall be adjustable from 0.05 to 999.9 seconds.

C. The memory shall retain and record run status and fault type of the past eight faults.

D. The software shall have an energy economy function that, when selected, will reduce the voltage to the motor when selected for variable torque loads. A constant volts/Hz ratio will be maintained during acceleration. The output voltage will then automatically adjust to meet the torque requirement of the load. Use of selectable volts/Hz ratio patterns does not meet specification; the function must be automatically optimized.

E. The AC Drive shall have macro configurations for pump applications, PID regulator set-up and network set-up.

F. The AC Drive shall have multiple control modes: Frequency, speed, open-loop speed, open-loop torque.

2.09 KEYPAD DISPLAY INTERFACE

A. A keypad display interface shall offer the modification of AC Drive adjustments through a touch keypad. All electrical values, configuration parameters, I/O assignments, application and activity function access, faults, local control, and adjustment storage, and diagnostics shall be accessible.

1. Keypad display shall use plain English words for parameters, status, and diagnostic messages.

2. Keypad shall include a Local/Remote pushbutton selection. Both start/ stop source and speed reference shall be independently programmable for Keypad, Remote I/O, or Field Bus.

3. Upon initial power up of the AFD, the keypad shall display a start-up guide that will sequence all the necessary parameter adjustments for general start up.

B. The AC Drive model number, torque type, software revision number, horsepower, output current, motor frequency and motor voltage shall be listed on the drive identification portion of the LCD display.

C. The keypad display shall have password protection that allows the keypad to be locked out from unauthorized personnel.

D. The keypad display shall be back-lit, multi-line, with a minimum of three lines.

E. The interface keypad shall include three independent status LEDs. The three are “Remote”, “Run”, and “Fault”.

2.10 CONTROL CONNECTIONS

A. The control power for the digital inputs and outputs shall be 24Vdc.

B. The internal power supply shall incorporate automatic current fold-back that protects the internal power supply if incorrectly connected or shorted. The transistor logic outputs will be current limited and will not be damaged if shorted.

C. Removable terminal strips shall be used on all logic and analog signal connections in the power converter

D. Inputs: the AC drive shall provide a minimum of six programmable digital inputs.

E. Three voltage-free programmable relay output contacts will be provided. One of the contacts will indicate AC Drive fault status. The other contact shall indicate a drive run status. These relays shall be configurable for other status indicators.

F. Two programmable analog outputs shall be provided, both 4-20 mA or 0 – 10 VDC.

G. The AC drive shall have a power removal logic input. The drive shall not allow the motor to operate until this input is closed. If this input is opened while the connected motor is running, the AC drive shall stop applying power to the motor. This power removal function shall be certified by an independent agency.

H. The control section of AC drive shall be supplied separately if necessary with 24V DC, to keep the network communication always available even if the power supply is OFF.

2.11 SERIAL COMMUNICATION

A. The AC Drive shall have an integrated RJ45 port, selectable for Modbus or CanOpen.

B. On-board communications:

1. The AC drive shall include the following communication as standard: Ethernet I/P, Modbus TCP, Modbus RTU, BACnet MS/TP.

2. The AC drive shall have the following communication protocols as an optional card. Profibus DP, CANopen, Devicenet, Profinet, Smartwire DT, Lonworks.

2.12 HARMONIC MITIGATION

A. Each drive shall include a combination of integrated filters and DC link reactors to provide effective harmonic mitigation equivalent to 3% impedance without requiring additional panel space.

B. The AC drive shall limit harmonic distortion reflected onto the utility system to a voltage and current level as defined by IEEE 519 for general systems applications, by utilizing the standard 3% (minimum) DC link choke with input surge protection with a two-coil design integrally mounted in the drive enclosure

C. Provide an input EMI filter to minimize conducted electrical noise to meet the requirements of IEC 61800-3.

2.13 AC LINE REACTOR

A. If noted on the Drawings, each drive shall be furnished with an AC line reactor, selected by drive supplier for compatibility with the drive and the associated motor.

1. The reactor shall be three-phase, 600 V class, consisting of suitable values of inductance.
2. The reactor shall be listed per UL-508, marked per CE, and certified per CSA C22.2
3. The reactor shall be as manufactured by MTE Corporation, RL series, or equal.

B. Performance:

1. The reactor shall be rated for nominal system voltage (690 V max), fundamental system frequency (60 Hz) and current.
2. The reactor impedance shall be 3% at full rated system current.
3. The reactor shall be rated to operate in ambient temperatures from -40°C to 50°C under open air conditions, or from -40°C to 45°C under enclosed conditions.
4. The reactor shall operate at rated current with a maximum average winding temperature rise of 135°C.
5. Reactors rated less than 750 A shall be capable of continuously operating at 150% of rated current. Reactors rated more than 750 A shall be capable of continuously operating at 125% of rated current.
6. The reactor shall be capable of 30 minutes of operation at 200% of rated current, and 1 minute of operation at 300% of rated current.
7. The reactor shall function properly for switching frequencies up to 20 kHz.
8. The reactor shall function as rated at altitudes up to 1000 m.
9. The reactor shall have an insulation system to provide 3000 V RMS of dielectric strength coil-to-coil and coil-to-core.

C. Construction:

1. The reactor construction shall utilize copper wire or copper foil for the windings.
2. The reactor shall utilize a class N insulation system, maximum temperature 200°C. Sheet insulation shall be Dupont Nomex 410.
3. The reactor shall have a core to carry the magnetic flux comprised of laminations of electrical grade silicon steel.
4. The core of the reactor shall be locked in place using steel banding.
5. All terminations shall be copper alloy taps or UL-recognized terminal blocks.
6. The reactor shall be vacuum-dipped and baked with epoxy resin.
7. The reactor shall be suitable for mounting within a NEMA rated enclosure as specified herein and as noted on the Drawings. Mounting brackets shall be painted ASTM structural steel or structural aluminum.
8. Reactor shall be mounted inside a NEMA Type 1 enclosure. The reactor enclosure shall be constructed of steel with a baked enamel finish. Openings shall be provided

for sufficient convective air flow for cooling. Forced air cooling shall not be required to provide adequate cooling.

PART 3: INSTALLATION

3.01 INSPECTION

A. Verify that the location is ready to receive work and the dimensions are as indicated.

3.02 PROTECTION

A. Before and during the installation, the AC Drive equipment shall be protected from water and site contaminants.

3.03 INSTALLATION

A. Installation shall be in compliance with manufacturer's instructions, drawings and recommendations.

B. The AC Drive supplier shall provide a representative to inspect the contractor's installation, test and start-up the AC Drive(s) furnished under this specification.

C. AC line reactors shall be mounted external to the AFD’s, as indicated on the Drawings.

3.04 TRAINING

A. On-site training shall be provided as part of the start-up service, with a minimum of 4 hours.

3.05 DOCUMENTATION

A. The AC Drive supplier shall supply a comprehensive bound instruction and installation manual that includes wiring diagrams, layout diagrams, and outline dimensions. This manual must be insertion in a shop manual supplied by the installing contractor.

END OF SECTION

WWTF REPAIRS - 2026
PRE-BID MEETING
TUESDAY, MARCH 17, 2026 @ 1:00 P.M.
CITY OF PARKVILLE – CITY HALL ADMINISTRATION CONFERENCE ROOM

NAME	COMPANY	EMAIL	PHONE
Dan Harper, PW Director	City of Parkville	dharper@parkvillemo.gov	816-268-5027
Bonnie Buckmaster, PW Dept. Asst.	City of Parkville	Bbuckmaster@parkvillemo.gov	816-268-5025
Jay Norco, City Engineer	North Hills Engineering	northillseng@gmail.com	816-935-2777
Danny McHhys	PCRSD	dmcthys@pcrsd.com	816-214-7189
MATT GUSTIN	DAN E. ROSS CONST. CO.	mgustin@derossconstruction.com	816-737-2953
Craig Organowski	MAX Electric	craigo@Maxelectric-kc.com	816-984-9977
Dawson Engle	Fluid Equipment	dengle@fluidequip.com	816-681-3590
Bryan Craig	Havens Construction	bcraig@havensco.com	816-868-8109
Mark Murphy	Haynes	mmurphy@haynesequip.com	816-714-0579
Josh Mahler	Yates Electric	JMAHLER@YATESELECTRIC.COM	816 654 5946
Austin Pfannenstiel	MEGAKC	AUSTINP@megakc.com Megabids@megakc.com	816-762-8383
River McCallon	Velocity Pump Rentals	rmccallon@velocityrents.com	816-491-5145
Taylor Cook	Badger	tcook@badgerinc.com	816257-6464
Dan Hagar	Parkville		
Blake Weese	Havens Construction	bweese@havensco.com	816-868-4174

Ryan Lemmer	Mersino	ryan.lemmer@mersino.com	402-906-7083
John Warren	Mersino	john.warren@mersino.com	816-863-1003
James Edmisten	Parkville	jaedmisten@parkvillemo.gov	816 876-1163
Trent Buss	Prairie Industrial	trent@prairieind.com	913-579-0224
Nate Colbach	Badger	NColbach@badgerinc.com	816 702 9016
MAXIM RAILEANU	Doudlinger	mraileanu@doudlinger.build	316-337-5342
Justin Fay	Prairie Industrial	justin@prairieind.com	913-249-2067
Naomi Daldalian	Parkville	ndaldalian@Parkvillemo.gov	(816) 977-4674

CITY OF PARKVILLE, MO

AGREEMENT BETWEEN CITY OF PARKVILLE AND CONTRACTOR FOR WWTF REPAIRS - 2026

This agreement is made and entered into this ____day of _____, 2026, by and between the City of Parkville, Missouri, (hereinafter the “City”) and **Havens Construction** (hereinafter the “Contractor”).

WITNESSETH:

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined and evaluated the Bids submitted, and as a result of this process has, in accordance with the law, determined and declared the Contractor to be the lowest and best responsible bidder for the construction of the public improvements, and has duly selected the Contractor for award of a contract therefor upon the terms and conditions set forth in this Agreement for the sum or sums stated below.

WHEREAS, the City has caused to be prepared, in accordance with the law, Notice to Bidders, Instructions to Bidders, Bid, this Agreement, General and Special Conditions, Plans, Specifications and other documents as identified below and as further defined in the General Conditions(collectively referred to as "the Contract Documents"), for the work therein described, and has approved and adopted these said Contract Documents and has caused to be published, in the manner and for the time required by law, an advertisement inviting sealed Bids for furnishing construction materials, labor, tools, equipment and transportation necessary for, and in connection with, the construction of public improvements in accordance with the terms of this Agreement; and

WHEREAS, the Contractor, in response to the advertisement, has submitted to the City, in the manner and at the time specified, a sealed Bid in accordance with the terms of this Agreement; and

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined and evaluated the Bids submitted, and as a result of this evaluation has, in accordance with the law, determined and declared the Contractor to be the lowest and best responsible bidder for the construction of the public improvements, and has duly selected the Contractor for award of a contract therefor upon the terms and conditions set forth in this Agreement for the sum or sums set forth below.

NOW, THEREFORE, in consideration of the compensation to be paid the Contractor, and of the mutual agreements herein contained, the parties hereto have agreed, and hereby agree, the City for itself and its successors and the Contractor for itself, its, successors and assigns, as follows:

ARTICLE I. The Contractor will furnish at its own cost and expense all labor, tools, equipment, materials and transportation required to construct and complete the work designated, described and required by the Contract Documents, to wit:

all in accordance with the Contract Documents, on file with the City Clerk of Parkville, Missouri, all of which are as fully a part hereof as if repeated verbatim herein; all work to be done in a good, substantial and workmanlike manner to the entire satisfaction of the City, and in accordance with the laws of the City, the State of Missouri and the United States of America. All terms used herein shall have the meanings ascribed to them in the General Conditions unless otherwise specified.

ARTICLE II. The City shall pay to the Contractor for the performance of the work embraced in this Contract, and the Contractor will accept in full compensation therefor, the sum of **FOUR HUNDRED TWENTY FOUR THOUSAND NINE HUNDRED FIFTY DOLLARS ($424,950.00)** (subject to adjustment as provided by the Contract Documents) for all work covered by and included in the Contract award and designated in the foregoing Article I, payment thereof to be made in cash or its equivalent and in the manner provided in the Contract Documents.

ARTICLE III. The contractor shall commence work upon the date stated in the Notice to Proceed and will complete all work within **200 calendar days of the date of the Notice to Proceed**. In addition, from the time the first existing WWTF aeration tank is taken off-line, all repairs to the WWTF shall be complete and all systems operating within 45 days. Time is of the essence. Accordingly, liquidated damages shall be assessed against Contractor, as stipulated liquidated damages and not as a penalty, in the amount of $___250.00___ for each and every calendar day the work remains incomplete over the specified completion time.

ARTICLE IV. This Agreement shall not become effective, nor shall Contractor commence any work hereunder, until the City has received, and approved, the Certificate of Insurance and Additional Insured- and Notice of Cancellation Endorsements, the fully executed Performance, Payment and Maintenance Bonds with Powers of Attorney, and the list of proposed Subcontractors from Contractor.

ARTICLE V. This Agreement is entered into, under and pursuant to, and is to be construed and enforceable in accordance with the laws of the State of Missouri.

ARTICLE VI: The following documents are made part of this agreement by reference:

Contractor's Bid Form and attachments.

Exhibit A	General Conditions of the Contract
Exhibit A-1	Special Conditions of the Contract
Exhibit B-1	Performance Bond
Exhibit B-2	Payment Bond
Exhibit B-3	Maintenance Bond
Exhibit C	List of Plans (by sheet number and date), including attached plan sheets all addenda thereto.
Exhibit D	List of Specifications, including attached specifications and all addenda thereto
Exhibit E	Contractor's Affidavit Acknowledging Federal Lobbying Activities and Conflict of Interest Prohibition
Exhibit F	Sales tax exemption documentation forms
Exhibit G	Contractor's Affidavit of Compliance with Non-Discrimination and Equal Employment Opportunity Laws
Exhibit H	Affidavit of Compliance with Safety Training Requirements (§292.675 R.S. Mo.)
Exhibit I	Affidavit of Compliance with R.S. Mo §285.530.6
Exhibit J-1	Applicable Missouri Prevailing Wage Rates
Exhibit J-2	Prevailing Wage Rate Reporting Form
Exhibit J-3	Certification of Compliance with Prevailing Wage Requirements
Exhibit K	Insurance Requirements
Exhibit L	Bill of Sale
Exhibit M	Bailment Agreement
Exhibit N	Conditional Partial Waiver of Lien and Release of Claims

Exhibit O	Conditional Final Waiver of Lien and Release of Claims
	Certificate of Substantial Completion
	Certificate of Final Completion
	Construction Change Directive
	Change Order

WITNESS WHEREOF, the City of Parkville, Missouri, has caused this Agreement to be executed on its behalf, thereunto duly authorized, and the said Contractor has executed this contract in the prescribed form and manner, the _____ 2026, first above written.

CITY OF PARKVILLE, MISSOURI

By: _____

Dean Katerndahl, Mayor

ATTEST:

_____
Melissa Bazert, City Clerk

HAVENS CONSTRUCTION

By _____

(SEAL) Title _____

(If the Contract is not executed by the President of the Corporation or general partner of the partnership, please provide documentation, which authorizes the signatory to bind the corporation or partnership. If a corporation, Contractor shall furnish the City a current certificate of good standing, dated within ten (10) days of the date of this Contract.)

BID FORM

UNIT PRICE

WWTF Repairs - 2026

FOR

CITY OF PARKVILLE, MISSOURI

Submitted By: Havens Construction Co., Inc.

To: City of Parkville, Missouri:

THE UNDERSIGNED BIDDER, having examined the Instructions to Bidders, Contract Forms, Drawings, Specifications, General Conditions, Special Conditions, and other related Contract Documents referred to herein, and any and all Addenda thereto; the location, arrangement, and construction of existing railways, highways, streets, roads, structures, utilities, and facilities which affect or may be affected by the Work; the topography and condition of the site of the Work; and being acquainted with and fully understanding (a) the extent and character of the Work covered by this Bid Form; (b) the location, arrangement, and specified requirements of and for the proposed structures and miscellaneous items of Work appurtenant thereto; (c) the nature and extent of the excavations to be made, and the type, character and general condition of the materials to be excavated; (d) the necessary handling and re-handling of excavated materials; (e) all existing and local conditions relative to construction difficulties and hazards, labor, transportation, hauling, trucking and rail delivery facilities; and (f) all local conditions, laws, regulations, and all other factors and conditions affecting or which may be affected by the performance of the Work required by the Contract Documents.

HEREBY PROPOSES and agrees, if this Bid is accepted, to enter into agreement in the form attached hereto, and to perform all Work and to furnish all required materials, supplies, equipment, tools and plant; to perform all necessary labor; and to construct, install, erect and complete all Work stipulated in, required by, in accordance with the Contract Documents and other terms and conditions referred to therein (as altered, amended, or modified by any and all Addenda thereto) at the prices set forth in the following Schedule of Prices.

Bidder hereby agrees to commence Work under this Contract on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. The Bidder agrees to fully complete all Work within the time frame as provided for in the Agreement.

Bidder further agrees, if the Bid is accepted, to pay as an agreed amount of liquidated damages at the rate of $250.00 per day, as provided in the Agreement, General Conditions, and Special Conditions.

Bidder accepts the provisions of the Instructions to Bidders regarding disposition of Bid Security.

Bidder acknowledges receipt of the following Addenda, which have been considered in the preparation of this Bid:

No.	1	Dated:	3/18/2026
No.		Dated:	
No.		Dated:	
No.		Dated:	
No.		Dated:	

Bidder lists in the space provided below the names of the manufacturers and suppliers of materials or equipment whose items are named or specified in the Specifications, including all Addenda, which the Bidder proposes to furnish and agrees that prices shown on the Bid Form are based on each item named below. Upon award of the Contract, the named material or equipment shall be furnished. Substitutions will be permitted only if permitted by the City in accordance with the requirements for Substitutions in the Contract Documents.

Proposed Base Bid Supplier *(Write in name below:)*	Equipment supplied
Fluid Equipment	Section 11376 Tri-Lobe Rotary Blower Package
Fluid Equipment	Section 16420 – Adjustable Frequency Drives

Failure to furnish all information requested below may be cause for rejection of the Bid.

Bidder agrees, if the Bid is accepted, to perform all the Work described in the Contract Documents, including all Addenda, for the prices set forth in the "Schedule of Unit Prices" presented at the end of this Section. In case of a discrepancy between the Unit Price and the Extension Figure, the Unit Price shall be considered to be the Bid.

TOTAL BASE BID PRICE (IN WORDS AND FIGURES)

Four hundred Fifty-Seven Thousand Nine Hundred Dollars & no/cents $457,900.00

(Words) (Figures)

Award shall be based on the City's evaluation of prices and other factors affecting the responsibility and responsiveness of Bidders. The City reserves the right to award all, some or none of the items identified above to the successful bidder.

The undersigned hereby agrees that this bid shall be good and may not be withdrawn for a period of thirty (30) **calendar days** after the scheduled closing time for receiving bids.

The undersigned hereby agrees to enter into Contract on the attached Agreement Form within fifteen (15) consecutive calendar days from the receipt of Notice of Award from the City's acceptance of this Bid, and to complete said Work within the indicated number of consecutive calendar days from the Effective Date of the Agreement, or if a Notice to Proceed is given, from the date indicated in the Notice to Proceed.

Bidder has submitted with this Bid its Bid Security as required by the Instructions to Bidders. Bidder further understands that, if the City has specified in the Instructions to Bidders that Performance, Payment, and Maintenance Bonds are required for this project, that the Bidder's failure to submit them on the forms provided and in compliance with all requirements may result in rejection of this Bid.

If this Bid is accepted and should Bidder for any reason fail to sign the Agreement within fifteen (15) consecutive calendar days as above stipulated, the Bid Security which has been made this day with the City shall, at the option of the City, be retained by the City as liquidated damage for the delay and expense caused the City, but shall not be deemed to limit the Bidder's liability for all of the City's damages;; but otherwise, it shall be returned to the undersigned in accordance with the provisions set forth in the Instructions to Bidders.

The undersigned acknowledges that the City retains the option to accept or reject any bid for any reason.

Dated at 2:00 pm this 30th day of March, 2026.

LICENSE or CERTIFICATE NUMBER, if applicable _____

FILL IN THE APPROPRIATE SIGNATURE AND INFORMATION BELOW:

IF AN INDIVIDUAL: _____ Doing Business As
Signature and Title

_____
Name of Firm

Business Address of Bidder: _____

_____

Telephone No. & Email _____

IF A PARTNERSHIP: _____
Name of Partnership

_____ Member of Firm

Business Address of Bidder: _____

_____

Telephone No.& Email _____

IF A CORPORATION: Havens Construction Co., Inc.
Name of Corporation

By Justin Bolsenga, Vice President
Signature & Title

ATTEST: _____ (CORPORATE SEAL)

Business Address of Bidder: 9400 Liberty Dr
Liberty, MO 64068

Telephone No. & Email jbolsenga@havensco.com/ 816-781-4769

If Bidder is a Corporation, supply the following information:

State in which Incorporated: Missouri

Name and Address of its: President Eric Havens

_____

Secretary Lisa Holsted

_____

HAVENS

CORPORATE RESOLUTION

I, Lisa J. Holsted, do hereby certify that at a meeting of the Board of Directors of The Havens Construction Company, Inc., a Corporation organized under the laws of Missouri, held on the 16th day of June, 2022, the following resolutions were duly adopted and are now in full force and effect:

> RESOLVED, that Justin M. Bolsenga, the Vice President is fully authorized to enter into agreements, contracts and arrangements and to execute, sign or endorse on behalf of the Corporation any papers, documents, contracts or agreements and to affix the corporate seal on same.

In witness whereof, I have hereunto set my hand this 16th day of June, 2022.

Lisa J. Holsted

Lisa J. Holsted
Corporate Secretary

Schedule of Unit Prices:

Item	Description	Qty.	Unit	Unit Price	Extension	
1	Mobilization & General Requirements (limited to 5% of total Bid Price)	1	LS	$19,500.00	$19,500.00	★
2	Temporary Pumping Equipment Rental	4	WEEK	$7,000.00	$28,000.00	
3	Replace Bar Rack at Existing Headworks Platform	1	LS	$5,800.00	$5,800.00	
4	Drain Aeration Tank 2 and Use Inflatable Plug.	1	LS	$5,600.00	$5,600.00	
5	Drain Aeration Tank 1 and Replace Valve GV-3.	1	LS	$13,000.00	$13,000.00	
6	Remove and Replace Mixer in Aeration Tank 1	1	LS	$5,500.00	$5,500.00	
7	Remove and Replace Section of 12" DI Influent Pipe	1	LS	$29,000.00	$29,000.00	
8	Demo & Haul Away Pump, Valves, Fittings in Pipe Gallery	1	LS	$22,000.00	$22,000.00	
9	Furnish Two Rotary Tri-Lobe Blowers (Section 11376)	1	LS	$93,900.00	$93,900.00	★
10	Furnish Two AFD's for Blowers (Section 16420)	1	LS	$18,650.00	$18,650.00	★
11	Modify Existing Blower Piping for New Blowers	1	LS	$51,000.00	$51,000.00	
12	Demo Existing Blowers, Install New Blowers	1	LS	$13,500.00	$13,500.00	
13	Drain Aeration Tank 2, Place Aeration Tank 1 Into Service	1	LS	$5,200.00	$5,200.00	
14	Clean Aeration Tank 2, Haul Grit and Debris Off Site	1	LS	$44,550.00	$44,550.00	
15	Replace Diffuser Membranes in Aeration Tank 2, Leak Test	1	LS	$15,500.00	$15,500.00	
16	Replace 8" Steel Elbow in Aeration Tank 2 Air Piping	1	LS	$3,500.00	$3,500.00	
17	Modify Mixed Liquor Overflow Box in Aeration Tank 2	1	LS	$2,700.00	$2,700.00	
18	Install new 6" Plug Valve in Clarifier / RAS Valve Pit.	1	LS	$6,675.00	$6,675.00	
19	Demo Existing Yard Hydrant, Install New Hydrant & Valve	1	LS	$2,675.00	$2,675.00	
20	Furnish Three AFD's for RAS Pumps (Section 16420)	1	LS	$20,000.00	$20,000.00	
21	Electrical Work for Mixer Terminations	1	LS	$1,950.00	$1,950.00	
22	Electrical Work for Blowers & Associated VFD's.	1	LS	$10,700.00	$10,700.00	
23	Electrical Work for RAS Pump VFD's	1	LS	$6,050.00	$6,050.00	

Total Bid Price (enter also on Bid Form) $424,950.00

★ - Revised - 4-7-2026

Notes:

1 Some bid items may not be used, depending on project conditions and bid pricing.
2 Note that mobilzation and general requirements is limited to 5% of total bid price.
3 The following pages titled "Description of Unit Prices" accompany this Schedule and are part of the Bid Form.
4 Owner may reduce the quanities of work from those shown above.

HAVENS

SUBCONTRACTOR AND SUPPLIERS LIST FOR

WWTF Repairs – 2026 City of Parkville

Subcontractor:

Yates Electric:	Electrical
H & H Septic:	Pumping and Haul Off
Fluid Equipment:	Tri-Lobe Rotary Blower Package
Fluid Equipment:	Adjustable Frequency Drive

Suppliers:

Kansas City Winwater:	Pipe and Fittings

City of Parkville - WWTF Repairs - 2026

Description of Unit Prices:

NOTES:

a. The following unit price descriptions have been prepared by Engineer to summarize the work involved.
b. All items of work required for a complete installation with complete restoration are required, whether specifically mentioned or not. Items of work not specifically mentioned shall be merged into the remaining unit prices. All items of work shall include labor, equipment, and sequencing, whether specifically mentioned or not.
c. All unit prices shall include Contractor's allowances for supervision, general requirements, overhead, and profit.
d. Contractors costs, general requirements, overhead, and profilt shall be proportionally distributed among the unit prices.
e. Owner may reduce the quanities of work vs. those shown on the Bid Form, with no increase in the unit pricing.
f. The Bid Form provides the basis of payment for each pay item: Lineal Foot, Lump Sum, Each, Ton, etc.

1. Mobilization. ***Work Includes:***

Includes mobilization to project site.
Also includes general administrative costs and temporary facilities.
Unit: Lump Sump covering all items related to this task.

2. Temporary Pumping Equipment Rental. ***Work Includes:***

Includes delivery and rental of hydraulic submersible pump, power unit controls.
Includes delivery and rental of temporary pipe/hose, fittings, valves, etc.
Includes fuel, maintenance checks, also decommisioning and removal at end of project.
Contractor shall included in his bid the time required to accomplish the work.
Minimum duration shall be 4 weeks.
This price does NOT include Contractor's labor and equipment to move pumps and hoses.
Unit: Lump Sump covering all items related to this task.

3. Replace Bar Rack at Existing Headworks Platform. ***Work Includes:***

Includes fabrication and delivery of new stainless steel bar rack and drain plate.
Includes lifing out existing bar rack, also hauling off and disposal.
Includes anchoring and bracing of new drain plate and bar rack.
Unit: Lump Sump covering all items related to this task.

4. Drain Aeration Tank 2 and Use Inflatable Plug. ***Work Includes:***

Includes labor and equipment to set up temporary pump and hoses.
Includes drawing down level in Tank 2, placing inflatable plug with air hose and gage.
Includes pumping Tank 2 contents to existing digester and clarifier splitter box.
Unit: Lump Sump covering all items related to this task.

5. Drain Aeration Tank 1 and Replace Valve GV-3. ***Work Includes:***

Includes labor and equipment to set up temporary pump and hoses.
Includes drawing down level in Tank 1 and pumping to Tank 2.
Includes removing existing gate valve GV-3, furnishing and installing new gate valve.
Includes installing new flange adapter for gate valve.
Includes removal and disposal of old gate valve.
Unit: Lump Sump covering all items related to this task.

6. Remove and Replace Mixer in Aeration Tank 1. ***Work Includes:***

Lifting out the existing mixer and placing on site in location directed by Owner.
Using new mixer (furnished by Owner), which will be stored at the WWTF site.
Inspecting the existing mixer mast, including carriage and travel stop, review with Engineer.
Lifting mixer up onto concrete deck.
Installing the new mixer on the existing mast, and adjusting the horizontal angle as directed.
Contractor shall use exsting jib hoist at mast, for lowering mixer into Tank 1.
Note: Electrical work is covered under a separate unit price.
Unit: Lump Sump covering all items related to this task.

7. Remove and Replace Section of 12" DI Influent Pipe: ***Work Includes:***

Inspection of existing DI pipe, making preparations for demolition and lifting.
Scheduling removal and replacement time with Owner.
Lifting and preparing Owner's 3-inch self-primer pump for RAS service.
Removing plate at overflow notch at existing Headworks platform.
Setting slide plates and installing inflatable plug in headworks channels.
Operating gate valve GV-4 in pipe gallery.
Setting aside and re-setting existing aluminum box over access opening.
Demolition of existing section of 12" DI pipe.
Lowering new pipe section into pipe gallery, removing old pipe section.
Using mini-cam to explore existing pipe to Headworks platform, Engineer to witness.
Cutting and installing new 12" DI pipe, with pipe hangers and flange adapter.
Detaching and re-attaching sump pump discharge, installing new tap saddle.
Testing of existing sump pump after re-connection.
Hauling and disposal of demolished items.
Re-installing plate at overflow notch at existing Headworks platform.
Removing slide plates and inflatable plug at Headworks platform.
Lifting Owner's 3-inch self-primer pump back to gravel drive.
Unit: Lump Sump covering all items related to this task.

8. Demo & Haul Away Pump, Valves, Fittings in Pipe Gallery. ***Work Includes:***

Setting aside and re-setting existing aluminum box over east access opening.
Setting aside and re-setting existing aluminum plate over west access opening.
Un-bolting and disconnecting existing valves, fittings, and pump.
Installing four 14" ductile iron blind flanges, using new or existing bolts.
Lifting out demolished items, via the existing access openings.
Unit: Lump Sump covering all items related to this task.

9. Furnish Two Rotary Tri-Lobe Blowers (Section 11376). ***Work Includes:***

Furnish two blowers as specified.
Includes all items covered under Section 11376, including submittals, equipments, start-up, etc.
This item includes Contractor's mark-up and general requirements, but NOT installation.
Unit: Lump Sump covering all items related to this task.

10. Furnish Two AFD's for Blowers (Section 16420). ***Work Includes:***

Furnish two adjustable frequency drives for the blowers as, specified.
Includes all items covered under Section 16420, including submittals, equipments, start-up, etc.
Includes furnishing two new line reactors for blowers.
Includes coordination between blower supplier and AFD supplier, to ensure compatibility.
This item includes Contractor's mark-up and general requirements, but NOT installation.
Unit: Lump Sump covering all items related to this task.

11. Modify Existing Blower Piping for New Blowers: ***Work Includes:***

Reviewing the blower dimensions and required piping modifications prior to modifications.
Modifying existing welded steel air piping, on both the suction and discharge sides.
Installing two new 6" wafer style butterfly valves on the blower suction pipes.
Installing new wafer style butterfly valve BFV-11 in the existing 8" air discharge pipe.
Installing new pipe supports.
Surface preparation and painting of modified steel pipe, fittings, supports.
Includes hauling and disposal of demolished items.
Unit: Lump Sump covering all items related to this task.

12. Demo Existing Blowers, Install New Blowers: ***Work Includes:***

Reviewing the blower dimensions, locations, and required piping modifications prior to demolition.
Meeting with Engineer to review blower manufacturer's plan for unit disassembly/re-assembly.
Setting aside and re-setting existing aluminum box over east access opening.
Removing and lifting out existing blowers, using existing doorway or access opening.
Lowering new blowers into blower room, setting and anchoring blower skid unit.
Disassembly and re-assembly as required, subject to approval by manufacturer & Engineer.

Connection to blower suction and discharge piping.
Includes start-up and testing.
Includes hauling and disposal of demolished items.
Note: Electrical work is covered under a separate unit price.
Unit: Lump Sump covering all items related to this task.

13. Drain Aeration Tank 2, Place Aeration Tank 1 Into Service. ***Work Includes:***
Coordinate with Owner for gravity transfer of mixed liquor from Tank 2 to Tank 1.
Includes labor and equipment to set up temporary pump and hoses.
Includes pumping to drain Tank 2, by pumping to Tank 1.
Unit: Lump Sump covering all items related to this task.

14. Clean Aeration Tank 2, Haul Grit and Debris Off Site. ***Work Includes:***
Removing accumulated grit from grit chamber, including efforts to loosen grit and form a slurry.
Estimated depth is about 12 inches in bottom of Tank 2.
Includes the vac truck and crew hours set forth on the Drawings - to be used as basis for Bid.
Includes spraying off walls, floor, piping, and other intenal items to remove grease and debris.
Contractor may use Owner's water via the yard hydrant.
Includes hauling and disposal of removed solids, slurry, and liquids.
Unit: Lump Sump covering all items related to this task.

15. Replace Diffuser Membranes in Aeration Tank 2, Leak Test: ***Work Includes:***
Planning and scheduling date and time to begin work, coordinating with Owner.
Access provisions to enter existing basin.
Removal and disposal of existing diffuser membranes, including blank membranes.
Installation of new diffuser membranes, including blank membranes (all furnished by Owner.)
Inspecting diffuser bodies, pipe and clamp connections, pipe supports, tightening as required.
Meeting with Engineer and Owner on site to discuss findings and any deficiencies.
Filling tank over top of diffusers with clean water, performing leak test.
Addressing loose membranes and connections discovered during leak test.
Note: Owner will furnish new membranes, blanks, and lubricant.
Unit: Lump Sump covering all items related to this task.

16. Replace 8" Steel Elbow in Aeration Tank 2 Air Piping: ***Work Includes:***
Disassembling, inpspecting, and re-asssembling existing clamp coupling.
Verifying pipe measurements and extent of replacements.
Cutting away existing steel pipe elbow and drop pipe.
Welding new elbow and drop pipe in place.
Visually inspecting welds for soundness.
Grinding welds smooth.
Wire brushing and solvent cleaning new pipe.
Priming and painting new pipe and adjacent existing pipe, to concrete wall.
Unit: Lump Sump covering all items related to this task.

17. Modify Mixed Liquor Overflow Box in Aeration Tank 2: ***Work Includes:***
Surveying to match top elevation of Tank 1 overflow box.
Fabricating steel plate section to raise level of existing overflow box.
Sealing gaps.
Performing surface preparation and painting of new steel plate section.
Unit: Lump Sump covering all items related to this task.

18. Install new 6" Plug Valve in Clarifier / RAS Valve Pit.: ***Work Includes:***
Planning and scheduling date and time to begin work, coordinating with Owner.
Allowing Owner to keep one RAS pump in service during installation.
Includes cutting existing 6" DI pipe, furnishing and installing new plug valve.
Furnishing and installing one 6" plug valve.
Includes installing new flange adapter and victaulic-flange adapter for plug valve.
Includes removal and disposal of removed section of pipe.
Includes coring floor slab above, installing new cast iron valve box & lid, nameplate.

Unit: Lump Sump covering all items related to this task.

19. Demo Existing Yard Hydrant, Install New Hydrant & Valve: ***Work Includes:***

Excavation and backfill.
Clean rock bedding for new valve, pipe, hydrant.
Furnishing and installing new post hydrant.
Furnishing and installing new brass gate valve, with riser, frame and lid.
Grading and grass restoration.
Unit: Lump Sump covering all items related to this task.

20. Furnish Three AFD's for RAS Pumps (Section 16420). ***Work Includes:***

Furnishing three adjustable frequency drives for the existing RAS pump as, specified.
Includes all items covered under Section 16420, including submittals, equipments, start-up, etc.
Includes coordination with AFD supplier, to ensure compatibility with existing pumps.
This item includes Contractor's mark-up and general requirements, but NOT installation.
Unit: Lump Sump covering all items related to this task.

21. Electrical Work for Mixer Terminations: Work Includes:

At existing terminal box, disconnecting existing mixer power and status wires.
At existing terminal box, connecting new mixer power and status wires.
Referrign to documentation provided by Owner to verify wire connectivity.
Installing new SS kellems grips on two pump cords, hang from handrail.
Unit: Lump Sump covering all items related to this task.

22. Electrical Work for Blowers & Associated VFD's: Work Includes:

For existing blowers, identifying and marking existing wires, disconnect at blower, to allow demolition of blower.
Extending new conduit & wiring from existing disconnects to each new blower.
Installing new terminal boxes for motor thermal circuits, modifying support racks.
Conduit anchors and supports.
Completing all wiring terminations.
Examining existing wiring, existing schematics, and SCADA I/O points.
Removing two existing AFD's for existing blowers.
Installing two new AFD's for new blowers, modifying support struts as required.
Modifying existing flex conduits and junction boxes as required for each new AFD.
Programming and testing new AFD's.
Removing and replacing existing AFD line reactor for each blower.
Modifying existing MCC buckets for each blower.
Verifying connection of all associated SCADA I/O points.
Unit: Lump Sump covering all items related to this task.

23. Electrical Work for RAS Pump VFD's: Work Includes:

For existing RAS pumps, identifying and marking existing wires, disconnecting at VFD.
Examining existing wiring, existing schematics, and SCADA I/O points.
Removing three existing AFD's for existing RAS pumps.
Installing three new AFD's for RAS pumps, modifying support struts as required.
Completing all wiring terminations.
Programming and testing new AFD's.
Re-using existing wiring, modifying conduits as required.
Verifying connection of all associated SCADA I/O points.
Includes hauling and disposal of demolished items.
Unit: Lump Sump covering all items related to this task.

END OF DESCRIPTIONS

ADDENDUM NO. 1

WWTF REPAIRS - 2026

FOR:

CITY OF PARKVILLE
March 18, 2026

This addendum shall become a part of the specifications and contract documents for the Project noted above. It shall be acknowledged on the Bid Form.

Pre-Bid Conference:

1. The conference was held at City Hall at 1 p.m. on Tuesday March 17, 2026.
2. Meeting Minutes are attached to this Addendum.
3. Attendance: See list attached to Meeting Minutes.

Clarifications:

1. None.

Project Manual:

1. SECTION 16420 - Adjustable Frequency Drives: Remove this Section as issued with the bid documents and replace with the attached Section.

Drawings:

1. None.

END OF ADDENDUM NO. 1

PRE-BID CONFERENCE
City of Parkville: WWTF Repairs - 2026

1:00 p.m., Tues, Mar 17, 2026 – City Hall, Parkville, MO

MINUTES

I. Introduction

Attendance List - See attached
City and Engineer Personnel
For questions: Jay Norco, P.E. Project Engineer: northhillseng@gmail.com

No addenda issued so far, at least one coming.
Current Planholder's List distributed.
Documents: Public Purchase – info on Bid Invitation.
Bid Opening: **Mon, March 30, 2026 at 2:00 p.m, City Hall**

II. Instructions to Bidders, Bid Form, and required attachments

Hardcopy bid is required.
Loose Bid Form
Bid Form attachments required: See IB-5.n.
Bond, tabulation subs, evidence to do business in MO, etc.
Bids open 30 days.
Bid Security 5% (Bond, money order, check)

Wage Rates - use Wage Order No. 32 – in the bid documents.
Contractor will be required to follow all requirements of MO Prevailing Wage Law – including reporting forms and notifications.
Experience requirement for bidders: See IB-20. We may modify this by addendum.

Bid Format (See Bid Form)
Unit Price
Unit Price Schedule attached to Bid Form.
Also Description of Unit Prices

What can be turned in after the Bid?
Project experience and qualifications information.
As/If requested: Detailed financial data, commitments, comprehensive experience list.
The subcontractors' experience statements.

III. Construction Documents:

Contract times are 200 days for final completion. Anticipate late April NOA, NTP early May.

Allowing 45 days for all repairs to be substantially complete after the first aeration basin is taken down.

Extensions will be given for abnormal weather conditions, per GC-30.

Contractor will need City Occupational license, see City website. All other permit fees will be paid for by the City. None anticipated.

Sales tax exempt. City will provide certificate.

Overview of the Work (Major Items)

Summary of Work -

1. **Tank Draining in Sequence:**
   a. See sequence, drawing Sheet 2.
   b. Sequence can be altered with consent of Engineer and Owner.
   c. Bid includes 4 weeks of hydraulic submersible pump, along with necessary pipe, hose, and fittings. How the unit is moved is up to the Contractor.
   d. The sequence includes tasks by Owner's operations personnel, for purposes of coordination.

2. **Work in Main Aeration Basin Complex:**
   a. Install new manual bar rack.
   b. Basin 1: Replace submersible mixer, new unit furnished by Owner.
   c. Basin 2: Clean tank, replace existing diffuser membranes, parts furnished by Owner.
   d. Basin 2: Welding steel work: Replace 8" air pipe elbow in basin, modify overflow box.
   e. Replace existing mixed liquor transfer valve in pipe gallery, gate valve GV-3.
   f. Demo existing two blowers, install two new blowers.
   g. Modify welded steel air piping for new blowers, add valves.
   h. Replace existing blower AFD's, replace line reactors, modify MCC bucket controls to accommodate new blowers.
   i. Replace section of existing 12" DIP influent, in pipe gallery.
   j. Demo existing valves, fittings, pump in pip gallery.

3. **Notes on Cleaning Basin 2:**
   a. See Sheet 6 Note 3.

4. **Clarifier Building:**
   a. Cut in new 6" plug valve inside valve pit.

b. Replace three existing AFD's for RAS pumps with new.

5. Work in Yard:

a. Replace existing yard hydrant, see notes Sheet 3.

Access:

See site plan – Owner will furnish key for gate locks.

IV. For questions and issues prior to the bid, contact Jay Norco – Project Engineer. Questions in e-mail and fax format will receive priority over verbal and voicemail. Email: northhillseng@gmail.com. Phone: 816-935-2777.

V. Questions/Answers

1. What is estimated lead time for blowers and VFD's? *Answer: We estimate 14 weeks from approved submittals for blowers, and 4 weeks for VFD's.*
2. What is the Engineer's cost estimate for the project? *Answer: $400,000.*
3. Do we have a profile (e.g. physical characteristics from lab tests) for the material that will be hauled from the Aeration Tank 2? *Answer: No the City does not have this, and would not be able to obtain this until the tank is brought down to a low fluid level. We expect this material will have a significant amount of grit, as well as waste activate sludge. If lab tests are required by the disposal site, then the City will arrange for these tests and will cover the cost of these tests, provided that the tests are reasonable (which means the testing cost will not exceed $2,000.) If the testing costs exceed that amount, then the Contractor will bear the additional cost, or the Contractor will find a different disposal site. Note: The City has contracted for clean-out of multiple tanks in the past, and testing of the residuals has never been required.*
4. Does this project include Owner-furnished equipment, and how will the start-up services for these items be handled? *Answer: Yes the project includes diffuser membranes and one submersible mixer as materials furnished by Owner. For the mixer, Owner will contract for start-up services directly with that supplier. For the diffuser membranes, no start-up services are needed. Contractor will perform the clean-water test and Engineer and Owner will observe.*
5. The Bid Schedule states that Owner may eliminate some bid items from the project? If this occurs, how will Contractor's O&P, bonding, and supervision costs be handled? *Answer: Yes, the Owner may elect to eliminate some items of work from the project, such as an effort to reduce the overall project cost. Bidders are directed to distribute their costs for O&P, bonds, and supervision proportionally across all the bid items. If Owner eliminates enough items of work so that Contractor cannot cover his fixed costs, then Contractor will have to document such costs, and Owner and Contractor will negotiate these items after the Bid, subject to article GC-31 of the General Conditions.*

VI. Site Visit: A site visit to the Parkville WWTF was conducted.

VII. Visits to Site: Bidders may visit the site, by appointment with PCRSD: Danny Matthys 816-214-7189.

Attachments:
Plan Holders List
Schedule of Unit Prices
Attendance List

End of Document

Plan Holders List 3-16-26
Agency **City of Parkville**
Bid Number **2601**
Bid Title **Wastewater Treatment Facility (WWTF) Repair - 2026**

Name	Contact	Address	Phone	Fax	Email
MegaKC Corporation	Brian Gordon	1491 Iron North Kansas City, MO, 64116,	(816) 918-0072	(816) 472-6722	megabids@megakc.com
Mellen & Associates	Brian Drake	3404 S. 11th St. Council Bluffs, IA, 51501,	(712) 561-0936	(712) 322-6557	bdrake@mellenInc.com
Environmental Works, Inc.	Tessa LeRoy	1455 E Chestnut Expressway Springfield, MO, 65802,	(417) 890-9500		tleroy@environmentalworks.com
Dondlinger Construction	Gabe A Probst	2656 S Sheridan St 2656 S Sheridan St Wichita, KS, 67217,	(316) 945-0555		gprobst@dondlinger.build
Mersino	John E Warren	6950 Q Street Omaha, NE, 68117,	(816) 863-1003		john.warren@mersino.com

WWTF REPAIRS - 2026
PRE-BID MEETING
TUESDAY, MARCH 17, 2026 @ 1:00 P.M.
CITY OF PARKVILLE – CITY HALL ADMINISTRATION CONFERENCE ROOM

NAME	COMPANY	EMAIL	PHONE
Dan Harper, PW Director	City of Parkville	dharper@parkvillemo.gov	816-268-5027
Bonnie Buckmaster, PW Dept. Asst.	City of Parkville	Bbuckmaster@parkvillemo.gov	816-268-5025
Jay Norco, City Engineer	North Hills Engineering	northillseng@gmail.com	816-935-2777
Danny McHhys	PCRSD	dmcHhys@pcrsd.com	816-214-7189
MATT GUSTIN	DAVID E. ROSS CONST. CO.	mgustin@davidrossconstruction.com	816-737-2953
Craig Organowski	MAX Electric	craigo@Maxelectric-kc.com	816-984-9877
Dawson Engle	Fluid Equipment	dengle@fluidequip.com	816-681-3590
Bryan Craig	Havens Construction	bCraig@havensco.com	816-868-8109
Mark Murphy	Haynes	MMurphy@haynesequip.com	816-714-0579
JOSH MAHER	YATES ELECTRIC	JMAHER@YATESELECTRIC	816 654 5946
AUSTIN PFANNENSTIEL	MEGAKC	AUSTINP@megakc.com Com Megabids@megakc.com	816-762-8383
River McCallon	Velocity Pump Rentals	rmccallon@velocitypumprentals.com	816-491-5145
Taylor Cook	Badger	tcook@badgerinc.com	816257-6464
Dan Haper	Parkville		
Blake Weese	Havens Construction	bweese@havensco.com	816-868-4174

Ryan Lemmer	MERSINO	ryan.lemmer@mersino.com	402-906-7083
John Warren	Mersino	john.warren@mersino.com	816-863-1003
James Edmisten	Parkville	jedmisten@parkvillemo.gov	816 876-1163
TRENT RUSS	PRAIRIE INDUSTRIAL	trent@prairieind.com	913-579-0224
Nate Colbach	Badger	NColbach@badgerinc.com	816 702 9016
MAXIM RAILEANU	Doudlinger	mraileanu@doudlinger.build	316-337-5342
Justin Fay	Prairie Industrial	justin@prairieind.com	913-249-2067
Naomi Daldalian	Parkville	ndaldalian@Parkvillemo.gov	(816) 977-4674

SECTION 16420

ADJUSTABLE FREQUENCY DRIVES

PART 1: GENERAL

1.01 SUMMARY

A. This section provides specification requirements for solid-state, pulse-width modulated (PWM) Adjustable Frequency Drives, herein referred to as AC Drives, for use with NEMA® design NEMA B AC motors, or standard IEC motors.

B. The AC Drive supplier shall furnish, field test, adjust and certify all installed AC Drives for satisfactory operation.

C. The supplier of the adjustable frequency drives shall ensure compatibility between the existing and proposed motors and AC Drives furnished.

D. The supplier of the adjustable frequency drives shall ensure adequate enclosure ventilation for cooling in the proposed AFD mounting locations.

E. This section also provides requirements for AC line reactors, which shall be provided for use with AFD's where specifically required on the Drawings.

1.02 RELATED SECTIONS

A. Section 11376 – Tri-Lobe Rotary Blower Package

1.03 REFERENCES

A. National Fire Protection Association - NFPA 70 - US National Electrical Code.

B. International Electrical Code - IEC 146.

C. UL508C: Power Conversion Equipment

D. UL 61800-5-1 Adjustable Speed Electrical Power Drive Systems, Safety Requirements

E. IEEE 519-1992: Guide for harmonic content and control

F. Canadian Standards Association International – CAN/CSA-C22.2 No. 14-05.

G. NEMA ICS 7.0: Industrial Controls & Systems for AFD

H. EN 50082-1 and -2

I. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall govern.

1.04 SUBMITTALS

A. Submit product data to Engineer for review.

B. A submittal package shall be furnished for the Engineers' approval. This package shall consist of, at a minimum:

1. Elementary power and control wiring diagrams, showing also all inputs and outputs.
2. Outline drawings shall include front and side views of with overall dimensions and weights shown.
3. Standard catalog specification sheets showing voltage, horsepower and maximum current ratings.
4. Major components list.
5. Sizing and product data for AC line reactors.

6. Test procedures per manufacturer's standards.

1.04 WARRANTY

A. A 36-month warranty shall be provided on materials and workmanship from the date of start-up.

1.05 QUALITY ASSURANCE

A. The manufacturer of the AC Drive shall be a certified ISO 9001 facility.

B. The AC Drive and all associated optional equipment shall be UL Listed according to UL 508 C - Power Conversion Equipment. As verification, a UL label shall be attached on the nameplate.

C. The AC Drive shall be designed, constructed and tested in accordance with applicable UL, CSA, IEC, NEMA, and NEC standards.

D. Every power converter shall have serial number with traceability records maintained by the manufacturer.

E. The manufacturer of this equipment shall have produced similar electronic equipment for continuous minimum period of manufacturing and development of AC drives for ten (10) years.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Base Bid Manufacturers: The following manufacturers' equipment will be acceptable, subject to the requirements set forth in this section.
1. Eaton PowerXL DG1
2. Allen Bradley 755TS
3. Danfoss FC 202 VLT Aqua
4. Toshiba AS3

B. No substitution will be permitted for base bid equipment items. Equivalent products of other manufacturers shall be approved by Engineer before the Bid. To be considered as an equivalent product, the equivalent supplier shall submit a qualification package to Engineer prior to the bid date, in accordance with the Instructions to Bidders. Engineer will determine if the proposed equivalent product is acceptable, and if acceptable Engineer will publish the equivalent product by addendum.

2.02 GENERAL DESCRIPTION

A. The AC Drive shall convert the input AC mains power to an adjustable frequency and voltage, to provide microprocessor-based control for three-phase induction motors.

B. The input power section shall utilize a full wave bridge design incorporating diode rectifiers. The diode rectifiers shall convert fixed voltage and frequency, AC line power to fixed DC voltage.

C. The output power section shall change fixed DC voltage to adjustable frequency AC voltage.

D. The adjustable frequency drive package shall include input EMI/RFI filtering.

E. The AC drive shall have a user interface (keypad) that presents information in plain English text. The user interface shall include a Local / Remote button to switch between control at the terminal strip and the user interface (keypad). This button shall also switch between network control and the user interface (keypad). The keypad shall have Run and Stop keys and a manual speed potentiometer function.

F. An AC line reactor shall be provided with each AC drive, to prevent noise from occurring in the system. Line reactors shall be installed in the location shown on the drawings.

2.03 CONSTRUCTION

A. The AC Drive power converter shall be UL Plenum rated.

B. All heat sink fans shall be accessible from the front and shall not require the removal of the AC drive power converter for fan replacement.

C. All heat sink fans shall be cycled on only when required to cool the drive to maximize the life of the fan

D. The AC Drive shall have an enclosure rating detailed below: IP21, Type 1 with optional conduit kit. The AC drive shall have complete front accessibility with easily removable assemblies.

E. A UL Type 1 conduit entrance kit is required. The kit shall attach and be ground to the bottom of the AC drive and provide conduit landing for incoming line power cables, motor lead cable, control wiring, and network cabling.

F. All circuit boards shall have conformal coating, to meet standard 3C3 for harsh environments according to levels in IEC 61721-3-3.

2.04 APPLICATION DATA

A. The AC Drive shall be sized to operate a variable torque load for centrifugal pumps, and a constant torque load for blowers.

B. The speed range shall be from a minimum speed of 1.0 Hz to a maximum speed of 72 Hz.

C. The AC Drive shall be capable of operating of operating any NEMA design B squirrel cage induction motor, regardless of manufacturer, with a horsepower and current rating within the capacity of the drive.

D. Incoming power: Three phase, 60 Hz, 480VAC, -15% to +10%.

2.05 ENVIRONMENTAL RATINGS

A. The AC Drive shall meet IEC 61800-5-1, IEC 60664-1 Annex A and NEMA ICS 1, UL, and CSA standards.

B. The AC Drive shall be designed to operate in an ambient temperature from 0 to 45 deg C (32 to 113 deg F). Enclosure shall be rated NEMA 1.

D. The storage temperature range shall be -25 to 65 °C (-13 to 149 °F).

E. The maximum relative humidity shall be 95%, non-condensing.

F. The AC Drive shall be rated to operate at altitudes less than or equal to 3300 ft (1000 m). For altitudes above 3300 ft (1000 m), the AC Drive should be de-rated per drive specifications.

G. The AC Drive shall meet the IEC 60721-3-3-3M3 operational vibration specification.

2.06 RATINGS

A. The AC Drive shall be designed to operate at the input line voltage indicated herein, or on the Drawings. Confirm with Engineer.

B. The AC Drive shall operate from an input frequency range of 60 Hz (±) 5%.

C. The AC Drive shall maintain the line side displacement power factor at no less than 0.96, regardless of speed and load.

D. The AC Drive shall have efficiency at full load and speed that exceeds 95% for drives below 15-HP and 97% for drives 15-HP and above. The efficiency shall exceed 90% at 50% speed and load.

E. The variable torque rated AC Drive over current capacity shall be not less than 110% for 1 minute.

2.07 PROTECTION

A. Upon power-up, the AC Drive shall automatically test for valid operation of memory, loss of analog reference input, loss of communication, DC-to-DC power supply, control power and pre-charge circuit.

B. The AC drive shall have a 65kAIC minimum short circuit withstand rating

C. The AC Drive shall be protected against short circuits, between output phases and to ground.

D. The AC Drive shall have under-voltage power-loss ride through performance per the SEMI F-47 voltage ride through standard and certified by a third party.

E. The AC drive shall have a programmable ride-through function, which will allow the logic to maintain control for a minimum of one-second (60 cycles) without faulting.

F. An auto restart function will provide selectable time for restart attempts after the fault has disappeared and other operating conditions permit the restart. The restart shall be performed by a series of automatic attempts separated by increasingly longer periods of time. This period of time shall be selectable.

G. Upon loss of the analog process follower reference signal, the AC Drive shall be programmable to display a fault.

H. The AC Drive shall have a solid-state UL 508C / UL 61800-5-1 listed overload protective device and meet IEC 60947.

I. The output frequency shall be software enabled to fold back when the motor is overloaded.

J. There shall be three skip frequency ranges that can be programmed to a bandwidth of ± 2.5 Hz.

2.08 ADJUSTMENTS & CONFIGURATIONS

A. The AC Drive shall be capable of storing the configuration in the keypad.

B. The acceleration and deceleration ramp times shall be adjustable from 0.05 to 999.9 seconds.

C. The memory shall retain and record run status and fault type of the past eight faults.

D. The software shall have an energy economy function that, when selected, will reduce the voltage to the motor when selected for variable torque loads. A constant volts/Hz ratio will be maintained during acceleration. The output voltage will then automatically adjust to meet the torque requirement of the load. Use of selectable volts/Hz ratio patterns does not meet specification; the function must be automatically optimized.

E. The AC Drive shall have macro configurations for pump applications, PID regulator set-up and network set-up.

F. The AC Drive shall have multiple control modes: Frequency, speed, open-loop speed, open-loop torque.

2.09 KEYPAD DISPLAY INTERFACE

A. A keypad display interface shall offer the modification of AC Drive adjustments through a touch keypad. All electrical values, configuration parameters, I/O assignments, application and activity function access, faults, local control, and adjustment storage, and diagnostics shall be accessible.

1. Keypad display shall use plain English words for parameters, status, and diagnostic messages.

2. Keypad shall include a Local/Remote pushbutton selection. Both start/ stop source and speed reference shall be independently programmable for Keypad, Remote I/O, or Field Bus.

3. Upon initial power up of the AFD, the keypad shall display a start-up guide that will sequence all the necessary parameter adjustments for general start up.

B. The AC Drive model number, torque type, software revision number, horsepower, output current, motor frequency and motor voltage shall be listed on the drive identification portion of the LCD display.

C. The keypad display shall have password protection that allows the keypad to be locked out from unauthorized personnel.

D. The keypad display shall be back-lit, multi-line, with a minimum of three lines.

E. The interface keypad shall include three independent status LEDs. The three are "Remote", "Run", and "Fault".

2.10 CONTROL CONNECTIONS

A. The control power for the digital inputs and outputs shall be 24Vdc.

B. The internal power supply shall incorporate automatic current fold-back that protects the internal power supply if incorrectly connected or shorted. The transistor logic outputs will be current limited and will not be damaged if shorted.

C. Removable terminal strips shall be used on all logic and analog signal connections in the power converter

D. Inputs: the AC drive shall provide a minimum of six programmable digital inputs.

E. Three voltage-free programmable relay output contacts will be provided. One of the contacts will indicate AC Drive fault status. The other contact shall indicate a drive run status. These relays shall be configurable for other status indicators.

F. Two programmable analog outputs shall be provided, both 4-20 mA or 0 – 10 VDC.

G. The AC drive shall have a power removal logic input. The drive shall not allow the motor to operate until this input is closed. If this input is opened while the connected motor is running, the AC drive shall stop applying power to the motor. This power removal function shall be certified by an independent agency.

H. The control section of AC drive shall be supplied separately if necessary with 24V DC, to keep the network communication always available even if the power supply is OFF.

2.11 SERIAL COMMUNICATION

A. The AC Drive shall have an integrated RJ45 port.

B. On-board communications:

1. The AC drive shall include the following communication as standard: Ethernet I/P, Modbus RTU.

2. Option cards shall be available to support additional protocols: BACnet MS/TP, Profibus DP, CANopen, Devicenet, Profinet, Smartwire DT, Lonworks.

2.12 HARMONIC MITIGATION

A. Each drive shall include a combination of integrated filters and DC link reactors to provide effective harmonic mitigation equivalent to 3% impedance without requiring additional panel space.

B. As part of the scope of supply, the AFD manufacturer will study the power distribution configuration for the wastewater treatment facility and make recommendations to Engineer for additional filters or other means to reduce THD to acceptable levels, if needed, including consideration of IEEE 519 compliance. If additional measures deemed necessary by Owner and Engineer, these will be added to the scope of the Work by change order.

2.13 AC LINE REACTOR

A. For the two blowers, each drive shall be furnished with an AC line reactor, selected by drive supplier for compatibility with the drive and the associated motor.

1. The reactor shall be three-phase, 600 V class, consisting of suitable values of inductance.
2. The reactor shall be listed per UL-508, marked per CE, and certified per CSA C22.2
3. The reactor shall be as manufactured by MTE Corporation, RL series, or equal.

B. Performance:

1. The reactor shall be rated for nominal system voltage (690 V max), fundamental system frequency (60 Hz) and current.
2. The reactor impedance shall be 3% at full rated system current.
3. The reactor shall be rated to operate in ambient temperatures from -40°C to 50°C under open air conditions, or from -40°C to 45°C under enclosed conditions.
4. The reactor shall operate at rated current with a maximum average winding temperature rise of 135°C.
5. Reactors rated less than 750 A shall be capable of continuously operating at 150% of rated current. Reactors rated more than 750 A shall be capable of continuously operating at 125% of rated current.
6. The reactor shall be capable of 30 minutes of operation at 200% of rated current, and 1 minute of operation at 300% of rated current.
7. The reactor shall function properly for switching frequencies up to 20 kHz.
8. The reactor shall function as rated at altitudes up to 1000 m.
9. The reactor shall have an insulation system to provide 3000 V RMS of dielectric strength coil-to-coil and coil-to-core.

C. Construction:

1. The reactor construction shall utilize copper wire or copper foil for the windings.
2. The reactor shall utilize a class N insulation system, maximum temperature 200°C. Sheet insulation shall be Dupont Nomex 410.
3. The reactor shall have a core to carry the magnetic flux comprised of laminations of electrical grade silicon steel.
4. The core of the reactor shall be locked in place using steel banding.
5. All terminations shall be copper alloy taps or UL-recognized terminal blocks.
6. The reactor shall be vacuum-dipped and baked with epoxy resin.
7. The reactor shall be suitable for mounting within a NEMA rated enclosure as specified herein and as noted on the Drawings. Mounting brackets shall be painted ASTM structural steel or structural aluminum.
8. Reactor shall be mounted inside a NEMA Type 1 enclosure. The reactor enclosure shall be constructed of steel with a baked enamel finish. Openings shall be provided

for sufficient convective air flow for cooling. Forced air cooling shall not be required to provide adequate cooling.

PART 3: INSTALLATION

3.01 INSPECTION

A. Verify that the location is ready to receive work and the dimensions are as indicated.

3.02 PROTECTION

A. Before and during the installation, the AC Drive equipment shall be protected from water and site contaminants.

3.03 INSTALLATION

A. Installation shall be in compliance with manufacturer's instructions, drawings and recommendations.

B. The AC Drive supplier shall provide a representative to inspect the contractor's installation, test and start-up the AC Drive(s) furnished under this specification.

C. AC line reactors shall be mounted external to the AFD's, as indicated on the Drawings.

3.04 TRAINING

A. On-site training shall be provided as part of the start-up service, with a minimum of 4 hours.

3.05 DOCUMENTATION

A. The AC Drive supplier shall supply a comprehensive bound instruction and installation manual that includes wiring diagrams, layout diagrams, and outline dimensions. This manual must be insertion in a shop manual supplied by the installing contractor.

END OF SECTION

STATE OF MISSOURI

Denny Hoskins
Secretary of State

CORPORATION DIVISION
CERTIFICATE OF GOOD STANDING

I, DENNY HOSKINS, Secretary of State of the State of Missouri, do hereby certify that the records in my office and in my care and custody reveal that

THE HAVENS CONSTRUCTION CO., INC.
00153833

was created under the laws of this State on the 4th day of April, 1972, and is in good standing, having fully complied with all requirements of this office.

IN TESTIMONY WHEREOF, I hereunto set my hand and cause to be affixed the GREAT SEAL of the State of Missouri. Done at the City of Jefferson, this 11th day of April, 2025.

Denny Hoskins
Secretary of State

Certification Number: CERT-04112025-0040

License # 24-1375-01 **Expires: May 31, 2026**

Parkville
Missouri

BUSINESS LICENSE

The Havens Construction Co, Inc.

9400 Liberty Drive
Liberty, MO 64068

Operated By Eric Havens

The City of Parkville certifies this business has met all requirements under Parkville Municipal Code Chapter 605 to operate in Parkville.

SEAL OF THE CITY OF PARKVILLE
PLATTE COUNTY MISSOURI

Dean Katerndahl
Mayor Dean Katerndahl

Karla Shewell
Deputy City Clerk Karla Shewell

Date Issued: May 6, 2025

EXHIBIT A

GENERAL CONDITIONS
OF THE CONTRACT FOR CONSTRUCTION

GC-1. DEFINITIONS

1. "Allowance" shall mean an item of the Work which has not been fully detailed as of the date of this Contract, and for which the City has instructed the Contractor to include a budgeted amount of money in the Contract Price, subject to reconciliation at a later time.

2. The "Bonds" shall mean the bid, performance and payment bonds, together with such other instruments of security as may be required by the Contract Documents. The forms on which Bonds must be furnished are attached to the Contract as **Exhibits B-1 and B-2.**

3. "Change Order" is a written order issued after the Contract is executed by which the City, the City Public Works Director and the Contractor agree to modifications to the Work which may result in additions or deletions to the Contract Price or Contract Time. Change Orders must be signed by the City and the Contractor to be binding.

4. "City" shall mean the City of Parkville, Missouri.

5. "City Public Works Director" shall mean the individual designated in the Contract Documents who has been employed by the City for the performance of professional services in connection with the Project. Where listed in these Contract Documents, “Engineer” is the engineer of record for the project, employed by the City for the performance of professional services in connection with the Project.

6. The "Contract Documents" consist of (1) the Contract between the City and the Contractor (sometimes referred to herein as the "Contract"); (2) these General Conditions; (3) the Special Conditions (if any); (4) the plans; (5) the specifications; (6) all addenda issued prior to, and all modifications issued after, execution of the Contract (drawings and data which may be furnished by the Contractor and approved by the City, additional drawings which may by furnished by the Public Works Director which the City Public Works Director deems necessary to make clear the intent of the Contract Documents (and, in particular, the specifications), and the bidding documents. It is understood that the Work shall be carried out and the Project shall be constructed fully in accordance with the Contract Documents.

7. "Contract Price" shall be the amount identified in the Contract between City and Contractor as the total amount due to the Contractor for total completion of the Work as per the Contract Documents.

8. The "Contract Time" shall be the number of calendar days for completion of the Work, or a specified date by which the Work shall be completed, as stated in the Contract.

9. "Defective Work" shall mean Work which is unsatisfactory, faulty or deficient or not in conformity with the Contract Documents. It shall also include Work damaged prior to approval of final payment, unless responsibility for such damage shall have been expressly assumed by the City at Substantial Completion.

10. "Effective Date of the Contract" shall mean the date indicated in the Contract on which it becomes effective, but, if no such date is indicated, it shall mean the date on which the Contract is signed and delivered by the City to the Contractor.

11. "Final Acceptance" shall mean the date when the City Public Works Director accepts in writing that the construction of the Project is complete in accordance with the Contract Documents such that the entire Project can be utilized for the purposes for which it is intended; that all other obligations of the Contractor have been satisfied; and that the Contractor is entitled to final payment.

12. "Inspector" shall mean the person or firm authorized in writing by the City Public Works Director or the City to perform inspections of the Work as provided in the Contract Documents.

13. "Modification" shall mean a written amendment to the Contract signed by both parties changing its terms, including but not limited to Change Orders, written interpretations issued by the City Public Works Director, and written orders for minor changes in the Work issued by the City Public Works Director.

14. "Notice to Proceed" shall mean the written notice issued by the City to the Contractor fixing the date on which the Contract Time is to commence and on which the Contractor shall start to perform its obligations under the Contract Documents.

15. "Partial Occupancy" shall mean placing a portion of the Work to be provided under the Contract Documents to the use intended by the City.

16. "Plans" shall mean and include all drawings which may have been or may be furnished by the City to Contractor for use in performing the Work. The Plans, including all addenda thereto, are more specifically identified on **Exhibit C.**

17. "Prevailing Wages" shall mean those wages included in the Prevailing Wage Order issued by the State of Missouri that is included as an Exhibit **J-1** to the Contract.

18. "Shop Drawings" shall mean all drawings, diagrams, illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information and data which are submitted by the Contractor, a Subcontractor, manufacturer, fabricator, supplier or distributor to illustrate some portion of the Work as required by the Contract Documents.

19. "Specifications" shall mean those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction methods, standards and workmanship as applied to the Work and certain administrative details applicable thereto. The Specifications, including all addenda thereto, are more specifically identified on **Exhibit D.**

20. "Subcontractor" shall mean an individual, firm or corporation having a direct contract with the Contractor or with another subcontractor for the performance of a part of the Work.

21. "Submittals" shall mean any Shop Drawing, sample or other physical or electronic information concerning a material, equipment, method of installation or other descriptive data required by the Contract Documents to be submitted by the Contractor.

22. “Substantial Completion” shall mean the state of the Project when the Work, or a designated portion thereof, is sufficiently complete in accordance with the Contract Documents, so that the City can occupy or utilize the Work or the designated portion thereof for its intended purpose.

23. "Underground Facilities" shall mean all pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish services or materials including, but not limited to, electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

24. The "Work" shall mean everything required of the Contractor by the Contract Documents to complete the construction, and includes all construction, labor, materials, tools, equipment and transportation and other items reasonably inferable from the Contract Documents for a fully functional end product.

25. "Work Directive" shall mean a written order from the City Public Works Director to the Contractor to proceed with Work in the manner specified, despite disagreement between the City and the Contractor as to whether the contents of

the directive constitute a change to the Contract Documents, or the appropriate adjustment, if any, in the Contract Time or Contract Price as a result.

GC-2. SCOPE, NATURE AND INTENT OF THE CONTRACT DOCUMENTS

1. The Contract Documents as enumerated herein form the Contract for construction. The Contract Documents are complementary, but not necessarily duplicate each other, and what is called for by any one shall be as binding as if called for by all. The intention of the Contract Documents is to include all construction, labor, materials, tools, equipment and transportation necessary for the workmanlike construction of the Project in accordance with the Contract Documents.

2. Dimensions and elevations shown on the Plans shall be accurately followed, even though they may differ from scaled measurements. All Work performed under this Contract shall be done to the lines, grades, and elevations shown on the Plans. No work shown on the Plans, the dimensions of which are not indicated, shall be executed until the required dimensions have been obtained from the City Public Works Director. Contractor shall be responsible for verification of all locations, dimensions and elevations in the field (including, but not limited to verification of location of Underground Facilities and utilities) and shall verify all field dimensions shown on the Contract Documents.

3. The Contractor shall keep the City Public Works Director informed a reasonable time in advance of the times and places at which he wishes to do Work, in order that lines and grades may be furnished and necessary measurements for record and payment may be made with the minimum of inconvenience and delay to the City Public Works Director and the Contractor.

4. Any Work done without being properly located and established by base lines, offset stakes, bench marks, or other basic reference points may be ordered removed and replaced at the Contractor's cost and expense. Contractor shall notify all affected utilities of the Work and coordinate with the utilities to avoid interruption of utility service and damage to utility lines and property. This notice requirement shall also apply as to the owner/operator of any affected Underground Facility. Any project delay, damages or increase in construction costs due to utility relocation delays shall be the Contractor's responsibility.

5. Contractor, together with its Subcontractors, shall carefully examine the Contract Documents for any interferences with the Work and clearances that may be required. Contractor shall be responsible for the proper fitting of materials and equipment without substantial alterations. Contractor shall be responsible for eliminating interferences without additional cost to City. If departures from the Plans and Specifications, or other Contract Documents, are deemed necessary by Contractor, details of such departures and reasons therefor shall be submitted

to City Public Works Director, with drawings (if City Public Works Director determines that drawings are necessary), for approval as soon as practical. No such departure shall be made except at the peril of the Contractor without the prior written approval of the City Public Works Director.

6. Whenever any word or expression defined herein, or pronoun used in its stead, occurs in these Contract Documents; it shall have and is mutually understood to have the meaning herein given. Work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

7. Whenever in these Contract Documents the words "as ordered," "as directed," "as required", "as permitted"," as allowed," or words or phrases of like import are used, it is understood that the order, direction, requirement, permission or allowance of the City and/or the City Public Works Director is intended.

8. Whenever any statement is made in the Contract Documents containing the expression "it is understood and agreed," or an expression of like import, such expression means the mutual understanding and agreement of the parties hereto.

9. The words "approved," "reasonable," "suitable," "acceptable," "properly," "satisfactory," or words of like effect in import, unless otherwise particularly specified herein, shall mean to the reasonable satisfaction of the City.

10. Titles and subheadings as used herein and other Contract Documents are provided only as a matter of convenience and shall have no legal bearing on the interpretation of any provision of the Contract Documents.

11. Discrepancies or conflicts among the Contract Documents shall be resolved in the following order of priority:

    a. Modifications to the Contract
    b. The Contract
    c. Special Conditions
    d. General Conditions
    e. Plans
    f. Specifications

12. This Contract, together with the other Contract Documents, constitutes the entire agreement between the parties and supersedes all prior agreements, whether oral or written, covering the same subject matter.

13. The Contract may not be amended or modified except by a modification as hereinabove defined.

14. It is specifically agreed between the parties executing this Contract that the Contract Documents are not intended to create any third party beneficiary relationship nor authorize anyone not a party to this Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of this Contract. The duties, obligations and responsibilities of the parties to this Contract with respect to third parties shall remain as imposed by law.

GC-3. DEFECTS IN CONTRACT DOCUMENTS

If Contractor has reasonable cause such that it should, in the exercise of ordinary care of someone in its position, know that any errors, omissions, ambiguity, discrepancies or inconsistencies (hereinafter "defects") appear in the Contract Documents, including but not limited to, the plans, specifications and other documents or the Work, Contractor shall notify the City Public Works Director in writing of such defects prior to taking any action in reliance on any of them. Contractor shall abide by the City Public Works Director's clarification without any increase in the cost of the Work. Subcontractors and remote tier Subcontractors shall, likewise, notify the Contractor in writing of any defects therein, and it shall be the obligation of the Contractor to remedy same as if Contractor had discovered such defects itself. The Contractor will not be permitted to take advantage of any such defect.

GC-4. COPIES OF THE CONTRACT

1. Unless otherwise provided in the Contract Documents, City will furnish to Contractor a maximum of two (2) copies of the Contract Documents, free of charge, necessary for the execution of the Work.

2. Contract Documents are the property of the City, and none of the Contract Documents are to be used on other work by Contractor. At City's request, all Contract Documents shall be returned to the City with the exception of one record set for the Contractor. All models and calculations are the property of City.

3. Contractor shall keep, and make available to City, at the Project site, one copy of all Contract Documents for the Work at the Project site, in good order and legibly marked to reflect actual construction, in hard-copy or electronic form as specified in the Contract Documents. Contractor shall also maintain at the site all approved samples and a print of all approved Shop Drawings.

4. Such Documents, samples and Shop Drawings and record drawings reflecting the work as-built shall be turned over to the City at the completion of the Work if requested by the City.

GC-5. SCOPE OF WORK AND GENERAL ADMINISTRATION OF THE CONTRACT

1. Unless otherwise stipulated, Contractor shall provide and pay for all Work (including labor, transportation, tools, equipment, machinery, plant and appliances) necessary to produce the results called for by the Contract Documents.

2. The Contractor shall be solely responsible for and have complete control and charge of construction means, methods, techniques, sequences and procedures, and for safety precautions and programs in connection with the Work. Neither the City nor the City Public Works Director shall be responsible for nor have control or charge over the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.

3. In executing the Contract, the Contractor expressly covenants and agrees that, in the undertaking to complete the Work within the time therein fixed, it has taken into consideration and made allowances for all hindrances and delays incident to such Work, whether growing out of delays in securing materials, workers, typical weather conditions or otherwise. No charge shall be made by the Contractor for hindrances or delays from any cause during the progress of the Work, or any portion thereof, included in this Contract, except as provided elsewhere herein.

4. The Contractor shall comply with all City, County, State and Federal laws, ordinances or regulations which would in any way control the actions or operations of those engaged in the work under this Contract or which would affect the materials supplied to or by them. It shall at all times observe and comply with all ordinances, laws and regulations and shall protect and indemnify and defend the City and the City's officers and agents against any claims or liability arising from or based on any violation of same. Because the Project may involve federal funds, Contractor shall execute the affidavit attached to the Contract as **Exhibit E,** confirming its compliance with the prohibition against federal lobbying and conflicts of interest.

4. It is understood that all royalties and fees for and in connection with patents, or patent infringement, claims for materials, articles, apparatus, devices or equipment used in or furnished for the Work shall be included in the Contract Price. Final payment to the Contractor by the City shall not be made while any suit or claim involving infringement or alleged infringement of any patent remains unsettled.

5. The Contractor shall, in addition to the schedule required by these General Conditions, give to the City Public Works Director full information in advance as to its plans for carrying on any part of the Work. If at any time before the beginning or during the progress of the Work, any part of the Contractor's plant or equipment or any of its methods of executing the Work, appear to the City Public

Works Director to be unsafe, inefficient or inadequate to ensure the required quality or rate of progress of the Work, the City Public Works Director may order the Contractor to increase or improve its facilities or methods, and the Contractor shall promptly comply with such orders; but neither compliance with such orders nor failure of the City Public Works Director to issue such orders shall relieve the Contractor from its obligation to secure the degree of safety, the quality of Work and the rate of progress required by the Contract.

6. The approval by the City Public Works Director of any plan, schedule or method of Work proposed by the Contractor shall not relieve the Contractor of any responsibility therefor, and such approval shall not be considered as an assumption by the City, or any officer, agent or employee thereof, of any risk or liability, and the Contractor shall have no claim under this Contract on account the of failure or inefficiency of any plan or method so approved. Such approval shall be considered and shall mean that the City Public Works Director has no objection to the Contractor's use or adoption, at the Contractor's own risk and responsibility, of the plan or method so proposed by the Contractor.

7. It is the intent of the City to supply the Contractor with a Sales and Use Tax Exemption certificate for use in purchasing materials and supplies on the Project. This documentation, a copy of which form is attached as Exhibit "F," must be signed and returned to the City upon completion of the Protect.

GC-6 ALLOWANCES

1. The Contractor shall include in the Contract Price all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the City may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection. No demand for expenses or overhead and fee for Allowance items other than those included in the Contract Price shall be allowed.

2. Unless otherwise provided in the Contract Documents,

   (a) allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

   (b) Contractor’s costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

   (c) whenever costs are more than or less than allowances, the Contract Price shall be adjusted accordingly by Change Order. The amount of the Change

Order shall reflect (1) the difference between actual costs and the allowances and (2) changes in Contractor's costs.

3. Materials and equipment under an allowance shall be selected by the City with reasonable promptness.

GC-7. AUTHORITY AND DUTY OF THE CITY PUBLIC WORKS DIRECTOR

The City Public Works Director is authorized to observe and inspect all Work included herein. Anything in the Contract Documents to the contrary notwithstanding, the City Public Works Director shall in all cases

(a) determine the amount and quantities of the several kinds of Work which are to be paid for under this Contract;

(b) rule on all questions relating to the plans and specifications for the Project;

(c) issue written clarifications or interpretations of the requirements of the Contract Documents (in the form of drawings or otherwise) which City Public Works Director may determine are necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents;

The City Public Works Director's decisions and findings shall be a condition precedent to the right of the parties to pursue disputes as otherwise provided herein. It is the intent of the Contract that there shall be no delay in the execution of the Work, and the decisions or directions of the City Public Works Director as rendered shall be promptly carried out.

GC-8. SUPERINTENDENCE AND SUPERVISION

1. Contractor shall provide all necessary supervision to the Work using its best skill, care, judgment and attention and shall keep on the Work, during its progress, a competent superintendent, and any necessary assistants, all satisfactory to City Public Works Director. The superintendent shall not be changed except with the consent of the City Public Works Director unless the superintendent proves to be unsatisfactory to the Contractor and/or ceases to be in its employ; provided however, that the City Public Works Director retains the right to require that the Contractor replace the superintendent at any time, such right not to be arbitrarily exercised.

2. Contractor shall furnish the City Public Works Director with the superintendent's cellphone and pager numbers and email address, and assure that the

superintendent is readily available to respond to calls and emails during business hours and, in emergency situations, outside of business hours.

3. Unless otherwise authorized in writing by the City Public Works Director , no Work shall be performed except when the superintendent is on-site. Contractor's superintendent shall be fluent in all languages necessary to communicate with the City, the City Public Works Director, Contractor's employees and Contractor's Subcontractors, for efficient administration, communication and safety.

4. The superintendent shall be fully authorized to act for the Contractor and receive whatever orders as may be given for the proper prosecution of the Work or notices in connection therewith. The superintendent must attend all meetings to represent Contractor and shall be informed sufficiently to adequately communicate on behalf of Contractor.

5. Use of Subcontractors on portions of the Work shall not relieve the Contractor of its obligation to have a competent superintendent directly employed by the Contractor on the Work at all times.

GC-9. CONTRACTOR'S EMPLOYEES

1. Contractor shall only engage employees who are competent to perform the Work assigned, and if the City Public Works Director so directs, Contractor shall promptly remove any employee determined by the City Public Works Director to be unacceptable. Contractor shall perform appropriate screening of candidates to assure their capability and suitability for the Work.

2. Contractor shall at all times enforce strict discipline and good order among its employees and shall not employ on the Work any unfit person or anyone not skilled in the Work assigned to him.

3. Contractor shall be responsible for compliance with all state and federal laws, if applicable, pertaining to wages, hours and benefits for workers employed to carry out the Work.

4. Contractor shall execute, and shall require all Subcontractors to execute, the affidavit which is attached to the Contract as **Exhibit G** relating to equal employment opportunity and non-discrimination.

5. **Missouri Safety Training Requirements** Contractor and all subcontractors shall provide a 10-hour OSHA construction safety program or similar program approved by the Missouri Department of Labor and Industrial Relations, to be completed on site by all employees within sixty (60) days of beginning work on the Project, pursuant to Section 292.675, Revised Statutes of Missouri. Contractor, or any subcontractors in violation of this requirement, will forfeit to the

City the sum of $2,500 plus $100 per day for each employee without training. The City may withhold penalties from the payment due to Contractor and its subcontractors. To assure compliance with this requirement, Contractor and all its subcontractors shall be required to execute an affidavit on the form attached hereto as **Exhibit H**.

6. **Missouri Immigration Compliance Requirements.** Contractor shall be responsible for ensuring compliance with the Immigration Reform Act of 1986 and all laws regulating immigration and the verification of eligibility for employment of persons. Contractor shall verify that its employees are eligible for employment and keep records of such verification for the periods prescribed by the Immigration Reform Act of 1986. Effective January 1, 2009, all contractors and subcontractors with contract amounts in excess of Five Thousand Dollars ($5,000) on public projects in Missouri are required to verify the employment eligibility status of employees through the E-verify federal program administered by the Department of Homeland Security, U.S. Citizenship and Immigration Services. Contractor shall indemnify, defend and hold harmless the City against any expense incurred including imposition of fines which results from violation of such laws. Contractor affirmatively states that it is not knowingly in violation of R. S. Mo. 285.530.1 and shall not henceforth be in such violation. Contractor further agrees to execute the sworn affidavit, attached hereto as **Exhibit I,** under the penalty of perjury attesting to the fact that Contractor's employees are lawfully present in the United States. Contractor shall obtain a similarly executed affidavit from all subcontractors and sub-subcontractors with contract amounts of $5,000 or more. Failure of Contractor to comply with this requirement shall be grounds for termination for default.

7. Prevailing Wage Requirements

(a) All of the Work performed under this Contract is subject to the requirements of Section 290.210-.340, Revised Statutes of Missouri, requiring payment of not less than the Prevailing Wages for Platte County, Missouri, and of Title 8, Division 30, Chapter 3, of the Code of State Regulations (the "Prevailing Wage Requirements"). Attached to this Contract as **Exhibit J-1** is the Prevailing Wage Order applicable to this Contract. Contractor agrees to comply with all Prevailing Wage Requirements with regard to Prevailing Wages, including but not limited to, maintaining and submitting full and accurate payroll records as required by Section 290.290.1, RSMo. and 8 CSR 3-30.010 et seq.

(b) Contractor shall create, maintain and submit, and shall require each of its Subcontractors to create, maintain and submit on a weekly basis, a Certified Payroll Report form, the format to be of the Contractor’s own choosing which contains, at minimum, the information described on **Exhibit J-2,** indicating each worker’s name, address, social security number, occupational title, hours worked, and wages paid of every worker employed in connection with

this Contract. Each payroll must be accompanied by a Certification Form substantially similar to **Exhibit J-3** indicating the accuracy and authenticity of such records, and signed by the Contractor's or Subcontractor's representative, attesting to the completeness and accuracy of the data on the Certified Payrolls. Contractor shall also post notices and identify its vehicles as provided by the Prevailing Wage Requirements.

(c) Contractor further agrees to indemnify, defend and hold harmless the City from and against any claim, liability, assessment, fine, penalty or other cost, including attorney's fees, which may be asserted against or incurred by the City as a result of an allegation that Contractor has not complied with these Prevailing Wage Requirements, whether such claim is asserted by a worker or by the Division of Labor Standards or any other entity. This indemnification shall survive termination of this Contract

8. No illegal drug, alcohol, or firearm usage will be tolerated at the Site. All persons admitted to work on the Site will dress appropriately and avoid foul language. Music shall not be played at volume levels that would be objectionable to third-parties. Any worker found by the City to be violating these conduct requirements will be removed immediately.

GC-10. WORK STOPPAGES

Contractor warrants to the City that there shall be no work stoppages or interruptions arising out of labor disputes, including, but not limited to, those due to the presence of both union and non-union workforces at the job site. The City may assign to Contractor a separate gate (e.g., union or non-union gate, as applicable). The gate assigned shall be used by Contractor and all Contractor's employees, Subcontractors, visitors, suppliers, vendors and materials deliveries, as applicable. Contractor agrees that Contractor's employees and its Subcontractor's employees will continue to work notwithstanding any dispute that may involve any other contractor or employer at the job site. Anything in this Contract to the contrary notwithstanding, in the event the Contractor fails to continue performance of the Work included herein without interruption or delay, because of such picket or other form of labor dispute, the City may terminate the services of said Contractor after giving 48 hours written notice to Contractor and its sureties of its intent to do so, or the City may invoke any of the rights set forth elsewhere in the Contract Documents.

GC-11. BEGINNING, PROGRESS AND TIME OF COMPLETION OF WORK

1. The Contractor shall, within the time set forth in the Notice to Proceed, or if no time is stated, within ten (10) days after being instructed to do so in the written "Notice to Proceed" from the City, commence the Work to be done under this Contract; and the rate of progress shall be such that the Work shall have been completed in accordance with the terms of the Contract on or before the

termination of the construction period contractually specified, subject to any extensions of such time made as hereinafter provided. Without the prior express written consent of the City, Contractor shall do no Work until the date set forth in the Notice to Proceed.

2. The Contractor, promptly after being awarded the Contract, shall prepare and submit for the City Public Works Director's information before submission of Contractor's first request for payment, a Contractor's construction schedule for the Work. If the City Public Works Director so requests, the Contractor shall submit the schedule in an electronic format such as Primavera or other commonly utilized software program. The schedule shall not exceed time limits current under the Contract Documents; shall be revised at appropriate intervals as required by the conditions of the Work and Project; shall be related to the entire Project to the extent required by the Contract Documents; shall be coordinated with applicable Subcontractors; and shall provide for expeditious and practicable execution of the Work. Schedules of subcontractors will also be available for inspection. The Work will be performed in accordance with the most current Schedule.

3. The Contractor shall be responsible for revisions to schedules of and coordinating same with its Subcontractors, and will resolve conflicts among their schedules.

4. Night Work may be established by the Contractor, as a regular procedure, with the written permission of the City Public Works Director; such permission, however, may be revoked at any time by the City Public Works Director. Otherwise, no Work shall be done between the hours of 6:00 p.m. and 7:00 a.m., nor on weekends or City holidays, without the written approval or permission of the City Public Works Director 48 hours in advance in each case, except such Work as may be necessary for the proper care, maintenance and protection of Work already done or of equipment, or in the case of an emergency jeopardizing persons or property.

5. **All limits stated in the Contract Documents are of the essence of the Contract.**

GC-12. LIQUIDATED DAMAGES

1. It is mutually understood and agreed by and between the parties to this Contract that in the event that the Contractor shall fail in the performance of the Work specified and required to be performed within the period of time stipulated therefor in the Contract, the City will be damaged in an amount which is difficult to ascertain with certainty at this time. Therefore, the parties agree, as a representation and fair allocation of risk and not as a penalty, that after due allowance for any extension or extensions of time which may be granted under

the Contract, if the Contractor is responsible for delay in Substantial Completion of the Work, the Contractor shall pay to City, or the City may withhold from the Contractor, as stipulated liquidated damages and not as a penalty, the sum stated in the Contract for each 24-hour calendar day, including weekends and holiday that Substantial Completion is not attained.

2. In the case of joint responsibility for any delay in the final completion of the work covered by this Contract, where two or more separate contracts are in force at the same time and cover work on the same Project and at the same site, the total amount of liquidated damages assessed against all contractors under such contracts, for any one day of delay in the final completion of the Work will not be greater than the approximate total of the liquidated damages sustained by the City by reason of such delay in completion of the Work, and the amount assessed against any one contractor for such one day of delay will be based upon the individual responsibility of such contractor for the aforesaid delay as determined by, and in the judgment of, the City.

3. In the event that the City elects to accept part of the Work as Substantially Complete prior to Substantial Completion of all of the Work, the parties shall equitably adjust the daily rate of liquidated damages. In the event that the parties cannot agree on such equitable adjustment, the Contractor has the right to pursue remedies under the disputes resolution procedures stated elsewhere in these General Conditions.

GC-13. INSPECTION OF WORK

1. The City, the City Public Works Director, and any third-party inspectors ("Inspector") shall at all times have access to the Work for the observation and inspection thereof wherever it is in preparation or progress, and Contractor shall provide proper facilities for such inspection. The Contractor shall comply with the directions and instructions of the Inspector. The Contractor shall furnish all reasonable aid and assistance required for any such inspection.

2. For all Work which the Contract Documents provide will be inspected, tested, or approved, the Contractor shall give the City Public Works Director timely notice of its readiness for such inspection, testing or approval and the date fixed for such inspection, testing or approval if the inspection, testing or approval is by an authority other than City Public Works Director.

3. All specified and required tests for approval of material shall be made at the expense of the Contractor by a properly equipped laboratory of established reputation, whose work and testing facilities shall be approved by the City Public Works Director. Approval of materials based on acceptable tests will apply only while such materials as furnished equal or exceed the tested samples or test specimens in quality and minimum requirements. Any change in origin, method

of preparation or manufacture of such materials will require new test and approval thereof. Reports of all tests shall be furnished to the City Public Works Director in as many certified counterparts as may be required by the City Public Works Director.

4. If Work is found not to be in accordance with the Contract Documents, Contractor shall at his own expense bear the cost of uncovering such Work, the cost of removing same, as well as the cost of undoing and redoing the Work and other Work damaged by such nonconforming Work.

5. The City reserves the right to require inspection of any and all Work before it is covered up; and, accordingly, Contractor must notify the City Public Works Director before covering any Work. If any Work should be covered up which is required to be inspected, tested or approved and which, by virtue of being covered up, is not susceptible to being properly inspected, tested or approved, Contractor shall, if requested by Inspector, uncover such Work and bear the thereof, and of redoing same after inspection, testing or approval and redoing such other Work damaged as a result of having to uncover and redo same.

6. The Inspector shall be free at all times to perform its duties, including the observation and inspection of the Work, and intimidation or attempted intimidation of any one of them by the Contractor or by any of its employees shall be sufficient reason, if the City so desires, to terminate the Contract.

7. Any inspection, by whomsoever conducted, shall not relieve the Contractor from any obligation to perform the Work strictly in accordance with the plans and specifications, and any of the Work not so constructed shall be removed and made good by the Contractor at its own expense.

GC-14. CONCEALED CONDITIONS

1. The City makes no warranty, express or implied, that the various and sundry materials and information, including, by way of example and without limitation, soil tests, bore reports, utility locations and other such data and as-builts in the case of renovation of or addition to existing facilities, reflect actual conditions. The Contractor represents and warrants that it has examined the site and conducted such tests and examinations as it deems necessary and assumes all responsibility for the foregoing. That being the case, should the Contractor encounter (1) concealed conditions of a nature which of an unusual nature, differing materially from those ordinarily encountered or generally recognized as inherent in Work of the character provided for in this Contract; or (2) conditions which are at variance with the conditions indicated by the Contract Documents, or should unknown physical conditions below the surface of the ground, or should concealed or unknown conditions in an existing structure, be encountered, the Contract Time and/or Contract Price may be equitably adjusted

by the City upon recommendation by the City Public Works Director. No such adjustment will be made unless the Contractor brings the matter to the City Public Works Director's attention within 48 hours of first encountering the condition, and unless the condition actually interfered with the critical path of Contractor's work.

2. Discovered Artifacts**.** If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the City Public Works Director. Upon receipt of such notice, the City Public Works Director shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the City Public Works Director but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in this Contract.

GC-15. SUBMITTALS.

1. The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the City Public Works Director's approval. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the City Public Works Director time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

2. Contractor shall submit, with such promptness as to cause no delay in his own work or in that of any Subcontractor or other contractor, three (3) copies of all shop, fabrication, assembly, foundation and other drawings and schedules, samples, certifications or other documentation or thing required by the specifications, including, but not limited: (1) drawings of equipment and devices offered by the Contractor for approval of the City Public Works Director in sufficient detail to adequately show the construction and operation thereof; (2) drawings showing essential details of any change in design of construction proposed, for consideration by the City Public Works Director, by the contractor in lieu of the design or arrangement required by the Contract Documents, or any item of extra work thereunder; (3) all required wiring and piping layouts; (4) samples of products representative of color, finish or other characteristics as stated in the specifications; and (5) structural and reinforcing fabrication drawings. At the option of the Director of Public Works, such information may be submitted electronically.

3. The City Public Works Director shall review, respond to, accept or reject such submittals within a reasonable time after receipt thereof. Contractor shall make such revisions as deemed necessary. Failure of the City Public Works Director to reject a submittal shall not operate as acceptance, or relieve Contractor of responsibility for compliance with the Contract Documents.

4. Once the Submittal is in a form acceptable to the City Public Works Director, the Contractor shall furnish a total of not less than three (3) copies of the final Submittal, and more when required, of each drawing as finally approved, such number to include any copies of preliminary or revised drawings which are approved as submitted. After due review by the City Public Works Director, all such drawings shall become a part of the Contract Documents, and the Work or equipment shown by such drawings shall be in conformity with said drawings unless otherwise required by the City Public Works Director.

5. No Work shall be performed in connection with the fabrication or manufacture of material or equipment shown by any drawing thereof, nor shall any accessory, appurtenance or device not fabricated or manufactured by the Contractor or its Subcontractors be purchased, until the drawing or drawings therefor have been approved as stipulated, except at the Contractor's own risk and responsibility. Review for compliance by the City or the City Public Works Director of drawings or other items submitted by Contractor shall not relieve Contractor from responsibility for errors of any sort in Shop Drawings or other submittals.

GC-16. WARRANTY

1. Contractor warrants to the City that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents permit or require. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operations, or normal wear and tear and normal usage. If required by the City Public Works Director, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

2. Should any special or specific warranties be required by any part of the Contract Documents, they shall be in addition to and not in place of the warranty of this paragraph. All manufacturer's warranties shall be assignable, and assigned to, the City.

3. Contractor shall require a similar warranty from each Subcontractor for all Work performed by such Subcontractor, which shall run to the benefit of the City. All such warranties shall be in writing and shall be promptly delivered to City. The furnishing of such warranties by Subcontractors and materialmen, however, shall not relieve Contractor of his obligations under this section. At the City's sole option, Contractor shall assign to City any rights Contractor may have against any Subcontractor and/or supplier for defective Work, materials or equipment.

4. Any provision of the Contract Documents to the contrary notwithstanding, all warranties provided for in the Contract Documents shall begin to run from the date of final payment by City to Contractor.

GC-17. APPROVAL OF EQUALS; REQUESTS FOR SUBSTITUTIONS

1. Approved equals, where permitted by the Contract Documents or otherwise made feasible by market conditions, shall be considered for approval as follows:

   (a) Contractor shall notify City in writing if it wishes to use an alternative product, and if such was specifically named in the Contract Documents.

   (b) If Contractor desires to use a product not specifically named in the Contract Documents, it must first inform City and receive written approval for such substitutions. City has no obligation to approve such request and is not responsible for any delay or cost incurred or caused by Contractor's making such request.

2. After this Contract has become effective, the City Public Works Director will consider a request for a substitution of products in place of those specified upon advance written request by Contractor. By making a request for a substitution, and unless otherwise specifically agreed to in writing by the City, Contractor represents that:

   (a) Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;

   (b) Contractor will endeavor to provide at least as extensive a warranty for the substituted product as for the originally specified product. If it cannot obtain as broad a warranty for the product offered, the lesser warranty will be specifically disclosed in the request for substitution; and

   (c) Contractor will coordinate the installation of the accepted substitute, making such adjustments as may be required for the Work to be complete in all respects.

3. The Contractor shall be solely responsible for design risks, delays and other claims arising out of any approved alternates or substitutions.

4. All specified and required tests for approval of material proposed as "equal" or as a substitution shall be made at the expense of the Contractor by a properly equipped laboratory of established reputation, whose work and testing facilities shall be approved by the City Public Works Director. Approval of materials based on acceptable tests will apply only while such materials as furnished equal or exceed the tested samples or test specimens in quality and minimum requirements. Any change in origin, method of preparation or manufacture of such materials will require new test and approval thereof. Reports of all tests shall be furnished to the City Public Works Director in as many certified counterparts as may be required by the City Public Works Director.

GC-18. PERMITS AND NOTICES

1. All permits and licenses shall be secured and paid for by Contractor, unless otherwise specified.

2. Contractor shall give all notices required by and all Work shall be done in accordance with all applicable federal and state laws, City and County laws and ordinances, building codes and rules and regulations bearing on the conduct of the Work.

GC-19. USE OF PREMISES

1. Contractor shall confine its operations to limits indicated by law, ordinances, rules, regulations, and permits of City or directions of City Public Works Director and shall not unreasonably encumber the premises and/or site.

2. Contractor shall not load or permit any part of any structure, street or highways to be loaded with a weight that exceeds load limits which that will endanger their safety.

3. Contractor shall comply with federal, state and local laws and ordinances, as well as any specific instructions regarding signs, advertisements, fires and smoking from City Public Works Director.

4. If provided in the Contract Documents, a laydown area or staging area shall be chosen by City Public Works Director. Contractor will furnish its own weather protection for materials, equipment and work in progress if required.

5. No City equipment will be taken out of service or put into service without approval of City.

GC-20. PROTECTION OF WORK AND PROPERTY

1. Contractor shall maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of life, the Work, supplies, materials and equipment on the Project site not yet incorporated in the Work, City's property and adjacent property. Contractor shall be solely liable for all damages to the City or the property of the City, to employees of the City or other contractors, to neighboring premises, or to any private or personal property, due to improper, illegal or negligent conduct of the Contractor, its Subcontractors, employees or agents in and about said Work, or in the execution of the Work. The Contractor shall be liable to the City for any damages, whether property damage or personal injury, occasioned by Contractor's use of any scaffolding, shoring, apparatus, ways, works, machinery, plant or any other process or thing that is required for the Work.

2. The Contractor shall give reasonable notice to the affected owners and utilities when any such property is liable to injury or damage through the performance of the Work and shall make all necessary arrangements with such owner or owners relative to the removal and replacement or protection of such property and/or utilities.

3. The Contractor shall satisfactorily shore, support and protect any and all structures and all excavations, pipes, sewers, drains, conduits and other Underground Facilities and shall be responsible for any damage resulting thereto. The Contractor shall not be entitled to any additional Contract Time on account of any postponement, interference or delay caused by any such structures and facilities being on the line of the Work, whether they are shown on the plans or not.

4. During unfavorable weather, or other unfavorable conditions for construction operations, the Contractor shall pursue only such portions of the Work as will not be damaged thereby. No portions of the Work, the satisfactory quality or efficiency of which will be affected by any unfavorable conditions, shall be constructed while these conditions exist, unless, by special means or precautions approved by the City Public Works Director, the Contractor shall be able to perform the Work in a proper and satisfactory manner.

5. The Contractor shall assume full responsibility for the Work and shall bear any loss and repair any damage at his/her own cost occasioned by neglect, accident, vandalism or natural cause, whether foreseen or unforeseen, during the progress of the Work and until the Work is completed and accepted by the City.

6. Contractor shall comply with any and all instructions from the City Public Works Director regarding prevention of accidents, fires or for the elimination of any unsafe practice and shall observe all the applicable recommendations of the

National Fire Protection Association Standard No. 241 (or other, later revision) "Standards For Safeguarding Building Construction and Demolition Operations".

7. Contractor shall post danger signs warning against the hazards created by such features of construction as protruding nails, hod hoists, well holes, elevator hatchways, scaffolding, window openings, stairways, falling materials, open trenches, other excavations, obstructions and similar conditions. All open trenches and other excavations shall be provided with suitable barriers, signs and lights, at Contractor's expense, such that adequate protection is provided to the public against accident by reason of such open construction. Obstructions such as material piles and equipment shall be provided with similar warning lights and signs.

8. All streets, roads, highways and other public thoroughfares which are closed to traffic, under the authority of a proper permit shall be protected, at Contractor's expense, by means of effective barricades on which shall be placed proper warning signs; such barricades being located at the nearest intersecting public highway or street on each side of the blocked section of such public thoroughfare.

9. All barricades and obstructions shall be illuminated by means of amber lights at night and all lights used for this purpose shall be at Contractor's expense and shall be kept burning from sunset to sunrise. Materials stored upon or along side public streets and highways shall be so placed, and the work at all times shall be so conducted, as to cause the minimum obstruction and inconvenience to the traveling public. All barricades, signs, lights and other protective devices in public rights-of-way shall be installed and maintained in conformity with applicable statutory requirements and as required by the Manual on Uniform Traffic Control Devices, as amended, or any other applicable statutes or ordinances.

GC-21. SAFETY

1. Contractor shall be responsible for enforcing safety rules to assure protection of the employees and property of City, to assure uninterrupted production and to assure safe working conditions for Contractor and Subcontractors and their employees and to assure the safety of the general public. In addition to any other rights the City might exercise, Contractor and/or any Subcontractor failing to follow safety rules shall be subject to eviction from the job site and may be refused reentry.

   Contractor shall designate a responsible member of its organization on the Project whose duty shall be the prevention of accidents. The name and position of the person so designated shall be reported to the City Public Works Director by

Contractor. In the absence of such designation, the Contractor's Superintendent shall be deemed to be the safety representative.

2. Contractor shall develop and maintain an up-to-date emergency action plan, taking into account fires, hazardous materials, explosions, adverse weather, floods, etc, which shall be in compliance with all federal, state and local laws and ordinances. The procedures should outline specific action to be taken to protect life and to secure and protect the building materials, constructed work, buildings, equipment and the position of cranes, and shall cover, at a minimum, personal safety training for employees and subcontractors equipment; first aid-personnel and facilities; fire protection; signs, signals, and barricades; safety inspections; material handling and storage; inspections; and corrective action.

3. In an emergency affecting the safety of life, the Work, the City's property or of adjoining property, Contractor, without special instruction or authorization from the City Public Works Director, is hereby permitted to act, at its discretion, to prevent such threatened injury or loss. Any compensation claimed by Contractor on account of emergency work shall be determined by mutual agreement of City and Contractor.

4. Whenever, in the opinion of the City Public Works Director, the Contractor has not taken sufficient precaution for the safety of the public or the protection of the Work to be constructed under this Contract, or of adjacent structures or property which may be injured by process of construction, and whenever, in the opinion of the City Public Works Director, an emergency shall arise and immediate action shall be considered necessary in order to protect property interests and to avoid personal injury and/or death, then the City Public Works Director, with or without notice to the Contractor, shall have the authority to cause such work to be done and materials to be furnished at places as the City Public Works Director may consider necessary and adequate. The cost and expense of such work and material so furnished shall be borne by the Contractor. The performance of such emergency work shall in no way relieve the Contractor of responsibility for damages which may occur during or after such precaution has been duly taken.

GC-22 REPORTING OF INJURY OR DAMAGE.

1. The Contractor shall be responsible for an damage to the Work, whether due to accident, adverse weather, malicious mischief, riot, sabotage, theft, etc;, and shall promptly return the Work to its previous condition at no cost to the City. If the loss is covered by property insurance, Contractor shall immediately report the damage and cooperate with the insurer on claims for reimbursement, but Contractor shall nevertheless promptly repair the damage so that the Work can proceed. The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property caused in whole or in part by the Contractor, a

Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable, except damage or loss attributable to acts or omissions of the City or anyone directly or indirectly employed by City, or by anyone for whose acts the City may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under the Indemnification provision of this Contract.

2. If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

GC-23. HAZARDOUS MATERIALS

1. When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

2. The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the Site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the City Public Works Director in writing.

3. Upon receipt of the Contractor's written notice, the City shall take reasonable steps to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the City and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

4. To the fullest extent permitted by law, the City shall indemnify and hold harmless the Contractor, Subcontractors, their agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to

attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity. The City shall not be responsible under this Section for materials or substances the Contractor brings to the Site unless such materials or substances are required by the Contract Documents. The City shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances. The City shall also indemnify the Contractor against fines, penalties or other costs assessed by government agencies for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents.

5. The Contractor shall indemnify the City for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the Site and negligently handles, or (2) where the Contractor fails to perform its obligations under this Section, except to the extent that the cost and expense are due to the City's fault or negligence.

GC-24. CUTTING, PATCHING AND DIGGING

1. Contractor shall do all cutting, fitting or patching of its work so that may be required to make its several parts come together properly and fit it to receive or be received by work of others shown upon or reasonably implied by the Contract Documents.

2. Contractor shall not endanger any property of City or any other individual or entity, or the Work by cutting, digging or otherwise and shall not cut or alter the work others except with the written consent of City.

3. Contractor shall assume responsibility for the patching or repairs, by the proper trade, of damages caused by work under this Contract.

4. Contractor shall comply with all local ordinances dealing with cutting, patching and digging and shall obtain all necessary permits.

GC-25. CLEANING UP

Contractor shall at all times keep the premises/site free from accumulations of waste material or rubbish caused by its employee or Work; and at the completion of the

daily Work it shall remove all its rubbish form and about the premises/site and all its tools, scaffolding and surplus materials, and shall leave its work "broom clean" or its equivalent unless more exactly specified. In case of dispute, City may remove the rubbish and charge the cost to Contractor.

GC-26. JOBSITE OFFICE AND TEMPORARY FACILITIES

1. If required by the Contract Documents, during the performance of this Contract, the Contractor shall maintain a suitable office at or near the site of the Work which shall be the headquarters of the superintendent authorized to receive drawings, instructions, or other communications or articles from the City Public Works Director, and any such communication given to the said superintendent or delivered at the Contractor's office at the site of the Work in his/her absence shall be deemed to have been given to the Contractor. Contractor shall coordinate the placement of such office with the City Public Works Director, but unless otherwise provided in the Contract, the City does not make any representation as to the availability of space, utilities, parking or other amenities for such office. Upon completion of Work or when requested by City Public Works Director, Contractor shall remove same from City's premises and leave the area in a clean and orderly condition.

2. The operations of the Contractor shall be in full conformity with all of the rules and regulations of boards and bodies having jurisdiction with respect to sanitation. The Contractor shall obey and enforce all sanitary regulations and orders, and shall take precautions against infectious diseases and the spread of same.

3. The Contractor shall supply safe and sufficient drinking water to all of its employees. All water used in the course of the Work shall be hauled in or purchased from the local Water Company's distribution system at the Contractor's own cost and expense.

4. Except where special permission has been granted by City, Contractor shall provide and maintain sanitary temporary toilet facilities located where directed by City Public Works Director for accommodation of all persons engaged on the Work. Temporary toilets shall be enclosed and weatherproof and kept in sanitary and an approved condition at all times. After use for same has ceased, Contractor shall remove the temporary toilet facilities from City's premises and disinfect and fill any vaults.

5. Contractor shall provide and maintain temporary heat as required to protect all Work and material against injury from dampness and/or cold to the satisfaction of City Public Works Director.

6. Unless otherwise specified in the Contract Documents, Contractor shall provide, at its cost and expense, temporary power, wiring and lights from City's provided source as may be required for its operations.

GC-27. SEPARATE CONTRACTS

1. City reserves the right to perform with its own forces or let other contracts in connection with the Project. Contractor shall afford reasonable opportunity for the introduction and storage of materials and the execution of work by City or others and shall properly connect and coordinate its Work with the work of City or others.

2. If any part of Contractor's Work depends upon the work of the City or others, Contractor shall inspect and promptly report to City any defects in any such work that renders it unsuitable for proper execution or results. Its failure to so inspect and report shall constitute an acceptance by it of such other work as fit and proper for the reception of its work.

3. In the event that Contractor is performing work at a site or on a project involving City and one or more other private or governmental entities, which have their own contractors on site as well, Contractor shall advise City Public Works Director when it anticipates that there may be interference with the Contractor's work or with the work of any other contractor. City Public Works Director shall, to the best of its ability, with input from Contractor as to coordination of the work, seek to schedule work of the various contractors so as to avoid as much inconvenience and delay as possible, and the Contractor agrees to cooperate with all other contractors, and it shall so conduct its operations so as to interfere to the least possible extent with the work of such contractors or workers; provided, however, that in the event Contractor experiences a delay or damage to the Contractor's work as a result of the presence of other such contractors the City may, in its discretion, grant an extension of Contract Time and/or an adjustment in the Contract Price as may be appropriate in the circumstances.

4. The Contractor shall be responsible for any injury or damages that may be sustained by other contractors, workers or their work because of any fault or negligence on Contractor's part, and shall at its own expense repair or pay for such injury or damage. Any difference or conflict which may arise between the Contractor and contractors or between the Contractor and the workers of the ity, or any other entity in regard to their work, shall be adjusted and determined by the City Public Works Director. If the Work of the Contractor is delayed or damaged because of any acts or missions of any other contractor or contractors, the City may, in its discretion, grant an extension of Contract Time and/or an adjustment in the Contract Price as may be appropriate in the circumstances.

5. When two or more contracts are being executed at one time in such manner that work on one contract may interfere with that on another, the City Public Works Director shall decide which contractor shall cease work and which shall continue, whether the work on both contracts shall progress at the same time, and in what manner the work is to proceed. Similarly, when the work site of one contract is the necessary or convenient means of access for the transportation or movement of workers, materials or appliances required for the execution of another contract, such privileges of access or any other responsible privilege may be granted by City Public Works Director to the contractor so desiring to the extent which may be reasonably necessary.

GC- 28 INSURANCE

The Contractor shall furnish insurance as described in **Exhibit K** to the Contract. Contractor's failure to submit Certificates of Insurance, and Additional Insured and Notice of Cancellation/Modification Endorsements to the City as provided in the Instructions to Bidders, and in all cases prior to commencement of any Work on site, shall be grounds for termination of this Contract and exercise of the City's remedies including, but not limited to, against Contractor's Bid security.

GC-29. SURETY BONDS/SECURITY FOR PAYMENT OF OBLIGATIONS

1. If required by the Contract Documents, Contractor shall, after Notice of Award, but as a precondition to enforcement of any right of Contractor with respect to the Contract, furnish City with a Performance Bond and a Payment Bond in the full amount of the Contract Price on the forms attached to the Contract as **Exhibits B-1 and B-2.** The Bonds shall be provided by a Treasury-listed, corporate surety admitted in the State of Missouri, with an A. M. Best Rating of A- or better, and accompanied by valid Powers of Attorney if executed by an agent of the surety. Failure to furnish such Bonds within the time specified in the Notice of Award may, at the City's option, be the basis for declaring Contractor in default and pursuing such legal rights as the City deems in its best interest, including, but not limited to, enforcement of the City's rights as to bid security.

2. Contractor shall be responsible for notifying its surety of any modifications to the Contract Price or Time, and said surety shall not seek discharge as a result of any failure on Contractor's part to notify surety. If Changes to the Contract result in an increase in the Contract Price, the Contractor will be reimbursed for any additional surety bond premium, and the Contractor shall obtain a Rider to the surety bonds increasing their penal sum accordingly.

3. If the City does not require the submission of Performance and Payment Bonds, it may require Contractor to submit additional documentation to verify that the Contractor has satisfied all of its financial obligations with respect to the Contract.

GC-30. DELAYS AND EXTENSION OF TIME

1. If Contractor shall be delayed at any time in the progress of the Work by an act or omission of City, or direction of the City Public Works Director to delay or suspend Work, or by any separate contractor employed by City and over which Contractor has no control and which is not a result of the Contractor's acts or the acts of any of its employees, Subcontractors or suppliers, negligent or otherwise, then the Contract Time and the Contract Price may be extended and/or adjusted for such reasonable time and amount as the City Public Works Director shall decide, provided, that the Contractor would not have been delayed by a cause not attributable to the City or a separate contractor.

2. If adverse weather conditions are the basis for a request for additional time, such request shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

3. If the parties are unable to agree upon an appropriate Extension of Time, the Contractor shall assert a Claim in accordance with applicable provisions of this Contract's Disputes section.

4. If the Contractor is not entitled to an Extension of Time, the Owner shall be entitled to recover its actual costs, or liquidated damages as stated in the Contract, attributable to the delay by the Contractor.

5. No request for an extension of time shall be made for delay unless Contractor provides written notice to City Public Works Director of such delay, the reasons therefor and the expected length of delay within two business days of the commencement of such delay, in order to afford the City the maximum opportunity to take such action as it deems appropriate to minimize the delay or the consequences thereof. In the case of continuing cause of delay, only one written notice is necessary.

6. If the Contract Documents include a requirement that the Contractor provide maintenance services on the Work, the Contractor shall be required to deliver a Maintenance Bond on the form attached at **Exhibit B-3** prior to release of Final Payment

GC-31. CHANGES IN THE WORK

1. Change Orders. The City, without invalidating the Contract, may by direct changes in the Work which may result in an addition to or deduction from the Contract Price and/or changes in the Contract Time. A change which is agreed upon by the City and the Contractor shall be commemorated in a Change Order to be prepared by the City Public Works Director, and signed by the City and the

Contractor. Change orders of $1,000 or less may be authorized and executed by the City Public Works Director on behalf of the City. Change Orders of $2,500 or less may be authorized and executed by the City Administrator on behalf of the City. Change Orders of more than $2,500 require the authorization and signature of the May following approval by the City's Finance Committee and/or Board of Aldermen. The Contractor shall then be entitled to bill and be paid for the Work of the Change in the same manner as all other payments under the Contract. The Work as changed shall be subject to all the same terms and conditions as original work under this Contract.

2. Quantity Variations. Where changes in the Work involve a change in the quantity of any item paid based on unit prices, the Contract Price shall be revised by extension of the quantities and unit price such items so changed subject to written approval of the City Public Works Director. If the quantity is increased or decreased by thirty-three percent (33%) or more, and the total value of the Work affected is at least twenty percent (20%) of the Contract Price, either party may request that the City Public Works Director equitably adjust the unit price. The City Public Works Director shall advise both parties in writing of his decision on such adjustment within ten days of receipt of substantiating information from the requesting party, subject to both parties' right to dispute this decision. Pending resolution of such dispute, however, the Contractor shall be entitled to bill and be paid for the Work at the unit prices determined by the City Public Works Director in the same manner as all other payments under the Contract.

3. Minor Changes. City Public Works Director may order minor changes in the Work through field orders, which in no material or substantial way increase or decrease the Work; and such minor changes in the Work shall not involve an addition or deduction from the Contract Price nor an extension of the Contract Time.

4. Work Directives. From time to time the City Public Works Director may also issue written orders to Contractor for needed clarifications, modifications or corrections. If the Contractor and the City do not agree that such written order is a change, or on what if any adjustment to the Contract Price or Contract Time is appropriate, the City Public Works Director shall issue a directive to the Contractor describing the Work affected thereby, and the Contractor shall immediately comply with it subject to the other terms of the Contract. Any appropriate adjustment to the Contract price or Contract Time shall be resolved as follows.

   The City Public Works Director shall either:

   (a) make a good faith evaluation of the appropriate adjustment to the Contract Price and/or Contract Time within ten days of receipt of substantiating proposal from the Contractor, and the Contractor shall be permitted to bill for the changed work as otherwise provided in the Contract Documents; or

(b) direct the Contractor to keep an accurate account of its Allowable Field Costs as provided for below, and the Contractor shall be permitted to bill for, and receive, such costs plus fifteen percent (15%) as its full compensation for the Contractor's profit, overhead, general superintendence, field office expense and all other elements of cost not embraced within the Allowable Field Costs; or

(c) If the City Public Works Director has determined in good faith that no change has occurred, and that the work covered by the Work Directive is part of the Contractor's obligations under the Contract Documents, the City Public Works Director direct the Contractor to proceed with the Work. The Contractor may keep records of its allowable costs and submit them through the disputes process as otherwise provided herein.

(d) Where a Work Directive results in a credit to the City, the credit will be for allowable costs only, and no credit will be given back to the City for overhead or profit unless the Work reduced equals or exceeds ten percent (10%) of the Contract Price.

(e) If the City Public Works Director determines that the value of any work performed under a Work Directive shall be based on costs incurred, the Contractor shall keep accurate records of its Allowable Field Costs as defined below.

(i) Where extra work is to be compensated based on Allowable Field Costs, only the following costs, as actually incurred and documented, will be paid to the Contractor:

(1) The cost of all workers, such as foremen, timekeepers, mechanics, and laborers, for the time actually employed in the performance of the said extra work;

(2) All materials and supplies;

(3) Trucks and rental on machinery and equipment for the time actually employed or used in the performance of said extra work, but not to exceed the purchase price of any such items if rented from third parties, and, if the items are owned by Contractor or an affiliate of Contractor, the rental rate shall not exceed eight-five percent (85%) of the local standard rental rate for similar items;

(4) Any transportation or travel charges necessarily incurred in connection with said equipment authorized by the City Public Works Director for use on said work and similar operating expenses;

(5) All incidental expenses incurred as a direct result of such extra work, including payroll taxes and a ratable proportion of premiums for insurance, where the premiums therefor are based on payroll costs, public liability and property damage, worker's compensation, and other insurance required by the Contract; provided, however, Contractor must enumerate and justify to City's satisfaction any such claimed incidental expenses;

(6) Additional premiums for surety bonds, upon receipt by the City of riders increasing the penal sum of the bonds.

(ii) Without in any way limiting City's right to challenge any individual costs claimed by Contractor, incidental costs shall not include:

(1) Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, Public Works Directors, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by Contractor whether at the site or in Contractor's principal or a branch office for general administration of the work unless specifically agreed to by City - all of which are to be considered administrative costs covered by the Contractor's overhead and profit.

(2) Expenses of Contractor's principal and branch offices other than Contractor's office at this site.

(3) Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

(4) Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

(5) Other overhead of general expense costs of any kind and the costs of any item not specifically and expressly agreed to by City.

The City Public Works Director may direct the form in which accounts of the Allowable Field Cost shall be kept and may also specify in writing, before the Work commences, the method of doing the Work and the type and kind of machinery and equipment, if required, which shall be used in the performance of extra work

5. If either party wishes to take exception to the City Public Works Director's decisions as to whether an item constitutes a Change, or the appropriate adjustment to the Contract Price or Contract Time associated with a Change, it shall notify the City Public Works Director, with a copy of such notice to the other party, within seven (7) days of receipt of the City Public Works Director's decision. Failure to give such notice shall constitute acceptance of the City Public Works Director's decision.

6. Except for Work done as a result of an emergency endangering life or property, no Work resulting in an additional pay item shall be performed unless pursuant to the provision of a Change Order or a Work Directive.

GC-32. INDEMNITY

1. Definitions. For purposes of indemnification requirements as set forth throughout the Contract, the following terms shall have the meanings set forth below:

   (a) "The Contractor" means and includes Contractor, all of his affiliates and subsidiaries, his Subcontractors and materialmen and their respective servants, agents and employees; and

   (a) "Loss" means any and all loss, damage, liability or expense, of any nature whatsoever, whether incurred as a judgment, settlement, penalty, fine or otherwise (including attorney's fees and the cost of defense), in connection with any action, proceeding , demand or claim, whether real or spurious, for injury, including death, to any person or persons or damages to or loss of, or loss of the use of, property of any person, firm or corporation, including the parties hereto, which arise out of or are connected with, or are claimed to arise out of or be connected with, the performance of this Contract whether arising before or after the completion of the Work required hereunder.

2. The Indemnities. For purposes of this Contract, and without in any way limiting indemnification obligations that may be set forth elsewhere in the Contract, and to the greatest extent permitted by applicable law, Contractor hereby agrees to indemnify, defend and hold harmless the City from any and all Loss to the extent such Loss is caused or incurred by, on account of or as a result of the negligence or other actionable fault of the Contractor, its employees, agents, Subcontractors and suppliers or any other party for whom Contractor is responsible.

   It is agreed as a specific element of consideration of this Contract that this indemnity shall apply notwithstanding the joint, concurrent or contributory or comparative fault or negligence of the City or any third party and, further, notwithstanding any theory of law including, but not limited to, a characterization of the City's or any third party's joint, concurrent or contributory or comparative fault or negligence as either passive or active in nature.

Additionally, Contractor agrees to defend any claim, action or suit that may be brought against City, its governing body, officers, agents or employees for infringement of any patents arising out of the performance of this Contract or out of the use or disposal by or for the account of City of supplies furnished or construction work performed hereunder, and also to indemnify and hold harmless City, its governing body, officers, agents, and employees against all judgments, decrees, damages, costs and expenses recovered against it or them sustained by it or them on account of any such actual or alleged infringement.

3. General Limitation. Nothing in this section shall be deemed to impose liability on the Contractor to indemnify the City for Loss to the extent that the City's negligence or other actionable fault is the cause of Loss.

4. Waiver of Statutory Defenses. With respect to the City's rights as set forth herein and to the greatest extent permitted by applicable law, the Contractor expressly waives all statutory defenses, including, but not limited to, those under workers compensation, contribution, comparative fault or similar statutes to the extent said defenses are inconsistent with or would defeat the purposes of this section.

GC-33. ASSIGNMENT OF CONTRACT

Contractor shall not assign any of its rights under the Contract without the express, advance written consent of the City. In case the Contractor assigns all, or any part, of the monies due or to become due under this Contract, the right of the assignee in and to any monies due or to become due the Contractor shall be subject to all prior claims of all persons, firms, and corporations for services rendered or materials supplied for the performance of the Work called for in this Contract and no money shall be paid assignee on behalf of the Contractor by the City until such time as the Contractor has discharged its obligations to the City under the Contract. It is expressly understood and agreed that no assignment shall be effective as against the City unless it complies with the foregoing.

GC-34. SUBCONTRACTING

1. The Contractor shall not make any substitution for any Subcontractor unless the City so agrees in writing. The City reserves the right to disapprove the use of any subcontractor, but its failure to exercise such right shall not constitute acceptance of the work of any subcontractor. Disapproval of a subcontractor shall not be grounds for an adjustment to the Contract Price or Contract Time.

2. Should any Subcontractor fail to perform in a satisfactory manner, the Contractor shall immediately take appropriate action to rectify the failure of its Subcontractors. The Contractor shall be as fully responsible to the City for the

acts and omissions of its Subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for the acts and omissions of persons directly employed by it.

3. The Contractor shall cause appropriate provisions to be inserted in all subcontracts to bind Subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the work of the Subcontractor and to give the Contractor the same power to terminate any subcontract as the City has to terminate the Contractor under any provisions of the Contract Documents.

4. Contingent Assignment of Subcontracts to City. Each subcontract agreement for a portion of the Work is assigned by the Contractor to the City, provided that

   (a) assignment is effective only after termination of the Contract by the City for cause pursuant to this Contract's termination provisions, and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

   (b) assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

   (c) When the City accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

   (d) Upon such assignment, if the Work has been suspended for more than 30 days, and if a Subcontractor provides backup for additional costs arising from the suspension, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

   (e) Upon such assignment to the City under this Section, the City may further assign the subcontract to a successor contractor or other entity. If the City assigns the subcontract to a successor contractor or other entity, the City shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

6. Nothing contained in the Contract Documents shall create any contractual relationship between any Subcontractor and the City, nor shall anything contained in the Contract Documents create any obligation on the part of the City to pay to or to see to the payment of any sums due any Subcontractor.

GC-35. CORRECTION OF WORK

1. The Contractor shall promptly correct Work rejected by the City Public Works Director or Inspector or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and

whether or not fabricated, installed or completed, and remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement of destroyed or damaged construction (whether completed or partially completed) of the City or separate contractors caused by the Contractor's correction or removal of Work, and compensation for the Inspector's services and expenses made necessary thereby, shall be at the Contractor's expense.

2. If Contractor should neglect to prosecute the work properly or fail to perform any provision of the Contract Documents, the City, after three (3) days' written notice to Contractor may, without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due Contractor.

3. In addition to the Contractor's Warranty obligations if, within two years after the date of Substantial Completion of the Work or designated portion thereof (or, if the Work in question was performed after Substantial Completion, from the date on which the Work was completed) or after the date for commencement of warranties or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the City Public Works Director to do so, unless the City Public Works Director has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the two-year period for correction of Work, if the City Public Works Director fails to notify the Contractor and give the Contractor an opportunity to make the correction, the City waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the City Public Works Director, the City may correct it in accordance with the provisions of this Contract.

4. Nothing contained in this Section shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the two-year period for correction of Work as described herein relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

5. If the City prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the City may do so instead of requiring its removal and correction, in which case the Contract Price will be reduced as appropriate

and equitable. Such adjustment shall be effected whether or not final payment has been made.

GC-36. DISPUTE RESOLUTION

1. City and Contractor agree that disputes relative to the Work shall first be addressed by negotiations between the parties. Such negotiations shall take place within thirty (30) days of demand by the party seeking resolution of the dispute. If direct negotiations fail to resolve the dispute, the party initiating the claim that is the basis for the dispute shall be free to take such steps as it deems necessary to protect its interests; provided, however, that notwithstanding any such dispute Contractor shall proceed with the Work as per the Contract Documents as if no dispute existed.

2. In order to preserve its rights to dispute a matter hereunder, the complaining party must submit a written notice to the other party setting forth the basis for its complaint within twenty (20) calendar days following receipt of the decision of the City Public Works Director as to such matter or other action on which the dispute is based. A decision of the City Public Works Director (where appropriate) under GC-7 above; notice of dispute, and direct negotiation, shall be conditions precedent to any further legal action.

3. Should the Contractor believe that it is entitled to any relief due to errors, omissions or defects in the Plans or Specifications, or as a result of any act or omission of an independent contractor designer in connection with the Project, the City shall cooperate with the Contractor by permitting the Contractor to pursue legal action against the designer in the name of the City at Contractor's sole risk and expense as the City would otherwise have against such designer. The City shall pay to Contractor such sums as may be recovered from the designer on behalf of Contractor. Other than this duty of cooperation and remittance, the City shall have no liability or obligation to Contractor for any act, error, omission, negligence or breach of duty by a designer.

4. Arbitration of disputes.

    a. Claims, except those waived as provided for elsewhere in this Contract, which have not been resolved by mediation, shall be decided by arbitration which, unless the parties mutually agree otherwise, in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect at the time of the arbitration. The demand for arbitration shall be filed in writing with the other party to the Contract and with the American Arbitration Association.

    b. A demand for arbitration may be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after

the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations.

c. An arbitration pursuant to this Section may be joined with an arbitration involving common issues of law or fact between the Owner or Contractor and any person or entity with whom the Owner or Contractor has a contractual obligation to arbitrate disputes which does not prohibit consolidation or joinder. No other arbitration arising out of or relating to the Contract shall include, by consolidation, joinder or in any other manner, an additional person or entity not a party to the Contract or not a party to an agreement with the Owner Contractor, except by written consent containing a specific reference to the Contract signed by the Owner and Contractor and any other person or entities sought to be joined. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by the parties to the Contract shall be specifically enforceable in accordance with applicable law in any court having jurisdiction thereof.

d. Claims and Timely Assertion of Claims. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

e. Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

GC-37. RIGHT OF CITY TO SUSPEND OR TERMINATE CONTRACT

1. Suspension of Work by the City . The City Public Works Director may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the City may determine. The Contract Price and Contract Time shall be adjusted for increases in the cost and time caused by such suspension, delay or interruption. No adjustment shall be made to the extent that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or that an equitable adjustment is made or denied under another provision of the Contract.

2. Termination of the Contract by the City. If any of the conditions enumerated below are found by the City to have occurred:

   (a) the Work to be done under this Contract shall be abandoned by the Contractor; or

(b) this Contract shall be assigned by Contractor otherwise than as herein provided; or

(c). at any time the City Public Works Director shall certify in writing to the City that:

(i) the performance of the Work under this Contract is being unnecessarily delayed such that all Bid items of the Project are not completed within the time named for their completion or within the time to which such completion date may be extended;

(ii) that the Contractor is violating any of the conditions or covenants of this Contract or the specifications therefor;

(iii) that the Contractor is executing the same in bad faith or otherwise not in accordance with the terms of said Contract; or

(iv) if the Contractor defaults in any material manner in its performance of the Contract; or

(d) a petition should be filed in bankruptcy by the Contractor, or by others seeking to have Contractor adjudged bankrupt and a motion is not made by Contractor within ten (10) days seeking assumption of the Contract and manifesting the ability to fulfill all of Contractor's obligations and curing all of Contractor's defaults; or if a general assignment of its assets should be made for the benefit of its creditors; or if a receiver should be appointed for the Contractor or any of its property;

then, in addition to other rights the City may choose to exercise, the City may, at its option, serve written notice upon the Contractor and its surety of City's intention to terminate this Contract, and unless within five (5) days after the serving of such notice upon the Contractor, a satisfactory arrangement be made for the continuance thereof, this Contract shall cease and terminate.

3. In the event of such termination, the City shall immediately serve notice thereof upon the surety and the Contractor, and the surety shall have the right to take over and complete the Work; provided, however, that if the surety does not commence performance thereof promptly, the City may take over the Work and prosecute same to completion, by contract or otherwise, for the amount and at the expense of the Contractor, and the Contractor and its surety shall be liable to the City for any and all excess cost sustained by the City by reason of such prosecution and completion; and in such event the City may take possession of, and utilize in completing the Work, all such materials, equipment, tools and plant as may be on the site of the Work and necessary therefor.

4. When Contractor's services have been so terminated, such termination shall not affect any rights or remedies of City against Contractor then existing or which may later accrue. Similarly, any retention or payment of monies due Contractor shall not release Contractor from liability.

5. The City also reserves the right, in its sole discretion and for its convenience and without cause or default on the part of Contractor, to terminate the Contract by providing written notice of such termination to Contractor. Upon receipt of such notice from City, Contractor shall: (1) immediately cease all work; or (2) meet with City and, subject to City's approval, determine what Work shall be required of Contractor in order to bring the Project to a reasonable termination in accordance with the request of City. If City shall terminate for its convenience as herein provided, City shall: (1) compensate Contractor for all purchased materials and actual cost of work completed to date of termination; and (2) release and indemnify Contractor against any liability Contractor may have to any third parties as the result of any contracts, commitments, purchase orders or any other such liabilities Contractor may have incurred as a result of its obligations under the provisions of the Contract. Contractor agrees that it shall minimize such potential liabilities by, where practical, informing third parties of City's right to terminate and attempting to obtain from such third parties a waiver of any liability in the event of such termination.

6. Any termination of the Contract for alleged default by Contractor that is ultimately determined to be unjustified shall automatically be deemed a termination for convenience of the City.

GC-38. PROGRESS PAYMENTS [if applicable]

1. Before submission of its first application for payment, the Contractor shall submit to the City Public Works Director a schedule of values allocating the various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the City Public Works Director may require. This schedule, unless objected to by the City Public Works Director, shall be used only as a basis for the Contractor's applications for payment, but does not constitute approval by the City Public Works Director of the method or performance by the Contractor.

2. Payment will be made to Contractor monthly from funds available within thirty (30) days of the City’s receipt of a proper undisputed pay request from the Contractor on the basis of a duly certified estimate of the value of all labor and materials delivered on the site and accepted by the City Public Works Director during the preceding month, calculated in proportion to the Contract price, but to ensure the proper performance of the Contract, five percent (5%) of the amount of each estimate will be retained, although the City reserves the right to increase retainage to ten percent (10%) if it determines, in its sole opinion, that the higher

rate is required to ensure performance of the Contract. Such retainage will be paid thirty (30) days after Substantial Completion of all work covered by the Contract unless the City is otherwise allowed by law to continue to retain said funds.

3. Unit Prices. Where the Contract provides that all or part of the Work is to be Unit Price Work, the Contract Price shall initially be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work multiplied by the estimated quantity of each item required for the Work. It is understood and agreed that estimated quantities of items for Unit Price Work are not guaranteed and are solely for the purpose of comparison of bids and determining an initial Contract Price. Determinations of actual quantities and classifications of Unit Price Work shall be made by the City Public Works Director. Each unit price shall be deemed to include Contractor's overhead and profit for each separately identified item.

4. Each payment made to the Contractor shall be on account of the total amount payable to the Contractor by or for the City, and all materials and Work covered by the partial payments made shall therefore become the sole property of the City. This provision shall not be construed as relieving the Contractor from the responsibility imposed by the Contract Documents for the care and protection of materials and Work upon which payments have been made, for the restoration of any damaged Work, or as a waiver of the right of the City to require the fulfillment of all the terms of the Contract. Progress payments in respect to materials will be made only for materials delivered on the site and accepted by the City Public Works Director, all calculated in proportion to the Contract Price.

5. In general, no payment will be made in estimates for materials delivered on the site and not incorporated in the Work unless approved by the City Public Works Director as being in the best interests of the City, and title to such materials is transferred to the City by Bill of Sale on the form attached to the Contract as **Exhibit L.** Payment shall not be permitted for materials not delivered to the site except as approved by the City Public Works Director as being in the best interests of the City, and the City has received both a fully executed Bill of Sale and a satisfactory Bailment Agreement on the form attached to the Contract as **Exhibit M.**

6. The retained percentages herein provided for are to be retained and held for the sole protection and benefit of the City, and no other person, firm or corporation shall have or assert any lien, claim, right or priority therein, thereon or thereto, or be entitled to receive any part thereof, except as herein expressly provided.

7. The City shall require the Contractor to submit with its payment applications completed and notarized Partial Release and Waiver of Claim form from itself, and all Subcontractors and vendors with contract values of $1,000 or more on the form attached to the Contract at **Exhibit N.** Contractor's failure to furnish said

waivers shall not relieve Contractor or its surety of any obligation assumed under this Contract, nor shall the City's request for such documentation create any obligation on City's part to verify accuracy.

8. The Contractor has bid this job net of all sales and compensation taxes. No application for payment shall include any amount for reimbursement of such taxes paid by Contractor resulting from Contractor's failure to use City's tax exemption certificate for any purchase in connection with the Work.

9. The Contractor shall be responsible for the return and /or exchange of surplus materials, and all credits for returned or exchanged materials shall be first submitted to the City Public Works Director for approval. Applications for payment shall reflect any such credits, and the Contract Price shall be adjusted as necessary to reflect such credits. Unreturnable excess materials shall be turned over to the City, or, at its option, be removed from the Project site at Contractor's expense.

GC-39 INSPECTION FOR SUBSTANTIAL COMPLETION AND RELEASE OF FUNDS

1. When the Contractor considers that the Work, or a portion thereof which the City agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the City Public Works Director a comprehensive list of items to be completed or corrected prior to final payment (the "Punch List"). Failure to include an item on the Punch List does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

2. Upon receipt of the Punch List, the City Public Works Director and/or the Inspector will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the inspection discloses any item, whether or not included on the Punch List, which is not sufficiently complete in accordance with the Contract Documents so that the City can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the City Public Works Director. In such case, the Contractor shall then submit a request for another inspection to determine Substantial Completion.

3. When the Work or designated portion thereof is substantially complete, the City Public Works Director will prepare and submit to the City and the Contractor a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the City and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. The City Public Works Director shall agree upon a reasonable value of Work not yet completed, and identify these in writing. Warranties required by the Contract Documents shall commence on the date of Substantial

Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

4. The City shall make payment of retainage applying to such Work or designated portion thereof, less 150% of the value of the remaining Work to be completed, and funds sufficient to protect the City from threatened claims, losses or other identified financial obligations of Contractor.

GC-40. PARTIAL OCCUPANCY OR USE

1. The City may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the City and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, liquidated damages (if any), security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the City Public Works Director as provided above. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.

2. Immediately prior to such partial occupancy or use, the City Public Works Director and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

3. In the event the City chooses to accept partial utilization of the Work, the amount of liquidated damages shall be equitable adjusted to reflect the relative value and potential damages associated with late completion of the remaining Work.

4. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

GC-41. FINAL COMPLETION AND FINAL PAYMENT

1. Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the City Public Works Director and/or Inspector will promptly make such inspection to determine if the Work is acceptable under the Contract Documents and the Contract fully performed. Before final acceptance, all installed and constructed equipment, devices and other Work which is to be tested under the

Contract Documents shall be tested and each part shall be in good condition and working order or shall be placed in such condition and order at the expense of the Contractor. All tests of such completed Work required under this Contract shall be made under the direction of the City Public Works Director. Upon agreement that the Work is complete, final payment of all remaining sums due to Contractor shall be made within fifteen days of compliance by Contractor with all requirements.

2. Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the City Public Works Director:

   (a) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work (less amounts withheld by the City) have been paid or otherwise satisfied,

   (b) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the City,

   (c) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents,

   (d) consent of surety to final payment,

   (e) final Waivers and Release of Claims from Contractor and all Subcontractors and Vendors with a contract value of $1,000 or more on the form attached hereto as **Exhibit O**,

   (f) a current copy of the site plan on which Contractor shall show by dimensioning all underground utilities, above ground utilities, sewer clean-outs, yard hydrants, water meter, gas meter, electric meter and phone lines, and, if required by the City, other data establishing payment or satisfaction of obligations, to the extent and in such form as may be designated by the City, and

   (g) receipt by the City of two copies of required sales tax exemption documentation on the forms attached to the Contract as **Exhibit F** from the Contractor.

3. If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, the City shall, upon application by the Contractor, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for

Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the City Public Works Director prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

4. The making of final payment shall constitute a waiver of Claims by the City except those arising from:

   (a) liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;

   (b) failure of the Work to comply with the requirements of the Contract Documents; or

   (c) terms of special warranties required by the Contract Documents.

5. Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver and release of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment. Any payment, however, final or otherwise, shall not release the Contractor or its sureties from any obligations under the Contract Documents, the Bonds or insurance coverage.

GC-42. PAYMENTS WITHHELD

1. The City may withhold payment in whole or in part, to the extent reasonably necessary to protect the City, for any of the following reasons:

   (a) defective Work not remedied;

   (b) third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the City is provided by the Contractor;

   (c) failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

   (d) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;

   (e) damage to the City or a separate contractor;

(f) reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

(g) repeated failure to carry out the Work in accordance with the Contract Documents.

The City may also nullify a payment previously issued, and withhold sums appropriate to protect the City from loss for which the Contractor is responsible. When the reasons for withholding payment are removed, payment will be made for amounts previously withheld.

2. The City may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered.

GC-43. RETENTION OF RECORDS – CITY'S RIGHT TO AUDIT

Contractor shall maintain copies of records, including invoices reflecting sale or use tax information, pertaining to the Construction of this project for a period of five (5) years from the date of final payment. Such records shall be made available to the City for audit and review purposes upon written request therefor from City or its authorized agent(s) during the construction period and the five (5) year period following final payment.

GC-44. NOTICE

1. Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

2. All notices of claims, potential changes or impediments to Contractor's ability to comply with the requirements of this Contract shall be given promptly and in writing, to allow the City the maximum opportunity to address and respond to them and to avoid impact to the Work.

GC-45. NO WAIVER OF RIGHTS

No waiver of any breach of this Contract shall be construed to be a waiver of any other subsequent breach.

GC-46. INDEPENDENT CONTRACTOR

The right of general supervision of the City and/or the City Public Works Director shall not make the Contractor an agent of the City, and the liability of the Contractor for all damages to persons, firms and corporations arising from the Contractor's execution of the Work shall not be lessened because of such general supervision, but as to all such person, firms and corporations, and the damages, if any, to them or their property, the contractor herein is an independent contractor in respect to the Work.

GC-47. SEVERABILITY

The parties agree that should any provision of the Contract Documents be determined to be void, invalid, unenforceable or illegal for whatever reason such provision(s) shall be null and void but that the remaining provisions of the Contract Documents shall be unaffected thereby and shall continue to be valid and enforceable.

GC-49. INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due as required by Missouri law.

GC-49. GOVERNING LAW

This Contract shall be governed by, and construed in accordance with, the laws of the state of Missouri.

GC-50. VENUE

Venue of any litigation arising in connection with this Contract shall be the state courts of Platte County, Missouri.

EXHIBIT A-1

Special conditions

SC-1. WORK IN OR ACROSS STREET OR HIGHWAY RIGHT-OF-WAY

All work performed and all preparations of the Contractor or his employees, and Subcontractors, if any, within the limits of street or highway rights-of-way shall be in conformity with the requirements, and be under the control, through the City, of the street or highway authority owning or having jurisdiction and control over such rights-of-way in each case. Any costs incurred to comply with such requirements are the responsibility of the Contractor.

SC-2. CONTRACTOR TO FURNISH STAKES AND HELP

The Contractor, unless otherwise instructed, shall stake the Work and shall furnish, without charge, competent personnel from its workforce and such tools, stakes, and other materials as required in properly staking out the Work, in making measurements and surveys and in establishing temporary or permanent reference marks in connection with said Work. The stakes furnished for the staking of the Work shall be of such type, size and quality as to be acceptable to the Public Works Director.

SC-3. PRESERVATION OF MONUMENTS AND STAKES

The Contractor shall carefully preserve all monuments, property corners, bench marks, reference points and stakes, and in case of destruction of the same, will be responsible for proper replacement and for any mistakes or loss of time that may be caused by their unnecessary loss or disturbance. In the event that the loss of stakes, etc., causes a delay in the Work because the Contractor failed to discharge the foregoing obligation, the Contractor shall have no claim for damages or extensions of time. In the case of any permanent monuments, property corners or bench marks which must of necessity be removed or disturbed in the construction of the Work, the Contractor shall carefully protect and preserve the same until they can be properly referenced for relocation. The Contractor shall furnish at its own expense such materials, surveyors and assistance as are necessary for the proper replacement of monuments, property corners or bench marks that have been moved or destroyed.

SC-4. MAINTENANCE OF TRAFFIC

Local traffic on all streets shall be carried through construction whenever possible. Detours of traffic will be permitted when necessary and with the prior written permission of the City. Streets may be closed for short periods of time under authority of proper permit issued by the City or authority having jurisdiction. However, the Contractor shall

conduct its Work so as to interfere as little as possible with public travel, whether vehicular or pedestrian, on such streets. Proper notification to County and City police units and to Fire Districts shall be given by the Contractor before closing any public thoroughfare.

Where construction operations require the closing of private driveways, the Contractor shall give a minimum of 48 hours' notice to the owner or owners thereof and where necessary shall provide temporary access to given property.

SC-5. BORROW AND WASTE AREAS

All borrow materials shall be obtained by the Contractor at its own cost and expense. The borrow area and materials shall be approved by the Public Works Director and shall be friable material suitable for compaction.

All waste areas shall be located off the site and arrangements and payment for use for such areas shall be the sole responsibility of the Contractor. All waste disposal shall be in compliance with federal, state, and local laws, ordinances and regulations.

SC-6. PARKING AREAS, DRIVES AND WALKS

All existing parking areas, drives and walks within the Project limits shall be adjusted to conform to the lines and grades shown on the plans. Any of the above structures that are removed or damaged during construction shall be reconstructed, at Contractor's expense, of materials that will create a quality equal to or better than the condition of the existing facility prior to construction operation.

SC-7. STREET SIGNS AND TRAFFIC AIDS

The Contractor shall be responsible for all preexisting traffic control devices at the Project site, including installation, maintenance, removal and storage of such devices. All temporary and permanent traffic control devices supplied by the Contractor shall comply with and be installed in accordance with the Manual on Uniform Traffic Control Devices, current edition as revised, and the Traffic Control Devices Handbook.

SC-8. EASEMENTS AND RIGHTS-OF-WAY

Permanent and temporary (construction) easements and rights-of-way will be provided by the City as shown on the plans. The Contractor shall confine its operations to the easements provided and shall carefully note where buildings, structures or other obstructions will limit its working space. In the event that easements and rights-of-way are not available or if they have not been secured, or if entry to property is denied by court order, injunction, litigation or any other reason, the Contractor shall cease operations in such area and confine its work to other area approved by the City. In the event of any delay arising from delays in securing easements and rights-of-way, the Contractor may request an extension of time under the General Conditions.

EXHIBIT B-1

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that the undersigned _____ hereinafter referred to as the "Contractor", and _____, a Corporation organized under the laws of the State of _____ and authorized to transact business in the State of Missouri, as Surety, are held and firmly bound unto the City of Parkville, Missouri, hereinafter referred to as the "Owner" in the penal sum of _____ DOLLARS, lawful money of the United States of America for the payment of which the sum, well and truly to be made, we bind ourselves and our heirs, executors, administrators, successors, and assigns, jointly and severally by these presents.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the above bonded Contractor has, on the _____ day of _____, 20_____, entered into a written contract with the aforesaid Owner for furnishing (among other things) all materials, equipment, tools, superintendence, labor, and other facilities and accessories, for the construction of certain improvements as designated, defined and described in the said Contract and the Conditions thereof, and in accordance with the Specifications and Plans therefor, a copy of said Contract being made a part hereof:

NOW THEREFORE, if the said Contractor shall and will, in all particulars, well, duly and faithfully observe, perform and abide by each and every covenant, condition, and part of the Construction work required under said Contract, and the Conditions, Specifications, Plans and other Contract Documents thereto attached or, by reference, made part thereof, according to the true intent and meaning in each case, and if said Contractor shall replace all defective parts, material and workmanship as required by the Contract, then this obligation shall be and become null and void; otherwise it shall remain in full force and effect.

PROVIDED FURTHER, if said Contractor fails in any particular to duly and faithfully observe, perform and abide by each and every covenant, condition and part of the said Contract and the Conditions, Specifications, Plans and other contract documents, thereto attached, or, by reference made a part thereof, according to the true intent and meaning in each case, or if said Contractor shall fail to replace all defective parts, material and workmanship as required by the Contract, then the Surety will promptly advise the City of its election to either complete all of the obligations of the Contractor; engage another Contractor acceptable to the City to complete the obligations of the Contractor; or pay the costs incurred by the City to complete the project and/or the costs to repair any defective parts, and any other damages incurred by the City in procuring completion and/or repair, such amount not exceeding the amount of this obligation, together with interest as provided by law.

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or additional to the terms of the contract, or the work to be performed thereunder, or the specifications accompanying the same, shall in any ways affect this obligation on this bond and it does hereby waive notice of any change, extension of time, or addition to the terms of the contract, or to the work, or to the specifications.

IN TESTIMONY WHEREOF, the said Contractor has hereunto set his hand, and the said Surety has caused these presents to be executed in its name, and its corporate seal to be hereunto affixed, by its attorney-in-fact duly authorized hereunto so to do, on this the _____day of _____, 20_____.

_____
Contractor

ATTEST:

_____
(SEAL) Secretary

By_____

_____
Title

_____
Surety Company

(SEAL) By _____

By_____
Attorney-in-Fact

By_____
Missouri Agent

Surety Claims Address: _____

(Accompany this bond with Attorney-in-Fact's Power of Attorney from the Surety Company certified to include the date of the bond)

EXHIBIT B-2

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that the undersigned _____ as Contractor, and _____ as Surety with General Offices in the City of _____ and authorized to transact business in the State of Missouri, are held and firmly bound unto the

CITY OF PARKVILLE, MISSOURI and the STATE OF MISSOURI, in the penal sum of

_____DOLLARS ($_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, and our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents:

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the said Contractor has on the _____ day of _____, 20_____, entered into a contract with the City of Parkville, Missouri, for furnishing all tools, equipment, materials and supplies, performing all labor, and constructing public improvements described in the Contract, as designated, defined and described in the said Contract and the Conditions thereof, and in accordance with the Specifications and Plans therefor, a copy of said Contract being made a part hereof.

NOW THEREFORE, if the Contractor or the subcontractors of the Contractor shall pay all indebtedness incurred for supplies, materials, or labor furnished, or equipment used or consumed in connection with or in or about the construction or making of the improvements described in the above-mentioned contract documents, this obligation shall be void; otherwise, it shall remain in full force and effect.

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alterations or additions to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying the same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work to be performed or to the specifications. The said Surety further agrees that any person to whom there is due any sum for labor or materials furnished, as hereinafter stated or said person's assigns, may bring action on this bond for the recovery of said indebtedness.

IN TESTIMONY WHEREOF, the said Contractor has hereunto set his hand, and the said Surety has caused these presents to be executed in its name, and its corporate seal to be hereunto affixed, by its attorney-in-fact duly authorized thereunto so to do at _____, on this, this _____ day of _____, 20_____

_____
Contractor

ATTEST:

_____
(SEAL) Secretary

By_____

_____
Title

_____
Surety Company

(SEAL) By _____

By_____
Attorney-in-Fact

By_____
Missouri Agent

Surety Claims Address: _____

(Accompany this bond with Attorney-in-Fact's Power of Attorney from the Surety Company certified to include the date of the bond)

Exhibit B-3

Bond No._____

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ as Principal, and _____ as Surety, are held and firmly bound unto the City of Parkville, Missouri, in the sum of _____ Dollars ($ _____), for the payment of which sum, well and truly to be made, we hereby bind ourselves, our heirs, executors, administrators, successors and assigns, firmly by these presents.

THE CONDITIONS OF THIS BOND ARE SUCH THAT:

WHEREAS, the said _____has been given permission by the City Director of Public Works, to construct _____ _____.

NOW THEREFORE, if the said _____ shall construct or cause to be constructed and completed the entire improvement in accordance with specifications used by the city of Parkville for like improvements, and to the lines and grades shown on the plans, all to be done subject to the approval and acceptance of the City Director of Public Works of said city of Parkville, and shall construct said improvement with such materials and in such manner that the same shall endure without need of any repairs for a period of two (2) years from and after the completion of said improvement and acceptance thereof; and if said improvement shall endure without the need of repairs for the period of two (2) years from and after the completion and acceptance thereof as aforesaid, then this obligations shall be void; otherwise to be in full force and effect.

Surety:_____

By:_____

Name_____
Missouri Resident Agent
Attorney-in-Fact, Power of Attorney, Attached

_____
Street, City, ZIP

_____
Phone Number

Principal:_____

By:_____

Name:_____
Title_____

_____
Street, City, ZIP

_____
Phone Number

Approved as to amount of bond:

By_____
Public Works Director
Date_____

Exhibit C

List of Plans, by sheet and date of issue, and all addenda thereto:

1. TITLE SHEET & NOTES
2. SEQUENCE OF WORK
3. SITE PLAN
4. BASIN 1 TOP PLAN
5. BASIN 1 SECTION
6. BASIN 2 TOP PLAN
7. BASIN 2 SECTION
8. BLOWER ROOM PLAN - DEMOLITION
9. BLOWER ROOM PLAN - INSTALL
10. BLOWER ROOM – SECTION 1
11. BLOWER ROOM – SECTION 2
12. PIPE GALLERY PLAN
13. PIPE GALLERY SECTION
14. LAB BUILDING ELECTRICAL PLAN
15. BLOWER POWER DIAGRAM
16. BLOWER CONTROL DIAGRAM
17. RAS / WAS VALVE PIT PLAN
18. RAS / WAS CONTROL ROOM PLAN
19. BAR RACK PLAN

Exhibit D

LIST OF SPECIFICATIONS FOR: WWTF REPAIRS – 2026

Section 11376 Tri-Lobe Rotary Blower Package

Section 16420 Adjustable Frequency Drives

SECTION 11376

TRI-LOBE ROTARY BLOWER PACKAGE

PART 1 GENERAL

1.1 SUMMARY

A. Furnish and install two tri-lobe blower packages at the Parkville WWTF.

B. Provide a complete skid-mounted blower system including: blowers, motors, belt drive system, filters, silencers, pressure gages, relief valves, coatings, mounting frame, and all other accessories and hardware required for a complete and fully functional system. The blower system shall be an "open skid" design without an enclosure. Each blower shall connect to inlet piping to draw outside air into the blower inlet silencer assembly.

C. All equipment specified in this section shall be designed and furnished by the blower manufacturer, who shall be responsible for the suitability and compatibility of all equipment specified in this Section.

D. Adjustable frequency drives are furnished under a separate Section. Contractor shall ensure compatibility of the blowers and adjustable frequency drives. Contractor shall interface the blowers with the existing Plant Control System (SCADA), in a similar manner as the existing blowers.

1.2 RELATED SECTIONS

A. Section 16420 – Adjustable Frequency Drives

1.3 REFERENCES: The following publications form a part of these specifications, to the extent indicated by references thereto. The revision in effect at the time of the Bid Opening shall be applicable. If these publications conflict with the requirements of this Section, the Section requirements shall govern.

A. Anti-Friction Bearing Manufacturers Association (AFBMA).

B. National Electrical Code (NEC)

C. American Society for Testing and Materials (ASTM).

D. International Electrotechnical Commission (IEC)

E. Institute of Electrical and Electronics Engineers (IEEE).

F. National Electrical Manufacturer's Association (NEMA).

G. International Organization of Standardization (ISO)

H. German Institute for Standardization (DIN)

1.4 DEFINITIONS

A. SCFM: Standard cubic feet per minute is understood to be air at 68° F, 14.7 psia, and 36 percent relative humidity flowing at a rate of 1 cubic foot per minute.

1.5 SYSTEM DESCRIPTION

A. Design Requirements:
1. Blowers: Provide three (2) rotary tri-lobe, positive displacement blowers. Blowers shall be operated using adjustable frequency drives for adjustment of air flow. Blowers shall be sized so that upper end of capacity envelope is no greater than 95% of manufacturer's recommended maximum capacity range.
2. Assembly Requirements: Contractor and manufacturer must note that the blower equipment must pass through one of two openings: a 36-inch square opening in the roof of the blower room, and or a 36" wide by 80" tall doorway. Blower package shall be designed to be dis-assembled to the degree necessary to pass through these openings, and then re-assembled with a minimum of effort.

B. Performance Requirements:
1. Blowers: Requirements below are for each unit. Supplier shall submit inlet capacity and power calculations based on the criteria set forth below.

Rated capacity and discharge pressure:	493 scfm at 11.0 psig
Max blower speed at rated capacity:	4,540 rpm
Site elevation:	750 feet MSL
Site barometric pressure:	14.2 psia
Summer inlet conditions:	100 deg F & 85% RH
Winter inlet temperature:	0 deg F
Reduced speed capacity & pressure:	131 scfm at 9.8 psig
Maximum noise level (no-enclosure):	111 dB at 60 Hz
Motor nameplate	40 Hp
Motor power	460 V / 3 phase / 60 Hz

C. Sequence of Operation and Controls: Two blower units are provided. Normally two blowers will be operated. Each blower will be dedicated to one tank, and operated at variable speed using a VFD, based on input from dissolved oxygen sensors. On rare occasion, one blower will be used to supply air to both tanks and the air flow spit between the tanks.

1.6 SUBMITTALS: The Contractor shall submit the following items required by this division in accordance with Article 15 of the General Conditions. Contractor may submit the information in electronic PDF format directly to the Engineer.

A. Product Data for Review: Standard product literature, performance specifications, drawings and data. Product data shall include, but shall not necessarily be limited to the following:
1. Table of contents
2. A complete and detailed list of any and all variations to the specification
3. Descriptive literature, bulletins, and/or catalog cut sheets of the equipment.
4. Scope of supply
5. Blower package performance data sheets showing at least the following:
   a. Package model name
   b. Bare blower model name
   c. Design conditions as listed in this section
   d. Air flow in ICFM and SCFM for design conditions listed
   e. Discharge pressure
   f. Motor size
   g. Brake horse power required for both blower
   h. Bare blower speed with percentage of its maximum speed
   i. Process air connection size.
   j. Operating Voltage required for both main motor.

k. Sound pressure and power levels
l. Dimensions
m. Package weight
n. Discharge temperature
o. Accessories being supplied

6. Installation data sheets
7. Manufacturer's standard performance curve showing blower rpm, pressure differential, capacity in ICFM, blower shaft horsepower, temperature rise at standard conditions.
8. Blower package drawing showing all important details required for installation including dimensions, anchor bolt locations, size and location of connections to other works and weight of equipment.
9. Motor manufacturer's data sheet showing at least the following:
   a. Motor manufacturer's name and model number
   b. Efficiency class and %
   c. Efficiency at ½, ¾, and full load
   d. Amp draw
   e. Motor RPM
   f. Code letter
   g. Motor frame
   h. Motor thermistors.
10. Electrical connection diagram for motor and any blower accessory requiring an electrical connection.
11. Inlet filter documentation
12. Data sheets for supplied instrumentation and accessories, including thermistor control module.
13. Spare parts overview drawing
14. List of spare parts furnished.
15. Paint specification for blower package
16. Maintenance overview
17. Blower startup check list
18. Lubrication requirements
19. MSDS sheet (oil)
20. Warranty information
21. Manufacturer's standard for equipment standards
22. Compliance with Machinery Standards for sound and performance certificate.

1.7 OPERATIONS AND MAINTENANCE INSTRUCTIONS: The Contractor shall submit the following items required by this division in accordance with Article 15 of the General Conditions. Contractor may submit the information in electronic PDF format directly to the Engineer. The final data shall be delivered both in hardcopy format, with 2 copies assembled into binders, and in electronic PDF format on electronic media.

A. O&M Manual Data: Shall include, but shall not necessarily be limited to the following:
   1. All information specific the model furnished, including:
   2. Technical Data for the blower package
   3. Safety and Responsibility
   4. Design and Function
   5. Installation and Operating Conditions
   6. Installation
   7. Initial Start-up
   8. Operation
   9. Fault Recognition and Rectification
   10. Maintenance
   11. Spare parts, Operating Materials, Service
   12. Decommissioning, Storage and Transport
   13. Annex with Drawings and Diagrams

1.8 QUALITY ASSURANCE

A. Manufacturers' Qualifications:
   1. All equipment furnished under this section shall be manufactured in a plant whose quality management system is certified / registered as being in conformity with ISO 9001 and who shall assume complete responsibility for the design and performance of the blower package.
   2. All equipment furnished under this section shall be new, unused, and shall be the standard product of the manufacturer, who shall have a minimum of 10 years' experience in producing blower packages and be able to produce evidence of at least 5 installations of similar size in satisfactory operation in the United States, if requested.

B. Factory Tests:
   1. All cast parts to be manufactured in a plant whose quality management system is certified / registered as being in conformity with ISO 9001.
   2. All critical dimensions of the blower components provided by the manufacturer shall be verified and documented prior to assembly.
   3. Each blower provided by the manufacturer shall be tested per ISO 1217, Annex B.
   4. Each blower provided by the manufacturer shall be operated at its maximum rated speed and differential pressure for fifteen (15) minutes.
   5. On completion of final assembly of the packaged blower and prior to shipment, each packaged blower shall be mechanically run for a minimum of sixty (60) minutes.
   6. Each blower package provided by the manufacturer shall be guaranteed to provide performance to ISO 1217, Annex C.
   7. A report on each blower system, signed by an officer of the company, shall be furnished with the O&M manuals giving as a minimum the following readings taken at/or near the end of the one hour run time:
      Amperage draw, per leg.
      Voltage draw, per leg.
      Pressure.
      Housing surface temperatures of motor bearings, blower bearings, and blower discharge air.
      Noise level in dbA measured at 3 ft from the blower system in (6) locations.
      Vibration levels in in/sec of blower and motor bearing housing in horizontal, vertical and axial direction and in (6) locations on the common base.
   8. A document certifying that the supplied blowers conform to the design specifications shall be provided.

1.9 MANUFACTURER'S FIELD SERVICES: In accordance with Section 01750 - Starting of Systems, an authorized representative of the manufacturer shall provide the following:

A. Start-up Services: As required, with a minimum of one 8-hour day. This includes the installation inspection and verification of re-assembly. This time may be divided between the two blowers, as required by the project sequence of construction.

B. Demonstration and Training: One 4-hour session shall be provided, to be scheduled on a day following start-up, as acceptable to Owner's operations personnel. This time may be divided between the two blowers, as required by the project sequence of construction.

1.10 WARRANTY

A. The manufacturer shall warrant the bare blower being supplied against all defects in workmanship and materials for a period of sixty (60) months from date of startup, not to exceed sixty-six (66) months from date of shipment from the manufacturer of the blowers. All other package components shall be warranted for a period of twelve (12) months from date of startup, not to exceed eighteen (18) months from the date of shipment.

B. The manufacturer's warranty period shall run concurrently with the contractor's warranty period.

C. The contractor shall be responsible for proper storage of the equipment so as to remain in "as shipped" condition. If the equipment remains in storage at the job site for longer than six (6) months before installation, the contractor shall provide factory service personnel for a complete inspection of the equipment. Any work necessary to restore the equipment to "as shipped" condition shall be the responsibility of the Contractor.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Base Bid Manufacturers: The following manufacturers' equipment will be acceptable, subject to the requirements set forth in this section.
1. Kaeser Compressors, Inc.
2. Atlas Copco USA, Inc.

B. No substitution will be permitted for base bid equipment items. Equivalent products of other manufacturers shall be approved by Engineer before the Bid. To be considered as an equivalent product, the equivalent supplier shall submit a qualification package to Engineer prior to the bid date, in accordance with the Instructions to Bidders. Engineer will determine if the proposed equivalent product is acceptable, and if acceptable Engineer will publish the equivalent product by addendum.

2.2 BLOWER UNIT:

A. Blower Type:
1. The bare blower shall be mounted for vertical air flow, be of the oil-free, positive displacement, rotary three lobe type, designed for air or other inert gas service, and belt driven via electric motor.
2. The bare blower assembly must operate at the effective value for vibration velocity in frequency range A and B, according to VDI 3836.

B. Material: AISI, ASTM, GJL, GLS, DIN, etc…, numbers, types, and grades specified are typical of material composition and quality, equivalent materials will be considered.

C. Casing/Housing:
1. The casing shall be made of high strength, close grained, cast iron, and shall be adequately ribbed to prevent casing deflection and facilitate cooling. Casing shall be of EN GG 20 material.
2. The casing shall be precision machined to allow for minimum clearances.
3. The casing shall include channels integrated on the discharge to reduce blower pulsation and dampen noise.
4. The casing shall include threaded atmospheric vent ports between its air-side and oil-side labyrinth seals for safe separation of the conveying and oil chamber.
5. Inlet and discharge ports shall be drilled and tapped for studs to allow solid connection of mating surfaces. Through bolting shall not be allowed. Flange style blower ports, which may be subject to loading, causing cylinder distortion, shall not be allowed.
6. Bearing fits shall be precision machined to ensure accurate positioning of the rotors in the casing.

D. Rotor Assemblies:
1. The rotors shall be precision machined out of a one-piece casting made of EN GGG 50 material. Stub shafts or two-piece impellers shall not be allowed.
2. The rotor assemblies shall be statically and dynamically balanced to ISO standard 1940/1- Q2.5 (turbine rotor). Modifications to the face of the rotors for balancing purposes are not acceptable.
3. The rotors shall be a tri-lobe design in order to minimize pulsation and noise.
4. The rotor must be solid or closed-end to prevent build-up of contaminants inside the rotor causing imbalance.
5. Cored rotors must be closed using threaded iron plugs which are permanently fixed. Impeller end caps of stamped sheet metal shall not be allowed.
6. The rotors shall have an integral sealing strip for improved efficiency.
7. The rotors shall operate without rubbing, liquid seals or lubrication in the air chamber.

E. Cover Plates:
1. The gear-end and drive-end cover plates shall be high strength, close grained, cast iron made of EN GG 20 material. Aluminum cover plates shall not be allowed.
2. The cover plates shall have a precision machined sealing face.
3. The drive-end cover plate shall include at least two precision machined holes to allow for the use of fitting bolts to accurately align the opening for the input shaft seal.

F. Timing Gears:
1. The rotor timing gears shall be precision machined and ground from alloy steel made from case hardened 16 MnCr5 material.
2. Each timing gear shall be straight cut and beveled to quality standard 5f 21, which will eliminate axial bearing loads and ensure long life as well as quiet operation. Helical gears, which cause axial loading, shall not be allowed.
3. Each timing gear shall be manufactured in accordance with:
   a. DIN 3960, Specifications for Spur Gear Sets
   b. DIN 3961 & DIN 3962, Tolerances for Spur Gear Mesh
   c. DIN 3964, Specifications for Shaft Centering
4. The timing gear set shall be taper-mounted on the rotors. Keyed, hub mounted, taper-pinned, or splined shaft timing gear mounting designs are not acceptable.

G. Bearings:
1. All four rotor shaft support locations shall incorporate large, heavy-duty, full complement, cylindrical roller bearings with PEEK cages, designed with at least 5-times the dynamic capacity of ball bearings. Ball bearings shall not be allowed.
2. The bearing maximum speeds must be at least two times the maximum recommended blower speed.
3. The bearings minimum acceptable L10 design life shall be as follows;
   a. At least 40,000 hours at blower's maximum rated speed and maximum rated differential pressure.
   b. At least 100,000 hours at design conditions.

H. Lubrication:
1. Both the gear end and the drive end of the blowers shall be oil splash lubricated via a disc slinger for minimal maintenance and long service life. Grease lubricated bearings in the blower are not acceptable.
2. The lubrication design shall ensure adequate lubrication of the timing gears and bearings.
3. The drive-end and gear-end oil chambers must not be interconnected and each oil chamber shall have a domed design sight glass to allow visual inspection of oil level and oil condition, viewable from the front of the blower.
4. Blower to be factory filled with a synthetic lubricating fluid that is rated for the design conditions specified.

I. Rotor Seals: Each rotor shall include one labyrinth seal assembly on each end, four assemblies in total per blower. Each seal assembly shall consist of the following;

2. Oil splash guard ring.
3. Shaft guide wear sleeve with vent holes located between the dual air and oil ring seals. Wear sleeve shall protect the blower casing.
4. Four piston ring type labyrinth seals made from heat treated GG/42CrMo4 material. Two seals located on the air side and two seals located on the oil side of the grooved rotor sleeve. The use of rubber lip seals shall not be allowed.
5. Grooved rotor sleeve which will protect the rotor shaft and be used to hold the four piston ring seals.

J. Input Shaft Seal Assembly:

1. The input drive shaft seal shall be a high temperature radial lip type seal made from Viton elastomer. The seal shall prevent oil leakage from where the input shaft goes thru the drive end cover.
2. The seal design shall incorporate a replaceable wear sleeve on the input drive shaft.
   a. The sleeve exterior to be tungsten carbide coated to reduce friction and wear.
3. The input shaft seal design must allow for the lip seal and the shaft sleeve to be replaced without removing the drive end cover plate.

2.3 DRIVE MOTOR:

A. Drive Motor:

1. Motor shall be designed, manufactured, and tested in accordance with the latest revised editions of NEMA MG-1, IEC, DIN, ISO, IEEE, ANSI, and AFBMMA standards as applicable and shall be capable of continuous operation.
2. Motor must meet or exceed Energy Independence and Security Act (EISA 2007) standards for NEMA Premium efficiency. It shall also be marked with a Department of Energy Certification Compliance Number to assure compliance.
3. Motor shall comply with Low Voltage Directive 2006/95/EC or equivalent and be UL listed.
4. Motor must be inverter rated with impulse peak resistance in accordance with IEC 60034-1:2010 or equivalent for operation with an IGBT frequency converter or equivalent.
5. Motor horsepower nameplate rating shall not be exceeded at the design discharge pressure when operating at 60hz.
6. The temperature rise of the motor windings shall not exceed IEC and NEMA standards when the motor is operated continuously at the rated horsepower, rated voltage, and frequency in ambient conditions at 104ºF / 40ºC.
7. Motor shall be suitable for Full Load/Direct On-line starting, Solid State Ramp starting, VFD, and/or Wye-Delta reduced current starting.
8. Motor to be supplied, mounted and aligned by the blower package manufacturer.
9. VFD controlled motor (=>100HP) shall have an isolated non drive end “B-side” bearing. Methods of shaft insulation by means of brushes and/or grounding rings are not acceptable.
10. Motor shall confirm to the following:
    a. Motor voltage: 460v/ 3ph/ 60hz
    b. Type: Squirrel cage induction
    c. Speed: Single
    d. Torque: Constant
    e. Service factor: 1.15
    f. Enclosure: TEFC
    g. Mounting: Horizontal
    h. Speed: up to 3,600 rpm @ 60 hz (maximum)
    i. Design: A
    j. Duty cycle: continuous (24 hours a day)
    k. Winding insulation: F
    l. Temperature rise: B
    n. Conduit box location: Top

o. Wiring Connection: Terminal strip inside conduit box. Use of wire nuts for connection of motor wiring to power source shall not be allowed.
p. Bearing L10 life: >40,000 hours
q. Bearing lubrication: Grease
r. Bearing type:
1) ≤ 40HP: Permanently greased
2) ≥ 50HP: Re-greaseable,
a) Lubrication fittings must be located towards the front of the blower package so that both bearings can be safely lubricated while the blower package is running.
b) Grease drain holes to be closed for protection of the environment. A spent grease cavity in the bearing cover should be large enough to hold spent grease required for 40,000 operating hours.
s. Bearing design: Cantilever forces (belt drive)
t. Condensation winding 110v heater: Not required.

11. Motor shall be as manufactured by Siemens, or equal.

B. Each motor shall be provided with Positive Temperature Coefficient (PTC) thermistors embedded in each winding, and the three thermistors shall be wired in series and connected to terminals in the motor conduit connection box. Blower supplier shall furnish (loose), for each blower, a thermistor control module with N.O. and N.C. contacts. Contractor shall mount the thermistor control module for each blower in the MCC bucket and shall wire the module into the blower controls, so that the blower will stop when the motor thermistors sense a high motor temperature condition.

2.4 BLOWER PACKAGES:

A. Drive:
1. The blower shall be driven by the drive motor through a V-belt drive assembly designed to meet the blower conditions specified with a 1.2 or larger service factor.
a. V-belts shall have a XPZ/XPB profile with embedded low-stretch polyester tension cords. The v-belts shall be designed for high rotational speeds and be heat and oil resistance. Ribbed, banded, or multi groove belts shall not be allowed.
b. Sheaves shall have a SPZ/SPB profile and be balanced to G16 for below 30m/s and G6.3 for sheaves above 30m/s.
c. Keyed taper bushing shall be used for easy installation and removal. QD type bushings shall not be allowed.
2. The blower drive must have a fully enclosed guard which protects the operator when the blower package enclosure is open while in operation.
a. Belt guard shall be OSHA approved.
b. The belt guard made from the manufacturer's standard sheet metal, shall be designed to duct the cooling air flow from the drive motor fan across the front of the blower to supplement blower input shaft seal cooling.
c. The mounting fasteners for the belt guard shall be retained on the housing to prevent loss during maintenance.
3. Belt tension shall be accomplished by the use of a motor swing base and automatic tensioning assembly.
a. The drive motor shall be mounted on a pivoting swing base with an axial adjustment for proper alignment of the v-belts. The weight of the drive motor shall provide the primary belt tension. The use of a sliding motor mount shall not be allowed.
b. A tensioning assembly consisting of a threaded rod with spring shall be used to adjust the v-belt tension to prevent belt slippage and efficiently transmit power to the blower. It shall include a visual indication
c. Adjustment of the tensioning assembly shall be accomplished without removal

of the guard or loosening of the motor mounting bolts.

d. The design of the swing base with tensioning assembly shall prevent the swing base from falling and creating a personnel hazard in the event of a belt failure. The tensioning assembly adjusting nut shall raise the motor swing base facilitating v-belt changes without the use of pry bars or jacks.

B. Inlet Silencer:

1. An inlet silencer designed for the frequency range of the blower, shall be provided to reduce the noise of the blower package as specified.
   a. The inlet silencer shall be of carbon steel construction and be of the wear-free absorptive type, directly connection to the inlet port of the blower, and shall be mounted horizontally.
   b. The inlet connection shall be configured to connected to piped outdoor air.
   c. The inlet silencer shall be lined with replaceable polyether absorptive material.
   d. The inlet silencer shall have an integral filter designed to protect the blower from particulates. It shall be located between the absorptive material and the blower inlet.
      1) The filter element shall be a washable and reusable polyester element for minimal pressure drop.
      2) The filter efficiency shall meet ASHRAE 52.2 MERV7 50-70%% @ 3-10 microns corresponding to EN779 G4.
      3) The filter element shall be removable without disconnecting the inlet duct.
   e. The filter maintenance cover and element must be removable by hand (without the use of tools).
   f. The pressure loss thru the inlet silencer assembly shall be accounted for in the motor horsepower selection of the blower package. A pressure allowance shall also be made for inlet piping external to the blower package.

C. Base frame with integrated discharge silencer:

1. The blower base frame with integrated discharge silencer shall be designed for the frequency range of the blower, shall be provided to reduce the noise of the blower package as specified.
   a. The blower base frame shall be of formed steel construction and designed for horizontal mounting of blower with vertical air flow. Flange-mounting only of the bare blower to the blower base frame shall not be allowed, additional support by use of the base frame shall be required; preventing the loading of the blower casing and discharge silencer shell.
   b. The blower base shall incorporate the pivoting motor swing base and tensioning assembly to insure proper alignment of the drive assembly.
   c. The discharge silencer shall be an integral part of the base frame.
   d. The discharge silencer type shall be a combination of absorption, reflection and diffusion.
      1) The design of the discharge silencer shall incorporate a solid outer and perforated inner cylinder with absorptive material in between the cylinders. Absorptive material shall be long, flexible, knotted polyester fibers to allow for lowering the noise and heat emissions inside the sound enclosure. The use of mineral wool shall not be allowed.
      2) The discharge silencer shall have connections ports for pressure relief, discharge pressure, and discharge temperature. Unused ports shall be capped or plugged.
   e. The pressure loss thru the discharge silencer assembly shall be accounted for in the motor horsepower selection of the blower package.

D. Filter / Silencers:

1. The inlet filter shall be integral to the inlet silencer and shall include a washable and

reusable polyester element for minimal pressure drop. Total pressure drop through the filter shall not exceed 6" water column.

2. The inlet silencer shall be of the absorptive type, directly connected to the inlet port of the blower, and shall be mounted horizontally.
3. The discharge silencer shall be of the absorptive type with an integral pulsation dampener and directly connected to the outlet port of the blower. The discharge silencer shall be mounted horizontally and shall be integral to the base frame.

E. Sound Enclosure:
1. Not required. Blower package shall be "open", allowing full access to the blower, motor, and other components.

F. Blower Package Accessories: Provide the following:
1. Pressure Relief Valve
   a. The relief valve(s) shall be factory installed on the frame-mounted piping. Relief valve may not be shipped loose for field installation in the discharge piping.
   b. The relief valve(s) shall be spring type and must be sized for 100% of the design flow specified. Weighted relief valves shall not be used without consent of Engineer.
   c. The relief valve(s) shall be set to protect the blower from excessive differential pressure based on the design conditions specified. A seal shall be affixed that must be broken if set point is changed.
   d. The relief valve(s) shall not relieve air or make noise until the high-pressure setpoint is reached. Blower manufacturer shall adjust or change out the relief valve(s) to accomplish this.
   e. The relief valve shall be ASME Section IIIV, UV, CE, and PED certified.
   f. The relief valve shall be manufactured by Kunkle.
2. Check Valve
   a. A check valve to prevent back flow through the blower shall be factory installed and not shipped loose for field installation in the discharge piping.
   b. The check valve flapper shall be swing type made from a steel disc embedded in a high temperature silicone elastomer. The valve shall be designed so that, in the event of failure, the valve element is retained in the valve housing. Split disc or center hinged designs shall not be used.
   c. The check valve capacity shall exceed the blower package's maximum discharge pressure and temperature.
3. Flexible Connector
   a. An elastomeric compensator/flex connector shall be provided to isolate the connection of the blower package to the self-supporting system piping. Restraining rods shall not be used. Flex connectors located between the bare blower and silencers shall not be allowed.
   b. The flexible connector capacity shall exceed the blower package's maximum discharge pressure and temperature.
   c. Discharge connection:
      1) 4" and smaller connection, a web reinforced silicone rubber sleeve with corrosion resistant clamps shall be provided.
      2) 6" and larger connection, an ANSI/DIN flanged arch-type EPDM web reinforced connector shall be provided.
   d. Piped Inlet connection:
      1) 6" or smaller connection, a web reinforced silicone rubber sleeve with corrosion resistant clamps shall be provided.
      2) 8" and 10" piped inlet connection, an arch-type EPDM web reinforced sleeve with corrosion resistant clamps shall be provided.
      3) 10" ANSI/DIN flanged inlet connection, an ANSI/DIN flanged arch-type EPDM web reinforced connector shall be provided.
4. Blower instrumentation gauges: The following gauges shall be pre-piped and panel

mounted on the front of the sound enclosure. Gauges shall not be shipped loose for field installation.

a. Filter differential pressure gauge: The filter differential pressure gauge shall measure the pressure difference from ambient to the back side of the filter that is integral to the blower package's inlet silencer. When the filter starts to become dirty, the resistance shall be shown on a resettable red dial indicating when the filter shall be changed.

b. Discharge pressure gauge

1) The discharge pressure gauge shall measure the pressure at the discharge of the blower.

2) The discharge pressure gauge shall be dual unit (English – PSI / Metric – Bar) with a range of 0 – 23 psi (0 – 1.6 bar). Minimum dial diameter shall be 2 ½", made with a stainless-steel case and be glycerin filled for pulsation dampening.

5. Discharge pressure switch:

a. The blower package shall include an installed discharge pressure switch that shall measure discharge pressure of the blower.

b. The discharge pressure switch shall be field adjustable.

c. The discharge pressure switch shall be a SPDT switch, Voltage rating up to 250v, 1A

d. The high pressure set point shall be as recommended by the blower manufacturer. Contractor shall wire the pressure switch to the blower control system. The switch shall be wired to shut down the blower package when actuated.

5. Oil Drains

a. An oil drain from the blower drive-end and gear-end lubricating oil sumps shall be separately piped to the front of the blower base with flexible tubing. Common fill and drain shall not be allowed.

b. Each oil drain shall include a drain valve installed for ease of maintenance. The drain valves shall be 90° stainless steel ball valves and include a fully retained gasketed threaded cap to prevent accidental discharge of the blower lubricant.

6. Vibration isolators

a. Vibration isolators shall be provided between the base frame with integrated discharge silencer and sound enclosure skid to prevent transmission of vibration to the foundation.

b. A ground wire shall be installed by Contractor between the blower base and the sound enclosure base to allow for grounding of the complete blower package.

7. Instrumentation junction box: The blower package shall include an instrumentation junction box where all the provided instrumentation is wired to a terminal strip making for a central electrical connection point (except for the blower drive motor).

G. Nameplates: The blower package shall have at least two weather proof corrosion resistant type nameplates which includes the manufacturer name, phone number, model number, year, capacity, max end pressure, max pressure difference, blower speed, equipment number, part number, serial number, voltage, phase, HP, motor Hz/ rpm, and FLA attached on the outside and inside of the blower package.

H. Anchor bolts and hardware: Anchor bolts, washers, hex nuts, and all other fastening hardware shall be stainless steel and be supplied by the contractor, and shall be the size recommended by the blower manufacturer.

I. Paint Specifications:

1. The blower manufacturer is responsible for surface preparation, priming and finish coating of the blower package and components requiring paint in accordance with the manufacture's standard procedures. Field painting of blower equipment or supplying components that are only prime painted is not acceptable.

a. Cast parts are to be painted with a two-part gray epoxy primer and two-part top coat.
b. Fabricated parts are to be painted with a two-part gray epoxy primer and two-part top coat.

2. The blower package to be painted the blower manufacturer's standard colors.

2.5 SPARE PARTS

A. The Contractor shall deliver the following spare parts for each blower system. All of the above parts shall be provided as spare parts, packaged for potential long-term, dry storage, and labeled.

1. Sufficient lubricants of all types required for the first two years of operation.
2. One set of blower gaskets and seals.
3. Two sets of drive belts.
4. Two filter elements for the air intake filter.

PART 3 EXECUTION

3.1 INSTALLATION, START-UP, AND TESTING: All Work shall conform to the Drawings, the manufacturer's recommendations, and the requirements of DIVISION 1.

3.2 BLOWER INSTALLATION

A. Contractor shall verify all dimensions and elevations. Make all electrical and control connections.

B. Provide all necessary lubrication for initial start-up, testing and as required for final acceptance. The blower package shall arrive on site ready for installation. Aligning, adjusting and filling the blower with lubrication shall not be required by the contractor.

C. Provide a complete unit with all materials, components and adjustments as required for successful operation.

D. Installation, start-up and testing of all equipment and associated construction shall conform to manufacturer's recommendations.

E. All piping shall be supported to prevent exerting undue forces and moments on the blower flanges. Single arch expansion joints shall be furnished to isolate the blower package from the piping system.

F. Each blower unit will be installed on a flat and level concrete floor, suitable for supporting the dead weight of the unit. Vibration isolation pads shall be placed between concrete pad and common base legs.

3.3 FIELD QUALITY CONTROL & TRAINING

A. Furnish the services of a manufacturer's authorized representative for proper installation to inspect and approve the installation, and to supervise a test run of the blower package.

B. After the installation and test run has been completed; the blower package shall be given a field test in the presence of the Engineer to verify that operation is satisfactory and in compliance with the Specification. If the blower package does not meet the Specification, corrective measures shall be taken or the package shall be removed and replaced with a package which satisfies the conditions of the Specifications.

C. Training: Furnish the services of a manufacturer's authorized representative, who will instruct plant personnel in the operation and maintenance of the blower package. All procedures shall be covered including preventive maintenance, method of controlling the blower package and troubleshooting.

END OF SECTION

SECTION 16420

ADJUSTABLE FREQUENCY DRIVES

PART 1: GENERAL

1.01 SUMMARY

A. This section provides specification requirements for solid-state, pulse-width modulated (PWM) Adjustable Frequency Drives, herein referred to as AC Drives, for use with NEMA® design NEMA B AC motors, or standard IEC motors.

B. The AC Drive supplier shall furnish, field test, adjust and certify all installed AC Drives for satisfactory operation.

C. The supplier of the adjustable frequency drives shall ensure compatibility between the existing and proposed motors and AC Drives furnished.

D. The supplier of the adjustable frequency drives shall ensure adequate enclosure ventilation for cooling in the proposed AFD mounting locations.

E. This section also provides requirements for AC line reactors, which shall be provided for use with AFD's where specifically required on the Drawings.

1.02 RELATED SECTIONS

A. Section 11376 – Tri-Lobe Rotary Blower Package

1.03 REFERENCES

A. National Fire Protection Association - NFPA 70 - US National Electrical Code.

B. International Electrical Code - IEC 146.

C. UL508C: Power Conversion Equipment

D. UL 61800-5-1 Adjustable Speed Electrical Power Drive Systems, Safety Requirements

E. IEEE 519-1992: Guide for harmonic content and control

F. Canadian Standards Association International – CAN/CSA-C22.2 No. 14-05.

G. NEMA ICS 7.0: Industrial Controls & Systems for AFD

H. EN 50082-1 and -2

I. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall govern.

1.04 SUBMITTALS

A. Submit product data to Engineer for review.

B. A submittal package shall be furnished for the Engineers' approval. This package shall consist of, at a minimum:

1. Elementary power and control wiring diagrams, showing also all inputs and outputs.
2. Outline drawings shall include front and side views of with overall dimensions and weights shown.
3. Standard catalog specification sheets showing voltage, horsepower and maximum current ratings.
4. Major components list.
5. Sizing and product data for AC line reactors.

6. Test procedures per manufacturer's standards.

1.04 WARRANTY

A. A 36-month warranty shall be provided on materials and workmanship from the date of start-up.

1.05 QUALITY ASSURANCE

A. The manufacturer of the AC Drive shall be a certified ISO 9001 facility.

B. The AC Drive and all associated optional equipment shall be UL Listed according to UL 508 C - Power Conversion Equipment. As verification, a UL label shall be attached on the nameplate.

C. The AC Drive shall be designed, constructed and tested in accordance with applicable UL, CSA, IEC, NEMA, and NEC standards.

D. Every power converter shall have serial number with traceability records maintained by the manufacturer.

E. The manufacturer of this equipment shall have produced similar electronic equipment for continuous minimum period of manufacturing and development of AC drives for ten (10) years.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Base Bid Manufacturers: The following manufacturers' equipment will be acceptable, subject to the requirements set forth in this section.
1. Eaton PowerXL DG1
2. Allen Bradley 755TS
3. Danfoss FC 202 VLT Aqua
4. Toshiba AS3

B. No substitution will be permitted for base bid equipment items. Equivalent products of other manufacturers shall be approved by Engineer before the Bid. To be considered as an equivalent product, the equivalent supplier shall submit a qualification package to Engineer prior to the bid date, in accordance with the Instructions to Bidders. Engineer will determine if the proposed equivalent product is acceptable, and if acceptable Engineer will publish the equivalent product by addendum.

2.02 GENERAL DESCRIPTION

A. The AC Drive shall convert the input AC mains power to an adjustable frequency and voltage, to provide microprocessor-based control for three-phase induction motors.

B. The input power section shall utilize a full wave bridge design incorporating diode rectifiers. The diode rectifiers shall convert fixed voltage and frequency, AC line power to fixed DC voltage.

C. The output power section shall change fixed DC voltage to adjustable frequency AC voltage.

D. The adjustable frequency drive package shall include input EMI/RFI filtering.

E. The AC drive shall have a user interface (keypad) that presents information in plain English text. The user interface shall include a Local / Remote button to switch between control at the terminal strip and the user interface (keypad). This button shall also switch between network control and the user interface (keypad). The keypad shall have Run and Stop keys and a manual speed potentiometer function.

F. An AC line reactor shall be provided with each AC drive, to prevent noise from occurring in the system. Line reactors shall be installed in the location shown on the drawings.

2.03 CONSTRUCTION

A. The AC Drive power converter shall be UL Plenum rated.

B. All heat sink fans shall be accessible from the front and shall not require the removal of the AC drive power converter for fan replacement.

C. All heat sink fans shall be cycled on only when required to cool the drive to maximize the life of the fan

D. The AC Drive shall have an enclosure rating detailed below: IP21, Type 1 with optional conduit kit. The AC drive shall have complete front accessibility with easily removable assemblies.

E. A UL Type 1 conduit entrance kit is required. The kit shall attach and be ground to the bottom of the AC drive and provide conduit landing for incoming line power cables, motor lead cable, control wiring, and network cabling.

F. All circuit boards shall have conformal coating, to meet standard 3C3 for harsh environments according to levels in IEC 61721-3-3.

2.04 APPLICATION DATA

A. The AC Drive shall be sized to operate a variable torque load.

B. The speed range shall be from a minimum speed of 1.0 Hz to a maximum speed of 72 Hz.

C. The AC Drive shall be capable of operating of operating any NEMA design B squirrel cage induction motor, regardless of manufacturer, with a horsepower and current rating within the capacity of the drive.

D. Incoming power: Three phase, 60 Hz, 480VAC, -15% to +10%.

2.05 ENVIRONMENTAL RATINGS

A. The AC Drive shall meet IEC 61800-5-1, IEC 60664-1 Annex A and NEMA ICS 1, UL, and CSA standards.

B. The AC Drive shall be designed to operate in an ambient temperature from -25 to 50 ˚C (-13 to 122 ˚F).

D. The storage temperature range shall be -25 to 65 ˚C (-13 to 149 ˚F).

E. The maximum relative humidity shall be 95%, non-condensing.

F. The AC Drive shall be rated to operate at altitudes less than or equal to 3300 ft (1000 m). For altitudes above 3300 ft (1000 m), the AC Drive should be de-rated per drive specifications.

G. The AC Drive shall meet the IEC 60721-3-3-3M3 operational vibration specification.

2.06 RATINGS

A. The AC Drive shall be designed to operate at the input line voltage indicated herein, or on the Drawings. Confirm with Engineer.

B. The AC Drive shall operate from an input frequency range of 60 Hz (±) 5%.

C. The AC Drive shall maintain the line side displacement power factor at no less than 0.96, regardless of speed and load.

D. The AC Drive shall have efficiency at full load and speed that exceeds 95% for drives below 15-HP and 97% for drives 15-HP and above. The efficiency shall exceed 90% at 50% speed and load.

E. The variable torque rated AC Drive over current capacity shall be not less than 110% for 1 minute.

2.07 PROTECTION

A. Upon power-up, the AC Drive shall automatically test for valid operation of memory, loss of analog reference input, loss of communication, DC-to-DC power supply, control power and pre-charge circuit.

B. The AC drive shall have a 65kAIC minimum short circuit withstand rating

C. The AC Drive shall be protected against short circuits, between output phases and to ground.

D. The AC Drive shall have under-voltage power-loss ride through performance per the SEMI F-47 voltage ride through standard and certified by a third party.

E. The AC drive shall have a programmable ride-through function, which will allow the logic to maintain control for a minimum of one-second (60 cycles) without faulting.

F. An auto restart function will provide selectable time for restart attempts after the fault has disappeared and other operating conditions permit the restart. The restart shall be performed by a series of automatic attempts separated by increasingly longer periods of time. This period of time shall be selectable.

G. Upon loss of the analog process follower reference signal, the AC Drive shall be programmable to display a fault.

H. The AC Drive shall have a solid-state UL 508C / UL 61800-5-1 listed overload protective device and meet IEC 60947.

I. The output frequency shall be software enabled to fold back when the motor is overloaded.

J. There shall be three skip frequency ranges that can be programmed to a bandwidth of ± 2.5 Hz.

2.08 ADJUSTMENTS & CONFIGURATIONS

A. The AC Drive shall be capable of storing the configuration in the keypad.

B. The acceleration and deceleration ramp times shall be adjustable from 0.05 to 999.9 seconds.

C. The memory shall retain and record run status and fault type of the past eight faults.

D. The software shall have an energy economy function that, when selected, will reduce the voltage to the motor when selected for variable torque loads. A constant volts/Hz ratio will be maintained during acceleration. The output voltage will then automatically adjust to meet the torque requirement of the load. Use of selectable volts/Hz ratio patterns does not meet specification; the function must be automatically optimized.

E. The AC Drive shall have macro configurations for pump applications, PID regulator set-up and network set-up.

F. The AC Drive shall have multiple control modes: Frequency, speed, open-loop speed, open-loop torque.

2.09 KEYPAD DISPLAY INTERFACE

A. A keypad display interface shall offer the modification of AC Drive adjustments through a touch keypad. All electrical values, configuration parameters, I/O assignments, application and activity function access, faults, local control, and adjustment storage, and diagnostics shall be accessible.

1. Keypad display shall use plain English words for parameters, status, and diagnostic messages.

2. Keypad shall include a Local/Remote pushbutton selection. Both start/ stop source and speed reference shall be independently programmable for Keypad, Remote I/O, or Field Bus.

3. Upon initial power up of the AFD, the keypad shall display a start-up guide that will sequence all the necessary parameter adjustments for general start up.

B. The AC Drive model number, torque type, software revision number, horsepower, output current, motor frequency and motor voltage shall be listed on the drive identification portion of the LCD display.

C. The keypad display shall have password protection that allows the keypad to be locked out from unauthorized personnel.

D. The keypad display shall be back-lit, multi-line, with a minimum of three lines.

E. The interface keypad shall include three independent status LEDs. The three are “Remote”, “Run”, and “Fault”.

2.10 CONTROL CONNECTIONS

A. The control power for the digital inputs and outputs shall be 24Vdc.

B. The internal power supply shall incorporate automatic current fold-back that protects the internal power supply if incorrectly connected or shorted. The transistor logic outputs will be current limited and will not be damaged if shorted.

C. Removable terminal strips shall be used on all logic and analog signal connections in the power converter

D. Inputs: the AC drive shall provide a minimum of six programmable digital inputs.

E. Three voltage-free programmable relay output contacts will be provided. One of the contacts will indicate AC Drive fault status. The other contact shall indicate a drive run status. These relays shall be configurable for other status indicators.

F. Two programmable analog outputs shall be provided, both 4-20 mA or 0 – 10 VDC.

G. The AC drive shall have a power removal logic input. The drive shall not allow the motor to operate until this input is closed. If this input is opened while the connected motor is running, the AC drive shall stop applying power to the motor. This power removal function shall be certified by an independent agency.

H. The control section of AC drive shall be supplied separately if necessary with 24V DC, to keep the network communication always available even if the power supply is OFF.

2.11 SERIAL COMMUNICATION

A. The AC Drive shall have an integrated RJ45 port, selectable for Modbus or CanOpen.

B. On-board communications:

1. The AC drive shall include the following communication as standard: Ethernet I/P, Modbus TCP, Modbus RTU, BACnet MS/TP.

2. The AC drive shall have the following communication protocols as an optional card. Profibus DP, CANopen, Devicenet, Profinet, Smartwire DT, Lonworks.

2.12 HARMONIC MITIGATION

A. Each drive shall include a combination of integrated filters and DC link reactors to provide effective harmonic mitigation equivalent to 3% impedance without requiring additional panel space.

B. The AC drive shall limit harmonic distortion reflected onto the utility system to a voltage and current level as defined by IEEE 519 for general systems applications, by utilizing the standard 3% (minimum) DC link choke with input surge protection with a two-coil design integrally mounted in the drive enclosure

C. Provide an input EMI filter to minimize conducted electrical noise to meet the requirements of IEC 61800-3.

2.13 AC LINE REACTOR

A. If noted on the Drawings, each drive shall be furnished with an AC line reactor, selected by drive supplier for compatibility with the drive and the associated motor.

1. The reactor shall be three-phase, 600 V class, consisting of suitable values of inductance.
2. The reactor shall be listed per UL-508, marked per CE, and certified per CSA C22.2
3. The reactor shall be as manufactured by MTE Corporation, RL series, or equal.

B. Performance:

1. The reactor shall be rated for nominal system voltage (690 V max), fundamental system frequency (60 Hz) and current.
2. The reactor impedance shall be 3% at full rated system current.
3. The reactor shall be rated to operate in ambient temperatures from -40°C to 50°C under open air conditions, or from -40°C to 45°C under enclosed conditions.
4. The reactor shall operate at rated current with a maximum average winding temperature rise of 135°C.
5. Reactors rated less than 750 A shall be capable of continuously operating at 150% of rated current. Reactors rated more than 750 A shall be capable of continuously operating at 125% of rated current.
6. The reactor shall be capable of 30 minutes of operation at 200% of rated current, and 1 minute of operation at 300% of rated current.
7. The reactor shall function properly for switching frequencies up to 20 kHz.
8. The reactor shall function as rated at altitudes up to 1000 m.
9. The reactor shall have an insulation system to provide 3000 V RMS of dielectric strength coil-to-coil and coil-to-core.

C. Construction:

1. The reactor construction shall utilize copper wire or copper foil for the windings.
2. The reactor shall utilize a class N insulation system, maximum temperature 200°C. Sheet insulation shall be Dupont Nomex 410.
3. The reactor shall have a core to carry the magnetic flux comprised of laminations of electrical grade silicon steel.
4. The core of the reactor shall be locked in place using steel banding.
5. All terminations shall be copper alloy taps or UL-recognized terminal blocks.
6. The reactor shall be vacuum-dipped and baked with epoxy resin.
7. The reactor shall be suitable for mounting within a NEMA rated enclosure as specified herein and as noted on the Drawings. Mounting brackets shall be painted ASTM structural steel or structural aluminum.
8. Reactor shall be mounted inside a NEMA Type 1 enclosure. The reactor enclosure shall be constructed of steel with a baked enamel finish. Openings shall be provided

for sufficient convective air flow for cooling. Forced air cooling shall not be required to provide adequate cooling.

PART 3: INSTALLATION

3.01 INSPECTION

A. Verify that the location is ready to receive work and the dimensions are as indicated.

3.02 PROTECTION

A. Before and during the installation, the AC Drive equipment shall be protected from water and site contaminants.

3.03 INSTALLATION

A. Installation shall be in compliance with manufacturer's instructions, drawings and recommendations.

B. The AC Drive supplier shall provide a representative to inspect the contractor's installation, test and start-up the AC Drive(s) furnished under this specification.

C. AC line reactors shall be mounted external to the AFD’s, as indicated on the Drawings.

3.04 TRAINING

A. On-site training shall be provided as part of the start-up service, with a minimum of 4 hours.

3.05 DOCUMENTATION

A. The AC Drive supplier shall supply a comprehensive bound instruction and installation manual that includes wiring diagrams, layout diagrams, and outline dimensions. This manual must be insertion in a shop manual supplied by the installing contractor.

END OF SECTION

EXHIBIT E

CONTRACTOR'S AFFIDAVIT ACKNOWLEDGING
FEDERAL LOBBYING ACTIVITIES AND
CONFLICT OF INTEREST PROHIBITION

1. 31 U.S.C.S. Section 1352 requires all subgrantees, contractors, subcontractors and consultants who receive federal funds via the City to certify that they will not use federal funds to pay any person for influencing or attempting to influence a federal agency or Congress in connection with the award of any federal contract, grant, loan or cooperative agreements.

2. In addition, contract applicants, recipients and subrecipients must file a form disclosing any expenditures they make for lobbying out of non-federal funds during the contract period.

3. Necessary forms are available from the City Public Works Director and must be returned to the City with other contract documents. It is the responsibility of the Contractor to obtain executed forms from any Subcontractors who fall within the provisions of the Code and to provide the City with the same.

The undersigned has read the foregoing and swears under penalty of perjury that the statements above are true and correct to the best of his information and belief.

_____
(signature)

State of _____)
County of _____)

On this _____ day of _____, 20_____, before me, the undersigned, personally appeared _____, _____ of _____, known to me to be the person who executed this document and acknowledged to me that he/she executed the same for the purposes therein stated.

_____ _____
Notary Public in and for said County and State Commission Expires

Exhibit F

Sales Tax Exemption Documentation

EXHIBIT G

CONTRACTOR'S AFFIDAVIT OF COMPLIANCE WITH NON-DISCRIMINATION AND EQUAL EMPLOYMENT OPPORTUNITY LAWS

Contractor certifies to The City of Parkville, Missouri, ("The City") that throughout the period covered, Contractor will comply with all applicable provisions of Executive Order 11246 as revised from time to time and as implemented by Title 41 of the Code of Federal Regulations, particularly Chapters 1, 50 and 60, as the same may be amended from time to time.

Contractor further certifies and agrees that each of the following provisions is made a part of the Contract between Contractor and the City:

I. NON-DISCRIMINATION IN EMPLOYMENT

(a) Contractor will recruit and hire employees who are disabled veterans, Vietnam era veterans, and individuals with handicaps and will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to status such as disabled veterans, Vietnam era veterans, handicapped individuals or because of race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following employment, upgrading demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the City setting forth the provisions of this non-discrimination clause.

(b) Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Subcontractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

(c) Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract of understanding, a notice to be provided by the agency contracting officer, advising the labor union or worker's representative if the Subcontractor's commitments under Equal Opportunity Clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.

(e) Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

(f) In the event of the Contractor's noncompliance with the Equal Opportunity Clause of this Contract or with any part of such rules, regulations or orders, this subcontract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rules, regulations or orders of the Secretary of Labor, or as otherwise provided by law.

(g) Contractor will include the provisions of paragraphs (a) through (g) in every subcontract unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provision will be binding upon each subcontractor or vendor. Contractor will take such action with respect to any subcontract as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event Contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, Contractor may request the United States to enter into such litigation to protect the interests of the United States.

II. CERTIFICATION OF NONSEGREGATED FACILITIES

Contractor does not, and during the performance of each subcontract with the City, will not maintain or provide for his employees and segregated facilities at any of his establishments, and does not and will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. Contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this certificate. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color or national origin, because of habit, local custom or otherwise. Contractor further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that he will retain such certifications in his files, and that he will forward the following to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods): NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES. A Certification of Nonsegregated Facilities, as required by Chapter 60-1.8 of Title 41 of the Code of Federal Regulations must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semi-annually or annually).

NOTE: Whoever knowingly or willfully makes any false, fictitious or fraudulent representations may be liable for criminal prosecutions under 18 U.S.C. 1001.

III. FILING CERTIFICATE

Contractor has filed or will file the necessary compliance reports, including Standard Form 100 (EEO-1) where and when required by law and applicable regulations, including, without limitation, the Civil Rights Act of 1964 as amended by the Equal Employment Opportunity Act of 1972 and regulations in 41 CFR 60-1.7. Contractor has required and will require similar certification and filing from its non-exempt suppliers.

IV. AFFIRMATIVE ACTION CERTIFICATE

Contractor has developed, is maintaining and will continue to maintain the written affirmative action compliance program to guarantee equal employment opportunity to minority groups required by applicable law and regulations, including, without limitation, those appearing in 41 CFR 60-1.40. Contractor has required and will require similar certification from each of its non-exempt suppliers.

V. UTILIZATION OF SMALL BUSINESS CONCERNS AND DISADVANTAGED SMALL BUSINESS CONCERNS

If the City is required to utilize small business concerns or disadvantaged small business concerns by law or by contract, Contractor agrees to provide any information requested by the City that would be relevant to the issue of whether or not Contractor meets the criteria for these small business concerns. If required by the City, Contractor further agrees to comply with the obligations imposed by 13 CFR §125.9 and FAR §52.219-8, which clauses are incorporated herein by reference.

Executed this _____ day of _____, 20___ by:

Firm/Company Name: _____

Name of Authorized Representative: _____

Signature of Authorized Representative: _____

Title of Authorized Representative: _____

_____
(signature)

State of _____)
County of _____)

On this _____ day of _____, 20_____, before me, the undersigned, personally appeared _____, _____ of _____, known to me to be the person who executed this document and acknowledged to me that he/she executed the same for the purposes therein stated.

_____ _____
Notary Public in and for said County and State Commission Expires

EXHIBIT H

AFFIDAVIT OF COMPLIANCE WITH SAFETY TRAINING REQUIREMENTS

Required by R.S Mo. § 292.675

COUNTY OF)
) SS.
STATE OF)

Before me, the undersigned Notary Public, personally appeared _____

Who is _____ (title) of _____ (a corporation/partnership/sole proprietorship/limited liability company, and states that he/she is authorized to make this affidavit, and being duly sworn upon his/her oath, deposes and states as follows:

That said company has verified the completion of a 10-hour construction safety program with respect to the employees working in connection with the contracted services.

The terms of this affidavit shall have the same meaning as is set forth in 292.675 of the Revised Statutes of Missouri.

Further affiant sayeth naught.

_____

(signature)

Subscribed and sworn to before me this ____ day of _____, 200_

My Commission Expires:

_____

Notary Public

EXHIBIT I

AFFIDAVIT OF COMPLIANCE WITH R.S Mo. §285.530.5

Effective January 1, 2009, all contractors and subcontractors with contract amounts in excess of $5,000 on public projects in Missouri are required to verify the employment eligibility status of employees through the E-verify federal program administered by the Department of Homeland Security, U.S. Citizenship and Immigration Services. Contractor shall indemnify, defend and hold harmless the City of Parkville Missouri against any expense incurred including imposition of fines which results from violation of such laws. **Contractor affirmatively states that it is not knowingly in violation of R.S. Mo. 285.530.1 and shall not henceforth be in such violation. Contractor further agrees to execute the this sworn affidavit under the penalty of perjury attesting to the fact that the direct Contractor's employees are lawfully present in the United States.** Failure of Contractor to comply with this requirement shall be grounds for termination for default.

COMES NOW Affiant _____, being of lawful age, and states the following based on personal knowledge, under oath and fully aware of the penalties for perjury:

1. I presently am employed by _____ ("Contractor") and am authorized by Contractor to make representation on its behalf.

2. All of Contractor's employees are lawfully present in the United States.

Further affiant sayeth naught.

Contractor:_____

By:_____

Title:_____

Date:_____

Signature, Print Name

COUNTY OF)
) SS.
STATE OF)

Subscribed and sworn to before me this ____ day of _____, 200_

My Commission Expires:

_____

Notary Public

EXHIBIT J-1

(APPLICABLE MISSOURI PREVAILING WAGE RATES)

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION

MIKE KEHOE, Governor

Annual Wage Order No. 32

Section 083

PLATTE COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Logan Hobbs, Director
Division of Labor Standards

Filed With Secretary of State: **March 10, 2025**

Last Date Objections May Be Filed: **April 9, 2025**

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$71.19
Boilermaker	$34.28*
Bricklayer-Stone Mason	$64.62
Carpenter	$66.80
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	$57.71
Plasterer	
Communication Technician	$65.55
Electrician (Inside Wireman)	$75.86
Electrician Outside Lineman	$34.28*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	$34.28*
Glazier	$34.28*
Ironworker	$71.57
Laborer	$50.93
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	$54.93
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	$65.88
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	$55.19
Plumber	$82.42
Pipe Fitter	
Roofer	$61.62
Sheet Metal Worker	$79.11
Sprinkler Fitter	$70.76
Truck Driver	$34.28*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.
**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.

Heavy Construction Rates for
PLATTE County

Section 083

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$67.97
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$34.28*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	$52.48
General Laborer	
Skilled Laborer	
Operating Engineer	$61.20
Group I	
Group II	
Group III	
Group IV	
Truck Driver	$53.30
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.

OVERTIME
and
HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

EXHIBIT J-2

(Prevailing Wage Reporting Form)

N OF
R
DARDS

MISSOURI DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS

CONTRACTOR PAYROLL RECORDS

(See Sections 290.210 to 290.340, RSMo and 8 CSR 30-3.010 to 8 CSR 30-3.060)

tor ☐ Subcontractor	Address of Contractor or Subcontractor: City: State: ZIP: Phone Number: (
	Address of Public Body: City: State: ZIP: Phone Number: (

	For Week Ending / /	AWO	Project and Location	Project (

ss	2. Occupational Title ***	3. Day and Date								4. Total Hours	5. Hourly Rate	6. Gross Amt	7. Deductions			
		Day										Project / Week	FICA and Medicare	Federal and State Withholding Tax	Other A	Other B
		Date														
		Hours Worked Each Day														
		DT														
		OT														
		ST														
		DT														
		OT														
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ns work in more than one occupational title, you must separately list the hours worked per occupational title and wage rates.* **

FRINGE BENEFITS

rates paid to each laborer or mechanic on the payroll, payments have been or will be made to appropriate programs for the benefit of these employees as shown in the following chart below. If l employees, you may list the amount of each such identical fringe payment only once in the appropriate column; if the fringe benefit amounts vary by employee, list each employee's name and employee for each fringe benefit.

e	Health and Welfare ($/hr)	Pension ($/hr)	Vacation ($/hr)	Holiday ($/hr)	Appren-tice Training ($/hr)	Other C ($/hr)	Other D ($/hr)	Total ($/hr)	If "Other/Deduction" or Fringes, please explain. (Indicate Other A, B, C or D)	Identify by or progr be (Indicate

_____ *(Name of Signatory Party)*, _____ *(Title)* do hereby state:

supervise the payment of the persons employed by _____ *(Contractor o*

_____ *(Building or Work)*; that during the payroll period commencing seven (7) days prior to the week ending date of _____ all persons employed on said

ated above, that no rebates have been or will be made either directly or indirectly to or on behalf of _____ *(Contractor*

arned by any person and that no deductions have been made

ctly from the full wages earned by any person, other than legally permissible deductions, that full and accurate records clearly indicating the names, occupations, and crafts of every worke

lic work together with an accurate record of the number of hours worked by each worker and the actual wages paid for each class or type of work performed and deduction made for each wor

ls are kept and have been provided for inspection to the authorized representative of the contracting public body and will be available as often as may be necessary and such records shall not b

riod of one year following the completion of the public work in connection with which the records are made.

olls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than th

rder incorporated into the contract; that the occupational title set forth herein for each laborer or mechanic conform with the work performed.

	Signature

of the above statements may subject the contractor or subcontractor to criminal prosecution. See Sections 290.340, 570.090, 575.050, and 575.060, RSMo.

Exhibit J-3

CERTIFICATION OF COMPLIANCE WITH PREVAILING WAGE REQUIREMENTS

Date:_____

I,_____, _____
(Name of Signatory Party) (Title)

Do hereby state:

(1) That I pay or supervise the payment of the persons employed y_____ that during the payroll period commencing seven (7) days prior to the week ending date of _____ all persons employed on said project have been paid the full weekly wages stated above, that no rebates have been or will be made either directly or indirectly to or on behalf of _____, from the full weekly wages earned by any person and that no deductions have been made by _____either directly or indirectly from the full wages earned by any person, other than legally permissible deductions, that full and accurate records clearly indicating the names, occupations, and crafts of every worker employed by them in connection with the public work together with an accurate record of the number of hours worked by each worker and the actual wages paid for each class or type of work performed and deduction made for each worker have been prepared, that these payroll records are kept and have been provided for inspection to the authorized representative of the contracting public body and will be available as often as may be necessary and such records shall not be destroyed or removed from the state for the period of one year following the completion of the public work in connection with which the records are made.

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained herein are not less than the applicable wage rates contained in any wage order incorporated into the contract; that the occupational title set forth herein for each laborer or mechanic conform with the work he/she performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a state apprenticeship agency recognized by the Office of Apprenticeship (OA), U.S. Department of Labor (USDOL), or if no such recognized agency exists in a state, are registered with the OA, USDOL.

_____
Signature

The falsification of any of the above statements may subject the contractor or subcontractor to criminal prosecution. See Sections 290.340, 570.090, 575.050, and 575.060, RSMo.

EXHIBIT K

INSURANCE REQUIREMENTS

1. Contractor agrees to procure and carry, at its sole cost, until completion of this Contract and all applicable warranty periods, all insurance as set forth below; provided, however:

1.1 All insurance is to be issued by companies authorized to do business in the state where the project is located, and with liability limits acceptable to City. Insurers shall have A.M. Best ratings of no less than B+ or higher, and at least a Class X financial rating.

1.2 The City reserves the right to review certified copies of any and all insurance policies to which this Contract is applicable.

1.3 Insurance certificates, written on a standard ACORD form, **and a copy of the additional insured endorsement, and endorsement assuring notice of cancellation or modification,** must be received by the City prior to commencement of work on site.

1.4 If Contractor should subcontract any of this work to a third party, Contractor shall see to it that such third party maintains such insurance and shall furnish evidence thereof to the City.

2. Such insurance shall include the following terms and conditions:

2.1 All coverages obtained by Contractor, except professional liability if applicable, shall be on an occurrence policy form and not on a claims made policy form.

2.2 The cost of defense of claims shall not erode the limits of coverage furnished.

2.3 Advance notice of cancellation. All insurance certificates will state that all coverages are in effect and will not be canceled without thirty (30) days' prior written notice ("endeavor to notify" language is not acceptable) to the City and other required additional insureds, and Contractor/Designer shall submit to the City, prior to commencing any Work on the Project, an endorsement to the policy confirming that such notice shall be given. All policies of liability insurance shall contain an endorsement stating the insurers agreement to provide such notice, using CNA form G-140327-B (Ed. 07/11), Travelers Form IL T4 00 (12/09) or other equivalent carrier forms, such as ACORD forms.

2.4 Severability of Interest. All insurance carried shall be endorsed to provide that, inasmuch as this policy is written to cover more than one insured, all terms, conditions, insuring agreements and endorsements, with the exception of limits of liability, shall operate in the same manner as if there were a separate policy covering each insured.

2.5 Comprehensive Automobile Liability Insurance. Contractor shall maintain comprehensive automobile insurance, including contractual liabilities insuring the indemnities set forth in this Contract covering all owned, non-owned and hired automobiles used in connection with the services or other work hereunder, whether on or off the site, and shall have minimum bodily injury and property damage limits of $1,000,000.00 combined single limit per occurrence. An MCS-90 endorsement shall be procured when applicable.

2.6 Workers' Compensation and Employer's Liability Insurance. Contractor shall maintain Worker's Compensation Insurance to cover the statutory limits of the Workers' Compensation laws of the state in which any work is to be performed and when applicable to Federal Laws, Voluntary Compensation and Employer's Liability (including occupational disease) coverage with limits not less than $500,000.00 per occurrence and $1,000,000.00 in aggregate for all workers on site, regardless of whether a worker is also an owner of Contractor.

2.7 Commercial General Liability Insurance. Contractor shall obtain and maintain comprehensive Commercial General Liability Insurance, on an occurrence form for the hazards of (i) construction operations; (ii) subcontractors and sub-subcontractors; (iii) interruption of the City's business; (iv) independent contractors; (v) products and completed operations (with completed operations to remain in force for two years following project completion); (vi) explosion, collapse and underground, and (vii) contractor's protective and contractual liability insuring the indemnities set forth in the Contract, including personal injury, death and property damage. Each Project shall maintain minimum limits of $2,000,000.00 per occurrence and $2,000,000.00 aggregate.

2.8 Excess Liability. Contractor shall maintain Excess Liability coverage on an umbrella form with minimum limits of $2,000,000.00 per occurrence and $2,000,000.00 aggregate.

2.9 Waiver of Subrogation. All insurance policies supplied shall include a waiver of any right of subrogation of the insurers thereunder against the City and all its assigns, subsidiaries, affiliates, employees, insurers and underwriters. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity has an insurable interest in the property damaged.

2.10 Additional Insureds. The City and any other person or entity required by the Contract, and all their assigns, subsidiaries and affiliates shall be included as additional insureds under Contractor's furnished insurance (except Workers' Compensation Insurance), for ongoing and completed operations, using ISO Additional Insured Endorsement (CG 20 10), edition date 11/85, or an equivalent (e.g., CG 20 10, edition date 10/93, plus CG 20 37, edition date 04/13 or other carrier form) under the commercial general liability policy. Said insurance shall be written on an OCCURRENCE basis, and shall be PRIMARY and NON-CONTRIBUTING.

2.11 Insurance Primary. All policies of insurance provided pursuant to this article shall be written as primary policies, and not in excess of the coverage of the indemnitee's insurance.

3. No Limitation of Liability. The required coverages referred to and set forth herein shall in no way affect, nor are they intended as a limitation on, Contractor's liability with respect to its performance of the Contract.

4. Subcontractors' Insurance. Contractor shall require all those subcontractors providing equipment, materials or services directly to Contractor/ in connection with this Contract to obtain, maintain and keep in force coverages in accordance with the insurance requirements set forth herein during the time they are involved in performance of services or other work

hereunder. Contractor shall obtain certificates of insurance and additional insured endorsements evidencing such coverage and provide the City with such certificates and endorsements. Contractor shall not be excused from its obligations to cause such subcontractor to meet the insurance coverage requirements set forth under this section unless Contractor shall have obtained in writing from the City a waiver, which shall be effective only as to such requirements and for such subcontractor specifically identified therein.

5. Patent Liability. Contractor shall protect, defend and save the City harmless from any liability, including costs and expenses, for, or on account of, any patented or unpatented invention, article or appliance manufactured or used in the performance of this Contract selected by Contractor, and further agrees to pay all loss and expense incurred by the City by reason of any such claims or suits, including attorneys' fees.

6. Professional Liability. If the Contract is entered with a Contractor, and any design or other professional services are included in the Contract, Contractor shall purchase, and maintain for a period of three years after the date of Final Completion, insurance covering claims arising out of the performance or furnishing of Design or Professional Services and for claims arising out of allegations of errors, omissions or negligent acts in connection with the Contract. The policy shall be at least as broad as the coverage provided in Owner' Design Liability Policy, Member Companies of CNA Insurance, Form G-115692-A (Ed 02/96), with a minimum limit of $1,000,000 per occurrence and $2,000,000 aggregate.

6.1 With respect to any Professional Liability insurance, Contractor agrees as follows:

.1 upon receipt of notice of any claim in connection with the Contract, to promptly notify the City, providing full details thereof, including an estimate of the amount of loss or liability.

.2 promptly notify the City of any reduction of limits or protection afforded under any policy provided, whether or not such impairment came about as a result of events connected to this Contract.

.3 In the event that the City shall determine that the Contractor/'s aggregate limits of protection shall have been impaired or reduced to such extent that they are deemed inadequate for the balance of the project, Contractor shall upon notice promptly reinstate the original limits of liability required hereunder and shall furnish evidence thereof to the City.

EXHIBIT L

BILL OF SALE

SELLER: _____
_____
_____

In consideration of payments made by _____ ("Buyer") referenced in the agreement dated _____, 20____, receipt of which is hereby acknowledged, Seller declares and certifies that it now possesses, and does hereby grant, sell, transfer and deliver to Buyer all right, title and interest in the following goods:

Buyer to have all right and title to the goods in himself and his executors, administrators and assigns forever and Seller, on behalf of itself, its successors and assigns, will warrant and defend the title to said goods and chattels hereby sold unto Buyer, its successors and assigns, forever, against the lawful claims and demands of all persons. It is expressly understood and agreed that the acceptance of the goods described herein is not a waiver of any right of action that the Buyer may have for breach of warranty or any other cause under the agreement referenced above or at law.

IN WITNESS WHEREOF, Seller has executed this Agreement the ____ day of _____, 20____.

Seller: _____

By: _____

Title: _____

Subscribed and sworn to before me this ____ day of _____, 20____.

_____
Notary Public in and for said County and State

My commission expires:

_____

EXHIBIT M

BAILMENT AGREEMENT

BAILOR:	BAILEE: Contractor/Subcontractor/ Supplier
_____	_____
_____	_____
_____	_____

LOCATION OF STORAGE:

The goods and materials described below are held and stored at the above referenced location pursuant to the Contract by and between Bailee, as Contractor/Subcontractor/Supplier, and City, for Work to be performed at

_____

_____

_____. In consideration of payment made to the undersigned Bailee, the receipt and sufficiency of which are admitted, the Bailee agrees:

1. To keep said goods and materials at the above mentioned address, separate and apart from all other goods and identified as subject to this bailment,

2. To keep said goods and materials fully insured against all risk of physical loss or damage,

3. To keep said goods protected from the weather, commingling, vandalism and/or diversion from said Project, and

4. To deliver said goods and materials to the Project site in conjunction with the performance of Bailee's Contract referenced above or upon the direction of Bailor and no other. The Bailee acknowledges that it has no ownership rights or title in, nor shall claim any lien upon, said goods and materials.

QUANTITY	DESCRIPTION OF ITEM

Receipted and Acknowledged:

Contractor/Supplier (Bailee)

Dated:_____ By:_____
Authorized Signature

EXHIBIT N

CONDITIONAL PARTIAL RELEASE AND WAIVER OF CLAIMS

To: The City of Parkville, Missouri, the Owner of the real estate (the "Property") identified below, any Lender(s) having any loans secured by the Property, the Applicant's Contractor (if not the General Contractor) and other parties, if any, having any interest in (hereinafter collectively the "Beneficiaries").

The "Property": _____

Description of the "Project": _____

The undersigned hereby applies for payment, certifies and waives lien rights, bond rights and all other claims.

Payment Request Amount: $_____

Date of last work covered by payment request:_____

Certificate

The undersigned, contingent upon the issuance, final clearance and payment of a valuable consideration of the sum stated above, and being familiar with the penalties for false certification, does hereby certify to the Beneficiaries that:

1. The amount requested for labor performed and equipment and material supplied on this Project or in connection with the Property reference above, represent the actual value of work accomplished under the terms of the undersigned's agreement and all authorized changes thereto concerning work to be performed on the Property (hereinafter the "Contract").

2. No labor, equipment or materials have been supplied by the undersigned to the Project which have not been included in the applications for payment submitted to date, under any agreement, verbal or written, or any arrangements of any type whatsoever, except as specifically noted here:

_____
_____
_____

3. Payment in full, less retainage and other claims documented as required by the Contract (if any), has been made by the undersigned through the period covered by all prior payments (a) to all of the undersigned's subcontractors, equipment providers, materialmen and laborers, and (b) for all materials and labor used or furnished by the undersigned in connection with the performance of the Contract. The undersigned represents and warrants that it owes no monies or other things of value to any subcontractor, materialman, person or entity for work performed or material supplied through the date of the most recent payment by Owner, except as identified below:

_____
_____
_____

4. The undersigned has complied with Federal, State and Local tax laws, including, without limitation, Income Tax Withholding, Sales Tax, Fringe Benefits owed pursuant to collective bargaining agreements, Social Security, Unemployment Compensation and

Worker's Compensation laws, insofar as applicable to the performance of the contract. Specifically, the undersigned has paid, or out of the proceeds of this payment will promptly pay, all sales or use tax due and owing.

5. The undersigned acknowledges and agrees that it is receiving the funds paid in consideration of this Application as a trustee, and said funds will be held in trust for the benefit of all subcontractors, materialmen, suppliers and laborers who supplied work for which the Beneficiaries or their property might be liable, and that the undersigned shall have no interest in such funds until all these obligations have been satisfied in full.

Partial Waiver and Release of Claims

NOW, THEREFORE, contingent upon the issuance, final clearance and payment of $_____, the undersigned irrevocably and unconditionally releases and waives any and all claims against the City or any other claims of any kind whatsoever in connection with this Contract and with the Property, also referred to as _____. The undersigned shall indemnify and hold the Beneficiaries and their respective successors and assigns harmless against any claims or suits in connection with the materials, labor, and everything else in connection with this Contract for which payment has been made.

Dated _____, 20__.

CONTRACTOR:_____

By:_____
Name: _____
Title: _____

State of _____)
County of _____)

On this _____ day of _____, 20_____, before me, the undersigned, personally appeared _____, _____ of _____, known to me to be the person who executed this document and acknowledged to me that he/she executed the same for the purposes therein stated.

_____ _____
Notary Public in and for said County and State Commission Expires

EXHIBIT O

CONDITIONAL FINAL WAIVER AND RELEASE OF CLAIMS

To: the City of Parkville, Missouri, the Owner of the real estate (the "Property") identified below, any Lender(s) having any loans secured by the Property, the Applicant's Contractor (if not the General Contractor) and other parties, if any, having any interest in (hereinafter collectively the "Beneficiaries").

The "Property":_____

Description of the "Project": _____

The undersigned hereby applies for payment, certifies and waives lien rights, bond rights and all other claims.

Payment Request Amount: $_____

Certificate

The undersigned, contingent upon the issuance, final clearance and payment of a valuable consideration of the amount stated above, and being familiar with the penalties for false certification, does hereby certify to the Beneficiaries that:

1. The amount requested for labor performed and equipment and material supplied on this Project or in connection with the Property reference above, represent the actual value of work accomplished under the terms of the undersigned's agreement and all authorized changes thereto concerning work to be performed on the Property (hereinafter the "Contract").

2. No labor, equipment or materials have been supplied by the undersigned to the Project which have not been included in the applications for payment submitted to date, under any agreement, verbal or written, or any arrangements of any type whatsoever, except as specifically noted here:

_____

_____

_____

3. Payment in full has been made, or with the funds requested hereby will be made, by the undersigned (a) to all of the undersigned's subcontractors, equipment providers, materialmen and laborers, and (b) for all materials and labor used or furnished by the undersigned in connection with the performance of the Contract. The undersigned represents and warrants that it owes no monies or other things of value to any subcontractor, materialman, person or entity for work performed or material supplied through the date of the most recent payment by Owner, and that the payments that have been or will be made out of this final payment to such persons or firms will fully and completely compensate them for all work in connection with the Project.

4. The undersigned has complied with Federal, State and Local tax laws, including, without limitation, Income Tax Withholding, Sales Tax, Fringe Benefits owed pursuant to collective bargaining agreements, Social Security, Unemployment Compensation and Worker's Compensation laws, insofar as applicable to the performance of the contract.

5. The undersigned acknowledges and agrees that it is receiving the funds paid in consideration of this Application as a trustee, and said funds will be held in trust for the benefit of all subcontractors, materialmen, suppliers and laborers who supplied work for which the Beneficiaries or their property might be liable, and that the undersigned shall have no interest in such funds until all these obligations have been satisfied in full.

Final Waiver and Release of Claims

NOW, THEREFORE, the undersigned , contingent upon the issuance, final clearance and payment of $_____, which the undersigned irrevocably and unconditionally releases and waives any and all mechanic's liens or other liens or right to claim any and all claims against the Owner, its sureties or on any bonds, or any other claims of any kind whatsoever in connection with this Contract and with the Property. The undersigned shall indemnify and hold the Beneficiaries and their respective successors and assigns harmless against any claims or suits in connection with the materials, labor, and everything else in connection with this Contract.

Dated _____, 20__.

CONTRACTOR:_____
_____

By:_____
Name: _____
Title: _____

State of _____)
County of _____)

On this _____ day of _____, 20_____, before me, the undersigned, personally appeared _____, _____ of _____, known to me to be the person who executed this document and acknowledged to me that he/she executed the same for the purposes therein stated.

_____ _____
Notary Public in and for said County and State Commission Expires

Certificate of Substantial Completion

PROJECT:
(Name and address)

CONTRACT FOR:_____
CONTRACT DATE:_____

TO OWNER:
CITY OF PARKVILLE, MISSOURI
Attention: Director of Public Works
City Hall
8880 Clark Avenue
Parkville, MO 64152

TO CONTRACTOR:
(Name and address)

PROJECT OR PORTION OF THE PROJECT DESIGNATED FOR PARTIAL OCCUPANCY OR USE SHALL INCLUDE:

The Work performed under this Contract has been reviewed and found, to the Professional's best knowledge, information and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated above is the date of issuance established by this Certificate, which is also the date of commencement of applicable manufacturer's warranties required by the Contract Documents, except as stated below:

Date of Commencement: _____

_____	_____	_____	
DESIGN PROFESSIONAL	**BY**	**DATE**	**OF ISSUANCE**

Punch List of items to be completed or corrected is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of manufacturer's warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment.

Cost estimate of Work that is incomplete or defective: $_____

The Contractor will complete or correct the Work on the list of items attached hereto within ___ days from the above date of Substantial Completion.

CONTRACTOR	**BY**	**DATE**

The Owner accepts the Work or designated portion as substantially complete and will assume full possession at ____ (time) on _____ (date).

OWNER	**BY**	**DATE**

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance shall be as stated on the attached list.

Certificate of Final Completion

PROJECT:
(Name and address)

CONTRACT FOR:_____

CONTRACT DATE:_____

TO OWNER:
CITY OF PARKVILLE, MISSOURI
Attention: Director of Public Works
City Hall
8880 Clark Avenue
Parkville, MO 64152

TO CONTRACTOR:
(Name and address)

The Work performed under this Contract has been reviewed and found, to the Professional's best knowledge, information and belief, to be finally complete. The date of Final Completion of the Project is the date of issuance established by this Certificate.

_____	_____	_____
DESIGN PROFESSIONAL	**BY**	**DATE OF ISSUANCE**

Construction Change Directive

PROJECT (*Name and address*):	**DIRECTIVE NUMBER:** **DATE:** **CONTRACT FOR:**
TO CONTRACTOR (*Name and Address*):	**CONTRACT DATED:**

You are hereby directed to make the following change(s) in this Contract:

PROPOSED ADJUSTMENTS

1. The proposed basis of adjustment to the Contract Sum or Guaranteed Maximum Price is:
   - ☐ Lump Sum decrease of $0.00
   - ☐ Unit Price of $_____ per
   - ☐ As follows:

2. The Contract Time is proposed to (remain unchanged). The proposed adjustment, if any, is ____ days.

When signed by the Owner and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.

Contractor signature indicates agreement with the proposed adjustments in Contract Sum and Contract Time set forth in this CCD.

OWNER (*Firm name*)	**CONTRACTOR** (*Firm Name*)
ADDRESS	**ADDRESS**
BY (*Signature*)	**BY** (*Signature*)
(*Typed name*)	(*Typed name*)
DATE	**DATE**

Change Order

PROJECT (*Name and address*):	**CHANGE ORDER NUMBER:** **DATE:**
TO CONTRACTOR (*Name and Address*):	**PROJECT NO.:** _____ **CONTRACT DATE:**

THE CONTRACTOR IS CHANGED AS FOLLOWS:

The original Contract Sum was	$ _____
The net change by previously authorized Change Orders	$ _____
The Contract Sum prior to this Change Order was	$ _____
The Contract Sum will be increased/decreased by this Change Order in the amount of	$ _____
The new Contract Sum including this Change Order will be	$ _____

The Contract Time will be increased by _____ ( ) days.
The date of Substantial Completion as of the date of this Change Order therefore is

This Change Order represents a complete and final resolution of all matters concerning or arising out of the work described in the Change Order, including any impact, delay, disruption and/or acceleration of work unless specifically identified herein.

NOT VALID UNTIL SIGNED BY THE CONTRACTOR AND OWNER.

CONTRACTOR (*Firm name*)	**OWNER** (*Firm Name*)
ADDRESS	**ADDRESS**
BY (*Signature*)	**BY** (*Signature*)
(*Typed name*)	(*Typed name*)
DATE	**DATE**

CITY OF PARKVILLE
Policy Report

Date: April 7, 2026

Prepared By:
Melissa Bazert, City Clerk

Reviewed By:
Alexa Barton, City Administrator

ISSUE:
Resolution No. 26-009, A Resolution demonstrating the City's commitment to public safety and intent to pursue a designation as a Blue Shield Community (Police)

BACKGROUND:
In March of 2025, Governor Mike Kehoe announced the Missouri Blue Shield designation program that recognizes local governments that maintain their commitment to enhancing public safety, strengthening support for law enforcement and building sustainable public safety partnerships. The Blue Shield Program designation allows communities to access state grants for law enforcement training and equipment.

STRATEGIC GOAL(S):
Public Safety

BUDGET IMPACT:
There is no impact to the budget for the designation. Designation will allow the city to apply for future funding.

ALTERNATIVES:
1. Approve the item.
2. Approve the item, subject to changes.
3. Do not approve the item.
4. Postpone the item.

STAFF RECOMMENDATION:
Staff recommends approval of the resolution.

POLICY:
The designation supports the Public Safety strategic goal and eligibility to apply for grants from the State.

SUGGESTED MOTION:
I move to recommend approval of Resolution No. 26-009, a resolution demonstrating the City's commitment to public safety and intent to pursue a designation as a Blue Shield Community.

ATTACHMENTS:
1. Resolution No. 26-009 Blue Shield Resolution

CITY OF PARKVILLE • 8880 Clark Avenue • Parkville, MO 64152 • (816) 741-7676 • FAX (816) 741-0013

CITY OF PARKVILLE, MO.
RESOLUTION No. 26-009

A RESOLUTION OF THE CITY OF PARKVILLE, MISSOURI, INDICATING AN INTENT TO PURSUE A DESIGNATION AS A BLUE SHIELD COMMUNITY UNDER THE SAFER MISSOURI INITIATIVE LAUNCHED BY GOVERNOR MIKE KEHOE

WHEREAS, the safety and well-being of all residents, visitors, and businesses within the City of Parkville are of paramount importance; and,

WHEREAS, the City of Parkville has been a regional leader in promoting safe communities and has excelled in the area of law enforcement, consistently getting excellent reviews among its citizens in official surveys and community conversations; and,

WHEREAS, crime poses a significant threat to the quality of life, economic growth, and overall health of the community; and,

WHEREAS, the City of Parkville will continue to demonstrate a commitment to public safety, including efforts to reduce any violent crime within the City; and,

WHEREAS, a collaborative approach involving law enforcement, community organizations, residents, and other stakeholders are essential to effectively reduce crime, with these efforts bringing an unparalleled sense of unity and pride to Parkville.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE CITY OF PARKVILLE, MISSOURI, that the City of Parkville reaffirms its commitment to the safety and security of all residents and will prioritize public safety initiatives in its policies, budgets, and programs in an effort to reduce and eliminate crime; and

BE IT FURTHER RESOLVED THAT the City of Parkville intends to apply for the designation of a Blue Shield Community, in accordance with Governor Mike Kehoe's Safer Missouri initiative.

IN TESTIMONY WHEREOF, I have hereunto set my hand, in the City of Parkville this 21st day of April, 2026.

_____
Mayor Dean Katerndahl

ATTEST:

City Clerk Melissa Bazert