MEMO

TO: Kelvin L. Shaw, City Administrator
Jessica Pyle, Finance Manager

CC: Jason Myers, City Clerk

FROM: Christopher R. Davies P.E., Public Works Director

DATE: October 23, 2023

SUBJECT: CONTRACT WITH BURNS & McDONNELL ENGINEERING COMPANY, INC. – CWWTP AERATION UPGRADE THAT INCLUDES DESGIN/CONSTRUCTION/STARTUP

Background:

The city is under contract with Burns & McDonnell for the preliminary design to upgrade the aeration basin at the Central Wastewater Treatment Plant. The contract presented for the November 6, 2023 City council meeting is for the Final Design, Construction and Start Up of the Aeration Basin at the Central Wastewater Treatment Plant (CWWTP).

Discussion:

The City has been working with Burns & McDonnell for the upgrade to the aeration basin at the CWWTP. The scope of the work includes the following major elements:

1) New diffusers inside of the basin
2) New Blowers, approved by City Council under separate contract because of long lead times and savings of funds
3) New Blower Building
4) New Mixer, approved by City Council under separate contract because of lead time and savings of funds
5) All associated electrical, piping, hardware, SCADA for the upgrade.

The contract price is Two Million Nine Hundred Sixty Seven Thousand Nine Hundred Forty Nine dollars ($2,967,949.00) Lump Sum.

In addition, there are three (3) allowances the Owner and Engineer have agreed to:

1) Bypass pumping: $73,400.00
2) Temporary Power for Sludge Removal: $57,300.00
3) Owner Controlled Allowance: $145,000.00

The allowances, as noted above, are elements of work that are identified to potentially occur, but it cannot be determined if they will occur or the magnitude of the occurrence. No work shall be performed on any Allowance Item without Design-0Builder first obtaining in writing advanced authorization to proceed from Owner.

If you have any questions or need additional information please feel free to contact me.

Recommendation:

It is staff's recommendation that City Council approve the Contract with Burns & McDonnell for the upgrade to the Aeration Basin for the Central Wastewater Treatment Plant and authorizing the Mayor to sign said contract.

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Standard Form of Agreement Between Owner and Design-Builder - Lump Sum

This document has important legal consequences. Consultation with an attorney is recommended with respect to its completion or modification.

This **AGREEMENT** is made as of the _____ day of _____ in the year of 20_____, by and between the following parties, for services in connection with the Project identified below.

OWNER:
City of Sedalia, Missouri
200 South Osage Avenue
Sedalia, Missouri 65301

DESIGN-BUILDER:
Burns & McDonnell Engineering Company, Inc.
9400 Ward Parkway
Kansas City, Missouri 64114

PROJECT:
Central Wastewater Treatment Plan Aeration Upgrades
3000 West Main,
Sedalia, Missouri 65301

In consideration of the mutual covenants and obligations contained herein, Owner and Design-Builder agree as set forth herein.

Article 1

Scope of Work

1.1 Design-Builder shall perform or furnish the Work described in the Contract Documents.

Article 2

Contract Documents

2.1 The Contract Documents are comprised of the following:

.1 All written modifications, amendments, minor changes and Change Orders to this Agreement issued in accordance with *General Conditions of Contract Agreement Between Owner and Design-Builder* attached hereto ("General Conditions of Contract");

.2 This Agreement, including all Exhibits shown in Article 12.2.

Article 3

Interpretation and Intent

3.1 Design-Builder and Owner, prior to execution of the Agreement, shall carefully review the Contract Documents, including the various documents comprising the Basis of Design Documents for any conflicts or ambiguities. Design-Builder and Owner will discuss and resolve any identified conflicts or ambiguities prior to execution of the Agreement.

3.2 The Contract Documents are intended to permit the parties to complete the Work and all obligations required by the Contract Documents within the Contract Time(s) for the Contract Price. The Contract Documents are intended to be complementary and interpreted in harmony so as to avoid conflict, with words and phrases interpreted in a manner consistent with construction and design industry standards. In the event inconsistencies, conflicts, or ambiguities between or among the Contract Documents are discovered after execution of the Agreement, Design-Builder and Owner shall attempt to resolve any ambiguity, conflict or inconsistency informally, recognizing that the Contract Documents shall take precedence in the order in which they are listed in Section 2.1 hereof. In such event, the parties shall be deemed to have jointly authored the Contract Documents and nothing shall be construed against or in favor of one party based on it being deemed the sole author.Conflicts existing within Section 2.1.2 shall be resolved by giving precedence first to the Deviation List, if any, then the Owner's Project Criteria, and then the Design Builder's Proposal.

3.3 Terms, words and phrases used in the Contract Documents, including this Agreement, shall have the meanings given them in the General Conditions of Contract.

3.4 If Owner's Project Criteria contain design specifications: (a) Design-Builder is entitled to reasonably rely on the accuracy of the information represented in the design specifications and their compatibility with other information set forth in Owner's Project Criteria, including any design performance specifications; and (b) Design-Builder shall be entitled to an adjustment in its Contract Price and/or Contract Time(s) to the extent Design-Builder's cost and/or time of performance have been adversely impacted by such inaccurate design specification.

3.5 The Contract Documents form the entire agreement between Owner and Design-Builder and by incorporation herein are as fully binding on the parties as if repeated herein. No oral representations or other agreements have been made by the parties except as specifically stated in the Contract Documents.

Article 4

Ownership of Work Product

4.1 Work Product. All drawings, specifications and other documents and electronic data, including such documents identified in the General Conditions of Contract, furnished by Design-Builder to Owner under this Agreement ("Work Product") are deemed to be instruments of service and Design-Builder shall retain the ownership and property interests therein, including but not limited to any intellectual property or proprietary rights, copyrights and/or patents, trademarks, subject to the provisions set forth in Sections 4.2 through 4.5 below.

4.2 Owner's Limited License Upon Project Completion and Payment in Full to Design Builder. Upon Owner's payment in full for all Work performed under the Contract Documents, Design-Builder shall grant Owner a limited license to use the Work Product in connection with Owner's occupancy of this Project only, conditioned on Owner's express understanding that its alteration of the Work Product without the involvement of Design-Builder is at Owner's sole risk and without liability or legal exposure to Design-Builder or anyone working by or through Design-Builder, including Design Consultants of any tier (collectively the "Indemnified Parties"), and on the Owner's obligation to provide the indemnity set forth in Section 4.5 herein. The Work Product cannot be used for other projects without Design-Builder's express written consent and appropriate compensation and agreement on terms of use and indemnity.

4.3 Owner's Limited License upon Owner's Termination for Convenience or Design-Builder's Election to Terminate. If Owner terminates this Agreement for its convenience as set forth in Article 8 hereof, or if Design-Builder elects to terminate this Agreement in accordance with Section 11.4 of the General Conditions of Contract, Design-Builder shall, upon Owner's payment in full of the amounts due Design-Builder under the Contract Documents, grant Owner a limited license to use the Work Product to complete the Project and subsequently occupy the Project, and Owner shall thereafter have the same rights as set forth in Section 4.2 above, conditioned on the following:

.1 Use and completion of, or modifications to, the Work Product is at Owner's sole risk without liability or legal exposure to any Indemnified Party and on the Owner's obligation to provide the indemnity set forth in Section 4.5 herein; and

.2 Owner agrees to pay Design-Builder the additional sum of One Hundred Thousand Dollars ($ 100,000.00) as compensation for the right to use the Work Product to complete the Project and subsequently use the work Product in accordance with Section 4.2 if Owner resumes the Project through its employees, agents, or third parties.

4.4 Owner's Limited License upon Design-Builder's Default. If this Agreement is terminated due to Design-Builder's default pursuant to Section 11.2 of the General Conditions of Contract, then Design-Builder grants Owner a limited license to use the Work Product to complete this Project only and subsequently occupy the Project, and Owner shall thereafter have the same rights, obligations, and liability as set forth in Section 4.2 above. Notwithstanding the preceding sentence, if it is ultimately determined that Design-Builder was not in default, Owner shall be deemed to have terminated the Agreement for convenience, and Design-Builder shall be entitled to the rights and remedies set forth in Section 4.3 above.

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4.5 Owner's Indemnification for Use of Work Product. If Owner is required to indemnify any Indemnified Parties based on the use or alteration of the Work Product under any of the circumstances identified in this Article 4, Owner shall defend, indemnify and hold harmless the Indemnified Parties from and against any and all claims, damages, liabilities, losses and expenses, including attorneys' fees, arising out of or resulting from the use or alteration of the Work Product.

4.6 Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Design-Builder's rights.

4.7 The Owner shall not utilize the Work Product furnished by Design-Builder to solicit bids or obtain negotiated prices from other contractors.

4.8 This Article 4 shall survive any termination of this Agreement by either Party.

Article 5

Contract Time

5.1 Date of Commencement. The Work shall commence within five (5) days of Design-Builder's receipt of Owner's Notice to Proceed ("Date of Commencement") unless the parties mutually agree otherwise in writing.

5.2 Substantial Completion and Final Completion

.1 Substantial Completion of the entire Work shall be achieved no later than Three Hundred Eighty-Five (385) calendar days after the Date of Commencement ("Scheduled Substantial Completion Date").

Substantial Completion shall be defined as set out in the General Conditions of Contract.

.2 Final Completion of the Work or identified portions of the Work shall be achieved as expeditiously as reasonably practicable under the Design-Builder's Standard of Care (as defined in the General Conditions). Final Completion is the date when all Work is complete pursuant to the definition of Final Completion set forth in Section 1.2.7 of the General Conditions of Contract.

.3 All of the dates set forth in this Article 5 ("Contract Time(s)") shall be subject to adjustment in accordance with the General Conditions of Contract.

.4 If the Design-Builder is delayed in the progress of this Project by acts or neglect by the Owner, its employees, separate contractors employed by Owner, or by governmental action, or by change orders in the Work not caused in any part by the fault of the Design-Builder; then the Contract Time for completion shall be extended, and the Contract Amount shall be equitably adjusted by a written Change Order.

.5 Where the Design-Builder reasonably establishes that delays as set forth above or that are caused by shortage of labor, strikes, lockout, tornado, flood, wind damage, fire, unusual delay in transportation, adverse weather conditions beyond the quantity of lost days anticipated in the Project Schedule per Exhibit "B" Anticipated Lost Days to Inclement / Adverse Weather, explosion, sabotage, accidents, riots, civil commotion, acts of war, casualty, condemnation, pandemic or epidemic, or other Force Majeure beyond the Design-Builder's reasonable control impact the cost and/or Contract Time, the Design-Builder shall be entitled to recover all extra costs and an appropriate extension of the Contract Time. As soon as reasonably practical after the occurrence of the Force Majeure, Design-Builder shall provide written notice of the existence of such cause of delay, together with back-up documentation that verifies the impact in accordance with the Contract Documents.

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.6 For purposes of determining weather delays, the parties shall use Exhibit "B," Anticipated Lost Days to Inclement / Adverse Weather. The days shown on Exhibit "B" shall not accumulate month-to-month, but are to be used for determining only the anticipated adverse weather in a given month. Adverse weather for a period of two (2) hours on any day shall constitute one complete day since crews sent home are not able to be re-called after they abandon the Work. Adverse weather days shall also include those days when site conditions are such that Work cannot be performed, or cannot be performed efficiently, due to adverse weather on the preceding day or days (including a weekend) which impact on site conditions.

5.3 Time is Important. Owner and Design-Builder mutually agree that time is a material consideration with respect to the dates and times set forth in the Contract Documents.

5.4 Liquidated Damages. Design-Builder understands that if Substantial Completion is not attained by the Scheduled Substantial Completion Date in Section 5.2.1, above, Owner will suffer damages which are difficult to determine and accurately specify. Design-Builder agrees that if Substantial Completion is not attained by seven (7) days after the Scheduled Substantial Completion Date (the "LD Date"), Design-Builder shall pay Owner Three Hundred Dollars ($300.00) as liquidated damages for each day that Substantial Completion extends beyond the LD Date.

5.5 Any liquidated damages assessed pursuant to this Agreement shall be in lieu of all liability for any and all extra costs, losses, expenses, claims, penalties and any other damages, whether special or consequential, and of whatsoever nature incurred by Owner which are occasioned by any delay in achieving Substantial Completion, Interim Milestone Dates or Final Completion.

Owner and Design-Builder agree that the maximum aggregate liability Design-Builder has for any liquidated damages that may be assessed under this Agreement shall be Thirty Thousand Dollars ($30,000.00).

5.6 Early Completion Bonus. Not applicable to this project.

Article 6

Contract Price

6.1 Contract Price. Owner shall pay Design-Builder in accordance with Article 6 of the General Conditions of Contract the sum of Two Million Nine Hundred Sixty Seven Thousand Nine Hundred Forty Nine Dollars ($ 2,967,949) ("Contract Price"), subject to adjustments made in accordance with the General Conditions of Contract. Unless otherwise provided in the Contract Documents, the Contract Price is deemed to include all sales, use, consumer and other taxes mandated by applicable Legal Requirements.

6.2 Markups for Changes. If the Contract Price requires an adjustment due to changes in the Work, and the cost of such changes is determined under Sections 9.4.1.3 or 9.4.1.4 of the General Conditions of Contract, the following markups shall be allowed on such changes:

.1 For additive Change Orders, including additive Change Orders arising from both additive and deductive items, it is agreed that Design Builder shall receive a Fee of ten percent (10%) of the additional costs incurred for that Change Order. In addition to mark-up for Fee, Design-Builder shall be entitled to mark-up for insurance and bond in an amount of two percent (2%).

.2 For deductive Change Orders, including deductive Change Orders arising from both additive and deductive items, the deductive amounts shall include an amount equal to the sum of

five percent (5%) applied to the direct costs of the net reduction (which amount will account for a reduction associated with Design-Builder's Fee).

6.3 Allowance Items and Allowance Values

.1 Any and all Allowance Items, as well as their corresponding Allowance Values, are set forth in Exhibit "C" hereto.

.2 Design-Builder and Owner have worked together to review the Allowance Items and Allowance Values based on design information then available to determine that the Allowance Values constitute reasonable estimates for the Allowance Items. Design-Builder and Owner will continue working closely together during the preparation of the design to develop Construction Documents consistent with the Allowance Values. Nothing herein is intended in any way to constitute a guarantee by Design-Builder that the Allowance Item in question can be performed for the Allowance Value.

.3 No work shall be performed on any Allowance Item without Design-Builder first obtaining in writing advanced authorization to proceed from Owner. Owner agrees that if Design-Builder is not provided written authorization to proceed by the date set forth in the Project schedule, due to no fault of Design-Builder, Design-Builder may be entitled to an adjustment of the Contract Time(s) and Contract Price.

.4 Design-Builder and Owner will agree to the compensation method for each Allowance Item prior to the work being performed. The Design-Builder's compensation for Allowance Items shall be determeined by one or more of the following methods:

.1 Unit prices set forth in the Agreement or as subsequently agreed to between the parties:

.2 A mutually accepted lump sum supported by sufficient substantiating data to permit evaluation by Owner:

.3 Costs, fees and any other markups as set forth in Section 6.2.

Article 7

Procedure for Payment

7.1 Progress Payments

.1 Design-Builder shall submit to Owner on the Fifth (5th) day of each month, beginning with the first month after the Date of Commencement, Design-Builder's Application for Payment in accordance with Article 6 of the General Conditions of Contract.

.2 Owner shall make payment within ten (10) days after Owner's receipt of each properly submitted and accurate Application for Payment in accordance with Article 6 of the General Conditions of Contract, but in each case less the total of payments previously made, and less amounts properly withheld under Section 6.3 of the General Conditions of Contract.

7.2 Retainage on Progress Payments

.1 Owner will retain five percent (5%) of each Application for Payment provided, however, that when fifty percent (50%) of the Work has been completed by Design-Builder by cost, and Design-Builder is otherwise in compliance with its contractual obligations, Owner will not retain any additional retention amounts from Design-Builder's subsequent Applications for Payment. Owner will also reasonably consider reducing retainage for Subcontractors completing their work early in the Project.

.2 Within fifteen (15) days after Substantial Completion of the entire Work or, if applicable, any portion of the Work, pursuant to Section 6.6 of the General Conditions of Contract, Owner shall release to Design-Builder all retained amounts relating, as applicable, to the entire Work or completed portion of the Work, less an amount equal to (a) the reasonable value of all remaining or incomplete items of Work as noted in the Certificate of Substantial Completion and (b) all other amounts Owner is entitled to withhold pursuant to Section 6.3 of the General Conditions of Contract.

7.3 Final Payment. Design-Builder shall submit its Final Application for Payment to Owner in accordance with Section 6.7 of the General Conditions of Contract. Owner shall make payment on Design-Builder's properly submitted and accurate Final Application for Payment within thirty (30) days after Owner's receipt of the Final Application for Payment, provided that Design-Builder has satisfied the requirements for final payment set forth in Section 6.7.2 of the General Conditions of Contract.

7.4 Interest. Payments due and unpaid by Owner to Design-Builder, whether progress payments or final payment, shall bear interest commencing five (5) days after payment is due at the rate of one and one-half percent (1.5%) per month until paid. In any legal action or arbitration by Design-Builder to recover amounts due and not paid, Design-Builder shall be permitted to recover its attorney's fees and costs from Owner.

7.5 Record Keeping and Finance Controls. With respect to changes in the Work performed on a cost basis by Design-Builder pursuant to the Contract Documents, Design-Builder shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management, using accounting and control systems in accordance with generally accepted accounting principles and as may be provided in the Contract Documents. During the performance of the Work and for a period of three (3) years after Final Payment, Owner and Owner's accountants shall be afforded access to, and the right to audit from time to time, upon reasonable notice, Design-Builder's records, books, correspondence, receipts, subcontracts, purchase orders, vouchers, memoranda and other data relating to changes in the Work performed on a cost basis in accordance with the Contract Documents, all of which Design-Builder shall preserve for a period of three (3) years after Final Payment. There is no right to audit work performed on a lump sum or fixed price basis. Such inspection shall take place at Design-Builder's offices during normal business hours unless another location and time is agreed to by the parties. Any rates, multipliers or markups agreed to by the Owner and Design-Builder as part of this Agreement are only subject to audit to confirm that such multiplier or markup has been charged in accordance with this Agreement, but the composition of such rate, multiplier or markup is not subject to audit.

Article 8

Termination for Convenience

8.1 Upon ten (10) days' written notice to Design-Builder, Owner may, for its convenience and without cause, elect to terminate this Agreement. In such event, Owner shall pay Design-Builder for the following:

.1 All Work executed and for proven loss, cost or expense in connection with the Work;

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.2 The reasonable costs and expenses attributable to such termination, including demobilization costs and amounts due in settlement of terminated contracts with Subcontractors and Design Consultants; and

.3 Overhead and profit in the amount of ten percent (10%) on the sum of items .1 and .2 above.

8.2 In addition to the amounts set forth in Section 8.1 above, Design-Builder shall be entitled to receive one of the following as applicable:

.1 If Owner terminates this Agreement prior to commencement of construction, Design-Builder shall be paid in full for the Pre-construction and design services already rendered, plus five percent (5%) of the remaining balance of the Contract Price.

.2 If Owner terminates this Agreement after commencement of construction, Design-Builder shall be paid five percent (5%) of the remaining balance of the Contract Price.

8.3 If Owner terminates this Agreement pursuant to Section 8.1 above and proceeds to design and construct the Project through its employees, agents or third parties, Owner's rights to use the Work Product shall be as set forth in Section 4.3 hereof. Such rights may not be transferred or assigned to others without Design-Builder's express written consent and such third parties' agreement to the terms of Article 4.

Article 9

Representative of the Parties

9.1 Owner's Representatives

.1 Owner designates the individual listed below as its Senior Representative ("Owner's Senior Representative"), which individual has the authority and responsibility for avoiding and resolving disputes under Section 10.2.3 of the General Conditions of Contract:

Name: Kelvin Shaw
Title: City Administrator
Address: 200 S. Osage
Sedalia, MO 65301
Telephone No.: 660-827-3000
E-mail.: kshaw@sedalia.com

.2 Owner designates the individual listed below as its Owner's Representative, which individual has the authority and responsibility set forth in Section 3.4 of the General Conditions of Contract:

Name: Christopher R. Davies, P.E.
Title: Public Works Director
Address: 200 S. Osage
Sedalia, MO 65301
Telephone No.: 660-827-3000
E-mail.: cdavies@sedalia.com

.3 The Owner represents and warrants to Design-Builder that Owner, if not the true owner of the real property upon which the Project is to be built, is the agent of the true owner, with express

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legal authority to enter into this Agreement for the purpose of improving that real property. The property cannot be used for the purpose intended by this Agreement without the making of the improvements described herein.

9.2 Design-Builder's Representatives

.1 Design-Builder designates the individual listed below as its Senior Representative ("Design-Builder's Senior Representative"), which individual has the authority and responsibility for avoiding and resolving disputes under Section 10.2.3 of the General Conditions of Contract:

Name: Bryan Canzoneri
Title: Section Manager Construction
Address: 9450 Ward Parkway
Kansas City, Missouri 64114
Telephone No.: 816-743-4603
E-mail.: bcanzoneri@burnsmcd.com

.2 Design-Builder designates the individual listed below as its Design-Builder's Representative, which individual has the authority and responsibility set forth in Section 2.1.1 of the General Conditions of Contract:

Name: Kevin DeVoto
Title: Construction Manager
Address:9450 Ward Parkway
Kansas City, Missouri 64114
Telephone No.: 816-686-2212
E-mail.: kgdevoto@burnsmcd.com

Article 10

Bonds and Insurance

10.1 Insurance. Design-Builder and Owner shall procure the insurance coverages set forth below and in accordance with Article 5 of the General Conditions of Contract, with the exception of Builder's Risk which shall be procured by Design-Builder.

TYPE:	**REQUIRED LIMITS:**
1. Worker's Compensation Insurance	Statutory Amount
2.Employer's Liability	$500,000 policy limit by disease, $500,000 each accident, $500,000 each employee by disease
3.Commercial General Liability (CGL)	
General Aggregate:	$1,000,000
Completed Operations Aggregate:	$1,000,000
Limit Per Occurrence:	$1,000,000
4. Automobile Liability: (Hired, Owned and Non-owned Included) Combined Single Limit per Accident	$1,000,000
5. Builder's Risk	Contract/Completed Value of Project Work

Design-Builder will provide an all-risk Builder's Risk insurance policy insuring the Work during construction at the Project site including materials and supplies to be incorporated into the Work with a limit equal to the replacement cost of the Work prior to mobilization to the site and/or construction start whichever is earlier, until Substantial Completion of the Work. This policy will include the Owner, subcontractors of ever tier as additional insureds and include the suppliers, vendors, manufacturers, architects, and engineers as additional insureds as their interest appear while on the Project site. This policy shall include a waiver of subrogation in favor of Owner.

6. Excess/Umbrella Liability Policy $1,000,000 per occurrence and in the aggregate

10.2 Bonds. Design-Builder shall provide the following performance and payment bond.

Performance Bond.

(Check one box only. If no box is checked, then no bond is required.)

☒ Required ☐ Not Required

Payment Bond.

(Check one box only. If no box is checked, then no bond is required.)

☒ Required ☐ Not Required

Article 11

Other Provisions

11.1 Other provisions, if any, are as follows:

Sole Governance of the Work. Where this Agreement is entered into subsequent to the Design-Builder beginning performance of the Work for the Project, the parties acknowledge and agree that this Agreement is intended to and shall govern all Work provided by the Design-Builder for the Project, whether initiated or performed prior or subsequent to the execution of this Agreement, and that this Agreement is intended to and shall supersede and replace any and all prior agreements whether written or oral for the Project and subject matter set forth in this Agreement.

11.2 Special Provisions

.1 Owner acknowledges that if conditions at the site differ from those shown in the as-built drawings, such costs shall be reimbursable via Change Order. Design-Builder's price is premised on the assumptions defined in Exhibit "C". If such assumptions prove to be incorrect based on actual site conditions, the added cost shall be reimbursable as a Change Order.

.2 Exclusions from the scope of Work are set out in Exhibit "C".

.3 Statutory Notices

NOTICE TO OWNER

FAILURE OF THIS CONTRACTOR TO PAY THOSE PERSONS SUPPLYING MATERIAL OR SERVICES TO COMPLETE THIS CONTRACT CAN RESULT IN THE FILING OF A MECHANIC'S LIEN ON THE PROPERTY WHICH IS THE SUBJECT OF THIS CONTRACT PURSUANT TO CHAPTER 429, RSMO. TO AVOID THIS RESULT YOU MAY ASK THIS CONTRACTOR FOR "LIEN WAIVERS" FROM ALL PERSONS SUPPLYING MATERIAL OR SERVICES FOR THE WORK DESCRIBED IN THIS CONTRACT. FAILURE TO SECURE LIEN WAIVERS MAY RESULT IN YOUR PAYING FOR LABOR AND MATERIAL TWICE.

11.3 Listing of Exhibits:

Exhibit "A": Not Used
Exhibit "B": Scope of Services
Exhibit "C": Design-Builder's Assumptions, Clarifications & Exclusions
Exhibit "D": Not Used
Exhibit "E": Anticipated Lost Days to Inclement / Adverse Weather
Exhibit "F": General Conditions of Contract Between Owner and Design-Builder ("General Conditions of Contract")
Exhibit "G": Design-Builder's Allowances
Exhibit "H": Preliminary Design Documents

Article 12

Limitation of Liability

12.1 Limitation. To the fullest extent permitted by law, and notwithstanding any other provision of this Agreement, the total liability, in the aggregate, of Design-Builder (including its affiliates and related companies), its Design Consultants and Subcontractors, surety (if any) and their respective officers, directors, employees, and agents, and any of them, to Owner and anyone claiming by, through or under Owner, for any and all claims, losses, liabilities, costs, or damages whatsoever arising out of, resulting from or in any way related to the Project or this Agreement from any cause, including but not limited to the negligence, indemnity, professional errors or omissions, strict liability, breach of contract, or warranty (express or implied) shall not exceed the sum of $2,000,000. The parties agree that specific consideration has been given by the Design-Builder for this limitation and that it is deemed adequate.

In executing this Agreement, Owner and Design-Builder each individually represents that it has the necessary financial resources to fulfill its obligations under this Agreement, and each has the necessary corporate approvals to execute this Agreement, and perform the services described herein.

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THIS CONTRACT CONTAINS A BINDING ARBITRATION PROVISION WHICH MAY BE ENFORCED BY THE PARTIES.

OWNER:	**DESIGN-BUILDER:**
_____	Burns & McDonnell Engineering Company, Inc.
(Name of Owner)	*(Name of Design-Builder)*
_____	DocuSigned by: Bryan Canzoneri
(Signature)	*(Signature)*
_____	Bryan Canzoneri
(Printed Name)	*(Printed Name)*
_____	Section Manager
(Title)	*(Title)*
Date: _____	10/27/2023 Date: _____

Caution: You should sign an original DBIA document which has this caution printed in blue. An original assures that changes will not be obscured as may occur when documents are reproduced.

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BURNS McDONNELL

EXHIBIT B - SCOPE OF SERVICES

1) The parties agree that the Design-Builder's Scope of Services includes and is limited to the following:

1.1 Project Management:

(1) Design-Builder will host monthly project update meetings and will provide meeting minutes with updated Action Item log.

(2) Design-Builder will host a weekly on-site construction coordination meeting with Owner to document work completed the past week, planned work for the next week and key interfaces between Design-Builder and Owner after mobilization.

(3) Design-Builder will provide a monthly invoice that includes the following:

(a) AIA Payment application with approved schedule of values and based on percent complete.

1.2 Engineering Services:

(1) Advance the design to Pre-IFC and produce a deliverable for the Owner's review.

(2) Design-Builder will hold a design review workshop with the Owner to review the Pre-IFC design deliverable and discuss Owner feedback/review comments.

(3) Incorporate Owner feedback into the design and produce Issued for Construction design documents.

(4) Review and approve compliance submittals for equipment and materials to be incorporated into the Work. PDF versions of the final approved ("A" status) equipment submittals will be provided to Owner for Owner's information and records.

(5) Provide engineering submittal management associated with submittals throughout the construction period.

(6) Review third party test reports for equipment and materials to be incorporated into the project.

(7) Provide clarification and interpretation of the Issued for Construction design documents throughout the construction period. (Respond to Requests for Information [RFIs])

(8) Revise Issued for Construction design documents as needed to support any changes during construction

(9) Prepare a PDF set of Conformed As-Constructed design documents incorporating any changes made to the Issued for Construction design documents during the construction process.

1.3 Procurement:

(1) Issuance and subsequent execution of supplier/vendor purchase orders.

(2) Receive, review, and process supplier/vendor payment applications, in accordance with the terms of the purchase orders.

(3) Perform supplier/vendor purchase order administration including the review and processing of RFIs, potential change order requests, change orders, etc.

(4) Manage equipment and material deliveries as needed to facilitate the project schedule.

(5) Review equipment and materials delivered to the site for compliance with the IFC documents and approved submittals prior to being implemented to the Work.

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1.4 Construction Services:

(1) Coordinate site preconstruction conference.
(2) Conduct weekly construction coordination meetings with subcontractors and Owner personnel.
(3) Receive, review, and process subcontractor payment applications.
(4) Perform subcontract administration including the review and processing of RFIs, potential change order requests, change orders, etc.
(5) Manage Subcontractors to construct installation of the Work in accordance with the Contract Documents.
(6) Third party services, including surveying and materials testing.

1.5 Commissioning & Start-up:

(1) Design-Builder will lead all commissioning and start-up activities in coordination with the Owner, key equipment suppliers and subcontractors.

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EXHIBIT C – ASSUMPTIONS, CLARIFICATIONS & EXCLUSIONS

GENERAL / COMMERICAL

1. The Scope of Services, Contract Time and Contract Price are based on Exhibit K – Preliminary Design Documents.
2. The Contract Price and Contract Times are based on the Contract being executed and Notice to Proceed issued before November 10th, 2023.
3. The Contract Price and Contract Times are based on a standard 5-day week working 8 hours per day.
4. Taxes including sales, use, or special use on permanent equipment and materials is not included as a Tax Exemption Certificate has been provided by Owner to Design-Builder.
5. "Buy American" requirements are not included.
6. COVID-19. The uncertainty and potential disruptions to the labor force and supply chain caused by the global outbreak and spread of COVID-19 ("coronavirus") may have an impact on this Project, the exact cost and duration of which Design-Builder can neither predict nor control. Government orders and restrictions may also delay or prevent performance as anticipated. Design-Builder will be granted with a period of relief in performance and appropriate cost relief where circumstances arise that are beyond Design-Builder's control, including COVID-19 related events. To the extent applicable, the doctrines of "commercial impracticability" or "frustration of purpose" under the Uniform Commercial Code may also excuse performance if delivery pursuant to our contract's terms has been made "impracticable" by the occurrence of a contingency, the non-occurrence of which both parties assumed when the contract was made. At this time, it is impossible to foresee or to predict the full impact of COVID-19 around the world and, therefore, have not included price or schedule contingency specifically for COVID-19.
7. Performance & Payment Bonds are included.
8. Builder's Risk Insurance is included.
9. Bringing existing buildings or equipment up to current code is excluded.
10. Spare parts are not included, unless called out in the Exhibit K – Preliminary Design Documents.
11. Excludes charges for consumption fees for providing utility services (electric, water, sewer, internet, gas, etc.). All consumption fees to be paid directly by Owner.
12. Owner will provide all water for construction and testing to Design-Builder at no cost.
13. Assumes no restrictions to work hours.
14. Local Building Permit fees have not been included as it was assumed these fees would be waived by the Owner.
15. Dewatering of the existing Aeration basin along with any and all removal of sludge is the responsibility of the Owner. Provisions for bypass pumping and temporary power to assist in dewatering and sludge removal have been defined in Exhibit K – Preliminary Design Documents.
16. Design Builder is not responsible for the condition of the plant effluent during any partial or full plant shut down operations.
17. Design Buldier is not responsible for the condition of the plant effluent during any partial or full bypass operations.
18. Any additional treatment needed during shutdown or bypass operations shall be the responsibility of the Owner.
19. It is anticipated that parts of the Work will be substantially complete and put into continuous operation prior to overall Substantial Completion of the entire Work. As individual work areas become substantially complete, the Design-Builder will request Substantial Completion of the individual work areas and request a Substantial Completion certificate be issued for that work. Warranties for the associated work areas will begin on the Substantial Completion date of each individual work area.
20. Pricing is based on current market conditions. In the event there is a significant price increase for material, equipment, or labor occurring after execution of the Agreement, the Contract Price shall

be equitably adjusted to reflect the increase in Design-Builder's cost. A change in price shall be considered significant when the price of an item increases 5% or more between the date of Agreement execution and the date of procurement.

SITE CONSTRUCTION AND ACCESS :

1. Owner will provide adequate material staging, parking, and lay-down space for use during construction, located at the approximate geographic coordinates 38.71669733988611, -93.26303976179486 . Design-Builder has included cost for installing stone for the laydown area, as well as restoring the disturbed area at Project Completion.
2. Includes improvements to the existing road only to the limits shown in the Exhibit K – Preliminary Design Documents.
3. It is assumed that Design-Builder will not encounter any existing hazardous material including, but not limited to, lead, asbestos, or contaminated soils.
4. Seeding of disturbed areas is included. Landscape plantings or sodding are not included.
5. It is assumed groundwater will not be encountered in any excavations. We have included pumping for precipitation water.
6. Dewatering of groundwater intrusion into excavations is not included.

DEMOLITION

1. The Owner shall be responsible for removing any and all material and chemicals inside the existing storage structure adjacent to the existing blowers and MCC2 structure prior to Design Builder mobilizing to site.
2. The Owner has first rights to any and all demoed material including by not limited to: existing MCC sections, existing blowers, and existing blower piping.

CONCRETE

1. The Design-Builder has included the restoration of the hard surfaces around the new PEMB building. The limits of these restorations are shown in exhibit K – Preliminary Design Documents
2. The Design-Builder will be responsible to repair any damage caused to additional hard surfaces during the course of construction.
3. No additional pavement, flatwork, or drives have been included beyond what is included in Exhibit K – Preliminary Design Drawings.

PROCESS MECHANICAL & EQUIPMENT

1. First fills of chemicals and fuels required for startup, testing, and commissioning will be provided by the Owner.
2. Based on review of the bids received for the process equipment, Owner and Design-Builder have mutually agreed to using the following equipment manufacturers:
    a. Aeration Diffusers – SSI/ Haynes
    b. Motor Control Center/Switchboard - ABB
3. The Owner is to provide Blowers based on Design-Builder supplied technical specifications. Owner and Design-Builder have mutually agreed to using FTC/Sulzer to supply blower as defined in Exhibit K – Preliminary Design Documents

ELECTRICAL, INSTRUMENTATION, & CONTROLS

1. Excludes all supply, installation, termination, and testing of fiber between PLC in Solids handling building and the admin/office building onsite

2. Excludes upgrades to the plant's existing communications/SCADA system beyond what is included in Exhibit K – Preliminary Design Documents.
3. Excludes any new security devices or systems (cameras, card readers, etc.), as well as any upgrades or repairs to any existing security devices or system.

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EXHIBIT E – ANTICPATED LOST DAYS TO INCLEMENT / ADVERSE WEATHER

The chart below provides the days per month that the Design-Builder anticipates will be lost due to inclement / adverse weather. The days shown in this Exhibit B shall not accumulate month-to-month but are to be used for determining only the anticipated adverse weather in a given month. Adverse Weather shall be as defined in Article 5 of the Agreement.

Anticipated Lost Days per Month	
Month	**Anticipated Lost Days**
January	2
February	2
March	1
April	2
May	3
June	3
July	2
August	2
September	2
October	2
November	1
December	1

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EXHIBIT G – DESIGN-BUILDER'S ALLOWANCES

The parties have agreed to establish the following Allowance Items and Allowance Values. Allowance items are elements of work that are identified to potentially occur, but it cannot be determined if they will occur or the magnitude of the occurrence, so they are not included in the Design-Builder's current Scope of Work. The Allowance Value is the value which the parties have agreed to establish for an Allowance Item in accordance with Article 6.3 of the Agreement. Allowances are included in the Contract Price.

If Allowances are utilized, the Design-Builder shall be compensated for its costs and the Design-Builder's markup. It is noted that use of an Allowance may also require a schedule adjustment in certain situations.

1. Bypass Pumping, $73,400: This allowance item may be utilized to address bypass pumping during the periods of time when the Design-Builder will assist in bypassing the existing aeration basin, or as needed by the owner. Design-Builder and Owner will agree to the compensation method prior to work being performed. The compensation method will be determined in accordance with paragraph 6.3.4 of the Agreement.

2. Temporary Power for Sludge Removal, $57,300: This allowance item may be utilized to address temporary power needs required during the operation to remove sludge form the existing plant, or as need by the City. Design-Builder and Owner will agree to the compensation method prior to work being performed. The compensation method will be determined in accordance with paragraph 6.3.4 of the Agreement.

3. Owner Controlled Allowance, $145,000: This allowance can be utilized to compensate the Design-Builder for costs associated with Differing Site Conditions or an Owner driven change in scope.. Design-Builder and Owner will agree to the compensation method prior to work being performed. The compensation method will be determined in accordance with paragraph 6.3.4 of the Agreement.

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EXHIBIT F –GENERAL CONDITIONS OF CONTRACT BETWEEN OWNER AND DESIGN-BUILDER ("GENERAL CONDITIONS OF CONTRACT")

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General Conditions of Contract Between Owner and Design-Builder

This document has important legal consequences. Consultation with an attorney is recommended with respect to its completion or modification.

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Article 1

General

1.1 Mutual Obligations

.1 *Owner and Design-Builder* commit at all times to cooperate reasonably with each other, and proceed on the basis of trust and good faith, to permit each party to realize the benefits afforded under the Contract Documents.

1.2 Basic Definitions

.1 *Agreement* refers to the executed contract between Owner and Design-Builder under DBIA Document No. 525, *Standard Form of Agreement Between Owner and Design-Builder Lump Sum* (2010 Edition), as modified by the parties.

.2 *Not Used.*

.3 *Construction Documents* are the documents, consisting of Drawings and Specifications, to be prepared, furnished or assembled by the Design-Builder consistent with the Exhibit "K" Preliminary Design Documents.

.4 *Day* or *Days* shall mean calendar days unless otherwise specifically noted in the Contract Documents.

.5 *Design-Build Team* is comprised of the Design-Builder, the Design Consultant, and key Subcontractors identified by the Design-Builder.

.6 *Design Consultant* is a qualified, licensed design professional who may be an employee of Design-Builder, or who is retained by Design-Builder, or employed or retained by anyone under contract with Design-Builder, to furnish design services required under the Contract Documents. A Design Sub-Consultant is a qualified, licensed design professional who is not an employee of the Design Consultant, but is retained by the Design Consultant or employed or retained by any one under contract to Design Consultant, to furnish design services required under the Contract Documents. Owner recognizes that Design-Builder is an integrated company with in-house design capabilities and that the function of Design Consultant may, in some instances, be self-performed by Design-Builder.

.7 *Final Completion* is the date on which all Work is complete in accordance with the Contract Documents, including but not limited to, any items identified in the punch list prepared under Section 6.6.1 and the submission of all documents set forth in Section 6.7.2.

.8 *Force Majeure Events* are those events that are beyond the reasonable control of both Design-Builder and Owner, including the events of war, riots, insurrections, terrorism, vandalism, floods, tornados, labor disputes, earthquakes, fires, epidemics, pandemics, executive orders, tariffs, actions/inactions of Government, transportation delays and accidents, supply chain disruptions, named storms, adverse weather conditions not reasonably anticipated, and other acts of God.

.9 *General Conditions of Contract* refer to this DBIA Document No. 535, Standard Form of General Conditions of Contract Between Owner and Design-Builder (2010 Edition), as modified by the parties.

.10 *Not Used.*

.11 *Not Used.*

.12 *Hazardous Conditions* are any materials, wastes, substances and chemicals deemed to be hazardous under applicable Legal Requirements, or the handling, storage, remediation, or disposal of which are regulated by applicable Legal Requirements.

.13 *Legal Requirements* are all applicable federal, state and local laws, codes, ordinances, rules, regulations, orders and decrees of any government or quasi-government entity having jurisdiction over the Project or Site, the practices involved in the Project or Site, or any Work.

.14 *Not Used.*

.15 *Site* is the land or premises on which the Project is located.

.16 *Subcontractor* is any person or entity retained by Design-Builder as an independent contractor to perform a portion of the Work and shall include materialmen and suppliers and shall not include the Design Consultants retained by the Design-Builder.

.17 *Sub-Subcontractor* is any person or entity retained by a Subcontractor as an independent contractor to perform any portion of a Subcontractor's Work and shall include materialmen and suppliers.

.18 *Substantial Completion* or Substantially Complete means the date on which the Work, or an agreed upon portion of the Work, is sufficiently complete in accordance with the Contract Documents so that Owner can occupy and use the Project or a portion thereof for its intended purposes.

.19 *Work* is comprised of all Design-Builder's design, construction and other services required by the Contract Documents, including procuring and furnishing all materials, equipment, services and labor reasonably inferable from the Contract Documents.

Article 2

Design-Builder's Services and Responsibilities

2.1 General Services

.1 Design-Builder's Representative shall be reasonably available to Owner and shall have the necessary skill and experience required to supervise the Work. Design-Builder's Representative shall communicate regularly with Owner and shall be vested with the authority to act on behalf of Design-Builder. Design-Builder's Representative may be replaced only with the mutual agreement of Owner and Design-Builder, which shall not be unreasonably withheld by the Owner. It is understood and accepted that Design-Builder does not plan to have a full-time, on-Site Superintendent or Project Manager until amount of Work on Site warrants that level of presence on Site.

.2 Design-Builder shall provide Owner with a monthly status report detailing the progress of the Work, including whether (i) the Work is proceeding according to schedule, (ii) known discrepancies, conflicts, or ambiguities exist in the Contract Documents that require resolution, (iii) health and safety issues exist in connection with the Work; (iv) status of the contingency account to the extent provided for in the Standard Form of Agreement Between Owner and Design-Builder Cost Plus Fee with an Option for a Guaranteed Maximum Price; and (v) other items that require resolution so as not to jeopardize Design-Builder's ability to complete the Work for the Contract Price and within the Contract Time(s).

.3 Unless a schedule for the execution of the Work has been attached to the Agreement as an exhibit at the time the Agreement is executed, Design-Builder shall prepare and submit, at least three (3) days prior to the meeting contemplated by Section 2.1.4 hereof, a schedule for the

execution of the Work for Owner's review and response. The schedule shall indicate the dates for the start and completion of the various stages of Work, including the dates when Owner information and approvals are required to enable Design-Builder to achieve the Contract Time(s). The schedule shall be revised as required by conditions and progress of the Work, but such revisions shall not relieve Design-Builder of its obligations to complete the Work within the Contract Time(s), as such dates may be adjusted in accordance with the Contract Documents. Owner's review of, and response to, the schedule shall not be construed as relieving Design-Builder of its complete and exclusive control over the means, methods, sequences and techniques for executing the Work.

.4 The parties will meet within seven (7) days after execution of the Agreement, or as mutually agreed, to discuss issues affecting the administration of the Work and to implement the necessary procedures, including those relating to submittals and payment, to facilitate the ability of the parties to perform their obligations under the Contract Documents.

2.2 Design Professional Services

.1 Design-Builder shall, consistent with applicable state licensing laws, provide through qualified, licensed design professionals employed by Design-Builder, or procured from qualified, independent licensed Design Consultants, the necessary design services, including architectural, engineering and other design professional services, for the preparation of the required drawings, specifications and other design submittals to permit Design-Builder to complete the Work consistent with the Contract Documents. Nothing in the Contract Documents is intended or deemed to create any legal or contractual relationship between Owner and any Design Consultant.

2.3 Standard of Care for Design Professional Services

.1 The standard of care for all design professional services performed to execute the Work shall be the care and skill ordinarily used by members of the design profession practicing under similar conditions at the same time and locality of the Project ("Design Standard of Care"). If Owner discovers any design portion of the Work that does not meet such Design Standard of Care within one (1) year from Substantial Completion of the design Work, Owner shall notify Design-Builder in writing and provide Design-Builder an opportunity to reperform and correct such design and services. Such reperformance and correction by Design-Builder shall be Owner's sole remedy and Design-Builder's sole obligation with regard to the Design Standard of Care or the quality of design or engineering services. The maximum Warranty Period for any such reperformance and correction of engineering or design services shall be one (1) year from Substantial Completion.

2.4 Design Development Services

.1 Design-Builder and Owner shall, consistent with any applicable provision of the Contract Documents, agree upon any interim design submissions that Owner may wish to review, which interim design submissions may include design criteria, drawings, diagrams and specifications setting forth the Project requirements. Interim design submissions shall be consistent with the Basis of Design Documents, as the Basis of Design Documents may have been changed through the design process set forth in this Section 2.4.1. On or about the time of the scheduled submissions, Design-Builder and Owner shall meet and confer about the submissions, with Design-Builder identifying during such meetings, among other things, the evolution of the design and any changes to the Basis of Design Documents, or, if applicable, previously submitted design submissions. Changes to the Basis of Design Documents, including those that are deemed minor changes under Section 9.3.1, shall be processed in accordance with Article 9. Minutes of the meetings, including a full listing of all changes, will be maintained by Design-Builder and provided to all attendees for review. Following the design review meeting, Owner shall review and approve the interim design submissions and meeting minutes in a time that is consistent with the turnaround times set forth in Design-Builder's schedule.

.2 Design-Builder shall submit to Owner Construction Documents setting forth in detail drawings and specifications describing the requirements for construction of the Work. The Construction Documents shall be consistent with the latest set of interim design submissions, as such submissions may have been modified in a design review meeting and recorded in the meetings minutes. The parties shall have a design review meeting to discuss, and Owner shall review and approve, the Construction Documents in accordance with the procedures set forth in Section 2.4.1 above. Design-Builder shall proceed with construction in accordance with the approved Construction Documents and shall submit one set of approved Construction Documents to Owner prior to commencement of construction.

.3 Owner's review and approval of interim design submissions, meeting minutes, and the Construction Documents is for the purpose of mutually establishing a conformed set of Contract Documents compatible with the requirements of the Work. Neither Owner's review nor approval of any interim design submissions, meeting minutes, and Construction Documents shall be deemed to transfer any design liability from Design-Builder to Owner.

.4 To the extent not prohibited by the Contract Documents or Legal Requirements, Design-Builder may prepare interim design submissions and Construction Documents for a portion of the Work to permit construction to proceed on that portion of the Work prior to completion of the Construction Documents for the entire Work.

.5 Upon completion of the Design Development Phase, the Design-Builder shall provide the Owner with drawings, outline specifications and other documents for written acceptance by the Owner. Owner shall provide written approval and / or comments within ten (10) business days of the receipt of the same.

2.5 Legal Requirements

.1 Design-Builder shall perform the Work in accordance with all Legal Requirements and shall provide all notices to Owner applicable to the Work as required by the Legal Requirements.

.2 The Contract Price and/or Contract Time(s) shall be adjusted to compensate Design-Builder for the effects of any changes in the Legal Requirements enacted after the date of the Agreement affecting the performance of the Work, or if a Guaranteed Maximum Price is established after the date of the Agreement, the date the parties agree upon the Guaranteed Maximum Price. Such effects may include, without limitation, revisions Design-Builder is required to make to the Construction Documents because of changes in Legal Requirements.

2.6 Government Approvals and Permits

.1 Except as identified as Design-Builder's responsibility in the Permit List attached as an exhibit to the Agreement, Owner shall obtain and pay for all necessary permits, approvals, licenses, government charges and inspection fees required for the prosecution of the Work by any government or quasi-government entity having jurisdiction over the Project.

.2 Design-Builder shall provide reasonable assistance to Owner in obtaining those permits, approvals and licenses that are Owner's responsibility.

2.7 Design-Builder's Construction Phase Services

.1 Unless otherwise provided in the Contract Documents to be the responsibility of Owner or a separate contractor, Design-Builder shall provide through itself or Subcontractors the necessary supervision, labor, inspection, testing, start-up, material, equipment, machinery, temporary utilities and other temporary facilities to permit Design-Builder to complete construction of the Project consistent with the Contract Documents.

.2 Design-Builder shall perform all construction activities efficiently and with the requisite

experience, skill and competence to satisfy the requirements of the Contract Documents. Design-Builder shall at all times exercise complete and exclusive control over the means, methods, sequences and techniques of construction for its Work.

.3 Design-Builder shall employ only Subcontractors who are duly licensed (where applicable) and qualified to perform the Work consistent with the Contract Documents. Owner may reasonably object to Design-Builder's selection of any Subcontractor, provided that the Contract Price and/or Contract Time(s) shall be adjusted to the extent that Owner's decision impacts Design-Builder's cost and/or time of performance.

.4 Design-Builder assumes responsibility to Owner for the proper performance of the Work of Subcontractors and any negligent acts and omissions in such performance of the Work. Nothing in the Contract Documents is intended or deemed to create any legal or contractual relationship between Owner and any Subcontractor or Sub-Subcontractor, including but not limited to any third-party beneficiary rights.

.5 Design-Builder shall coordinate the activities of all Subcontractors. If Owner performs other work on the Project or at the Site with separate contractors under Owner's control, Design-Builder agrees to reasonably cooperate with such separate contractors so that the Project can be completed in an orderly manner without unreasonable disruption. However, unless otherwise stated, Design-Builder is not responsible to schedule or coordinate Owner's separate contractors.

.6 Design-Builder shall keep the Site reasonably free from debris, trash and construction wastes to permit Design-Builder to perform its construction services efficiently, safely and without interfering with the use of adjacent land areas. Upon Substantial Completion of the Work, or a portion of the Work, Design-Builder shall remove all debris, trash, construction wastes, materials, equipment, machinery and tools arising from the Work or applicable portions thereof to permit Owner to occupy the Project or a portion of the Project for its intended use.

2.8 Design-Builder's Responsibility for Project Safety

.1 Design-Builder recognizes the importance of performing the Work in a safe manner so as to prevent damage, injury or loss to (i) all individuals at the Site, whether working or visiting, (ii) the Work, including materials and equipment incorporated into the Work or stored on-Site, and (iii) all other property at the Site or adjacent thereto. Design-Builder assumes responsibility for implementing and monitoring all safety precautions and programs related to the performance of the Work. Design-Builder shall, prior to commencing construction, designate a Safety Representative with the necessary qualifications and experience to supervise the implementation and monitoring of all safety precautions and programs related to the Work. Unless otherwise required by the Contract Documents, Design-Builder's Safety Representative shall be an individual stationed at the Site who may have responsibilities on the Project in addition to safety. The Safety Representative shall make routine daily inspections of the Site and shall hold weekly safety meetings with Design-Builder's personnel, Subcontractors and others as applicable. The Safety Representative may be the Design-Builder's Superintendent or Project Manager.

.2 Design-Builder and Subcontractors shall comply with all Legal Requirements relating to safety, as well as any Owner-specific safety requirements set forth in the Contract Documents, provided that such Owner-specific requirements do not violate any applicable Legal Requirement. Design-Builder will immediately report in writing any material safety-related injury, loss, damage or accident arising from the Work to Owner's Representative and, to the extent mandated by Legal Requirements, to all government or quasi-government authorities having jurisdiction over safety-related matters involving the Project or the Work.

.3 Design-Builder's responsibility for safety under this Section 2.8 is not intended in any way to relieve Subcontractors and Sub-Subcontractors of their own contractual and legal obligations and responsibility for (i) complying with all Legal Requirements, including those related to health and safety matters, and (ii) taking all necessary measures to implement and monitor all safety

precautions and programs to guard against injuries, losses, damages or accidents resulting from their performance of the Work. Design-Builder is not responsible for any safety violations, acts or omissions of the Owner or its separate contractors, consultants and their subcontractors.

2.9 Design-Builder's Warranty

.1 Design-Builder warrants to Owner that the construction, including the materials and equipment furnished and procured by Design-Builder as part of the construction, shall be new unless otherwise specified in the Contract Documents, of good quality, in conformance with the Contract Documents and free of defects in materials and workmanship. Design-Builder's warranty obligation excludes defects caused by abuse, alterations, normal wear and tear, operation or maintenance outside of manufacturer's recommendations, weather, or failure to maintain the Work in a commercially reasonable manner. Nothing in this warranty is intended to duplicate or limit any manufacturer's warranty which provides Owner with greater warranty rights than set forth in this Section 2.9 or the Contract Documents. Design-Builder will provide Owner with all manufacturers' warranties upon Substantial Completion.

.2 The Design-Builder agrees to assign to the Owner at the time of Final Completion of the Work any and all manufacturer's warranties relating to materials and labor used in the Work. Owner agrees to look solely to such manufacturer(s) for remedies for defects in equipment and material, and not to Design-Builder to the extent covered by an express or implied warranty. Design-Builder's sole obligation is to provide reasonable assistance to Owner in obtaining relief under such manufacturer's warranties.

.3 THE WARRANTIES AND REMEDIES PROVIDED IN THIS SECTION 2.9 ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. CORRECTION OF A WARRANTY DEFECT AND COMPLIANCE BY CONTRACTOR WITH ITS RELATED OBLIGATIONS IN RESPECT TO SUCH DEFECT IN THE MANNER AND WITHIN THE PERIOD OF TIME PROVIDED HEREIN SHALL CONSTITUTE COMPLETE FULFILLMENT OF ALL OF THE LIABILITIES OF CONTRACTOR TO OWNER AND SHALL BE OWNER'S SOLE AND EXCLUSIVE REMEDY IN RESPECT TO SUCH DEFECTIVE SERVICE OR DEFECTIVE EQUIPMENT OR DEFECTIVE WORK. ALL DESIGN-BUILDER LIABILITY SHALL END UPON EXPIRATION OF THE ONE-YEAR WARRANTY PERIOD, PROVIDED THAT OWNER MAY CONTINUE TO ENFORCE ANY CLAIM FOR WHICH IT HAS GIVEN NOTICE PRIOR TO THAT DATE.

2.10 Correction of Defective Work

.1 To the extent not covered by a manufacturer's warranty under Section 2.9.2, Design-Builder agrees to correct any Work that is found to not be in conformance with the Contract Documents, including that part of the Work subject to Section 2.9 hereof, within a period of one year from the date of Substantial Completion of the Work or any portion of the Work, or within such longer period to the extent required by any specific warranty included in the Contract Documents.

.2 Design-Builder shall, within seven (7) days of receipt of written notice from Owner that the Work is not in conformance with the Contract Documents, take meaningful steps to commence correction of such nonconforming Work, including the correction, removal or replacement of the nonconforming Work. If Design-Builder fails to commence the necessary steps within such seven (7) day period, Owner, in addition to any other remedies provided under the Contract Documents, may provide Design-Builder with written notice that Owner will commence correction of such nonconforming Work with its own forces. If Owner does perform such corrective Work, Design-Builder shall be responsible for all reasonable costs incurred by Owner in performing such correction. If the nonconforming Work creates an emergency requiring an immediate response to prevent imminent danger to persons or property, the seven (7) day period identified herein shall be deemed inapplicable.

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.3 The one year period referenced in Section 2.10.1 above applies only to Design-Builder's obligation to correct nonconforming Work and warranty obligations, and is not intended to constitute a period of limitations for any other rights or remedies Owner may have regarding Design-Builder's other obligations under the Contract Documents.

2.11 Prevailing Wages

.1 If applicable pursuant to Sections 290.210 to 290.340, RSMo., Design-Builder shall pay not less than the prevailing hourly rate of wages as found by the Department of Labor and Industrial Relations of the State of Missouri and listed on the current Wage Order for Pettis County, a copy of which is available at City Hall, or determined by the Court of Appeals shall be paid to all workers performing work under this contract. Applicable wage rates to the owner's locality are attached hereto as Exhibit A and incorporated herein.

.2 It is further stipulated that the Design-Builder shall forfeit a penalty to the Owner of one hundred dollars ($100.00) for each calendar day, or portion thereof, if a worker is paid less than the prevailing rate for any work done under the contract by the Design-Builder or by any subcontractor.

2.12 Construction Safety Training

.1 The Design-Builder shall provide a ten (10) hour Occupational Safety and Health Administration (OSHA) construction safety program for all employees who will be on-site at the project. The construction safety program shall include a course in construction safety and health that is approved by OSHA or a similar program approved by the Missouri Department of Labor and Industrial Relations that is at least as stringent as an approved OSHA program as required by Section 292.675 RSMo.

.2 If any on-site employees had not previously completed a construction safety program, Design-Builder shall require those on-site employees to complete a construction safety program within sixty (60) days after the date work on the project commences.

.3 The Design-Builder acknowledges and agrees that any of Design-Builder's employees found on the project site without documentation of the successful completion of a construction safety program shall be required to produce such documentation within twenty (20) days or will be subject to removal from the project.

.4 The Design-Builder shall require all of its subcontractors to comply with the requirements of this Article and Section 292.675 RSMo.

2.13 Notice of Penalty Provisions

.1 Pursuant to Section 292.675 RSMo., Design-Builder shall forfeit to Owner as a penalty two thousand five hundred dollars ($2,500), plus one hundred dollars ($100) for each on-site employee employed by Design-Builder or its subcontractor, for each calendar day, or portion thereof, such on-site employee is employed without the construction safety training required in Section 2 above.

.2 The penalty described in Subsection .1 of this Section shall not begin to accrue until the time periods described in Sections 2.12.2 and 2.12.3 above have elapsed.

.3 Violations of Section 2.12 above and imposition of the penalty described in this Section shall be investigated and determined by the Missouri Department of Labor and Industrial Relations.

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2.14 Unauthorized Aliens

.1 Pursuant to RSMo 285.530(1), by its sworn affidavit in substantially the form attached hereto as Exhibit B and incorporated herein, Design-Builder hereby affirms its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. Furthermore, Design-Builder affirms that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

2.15 Anti-Discrimination Against Israel Act

.1 Pursuant to RSMo. 34.600, by its sworn affidavit in substantially the form attached hereto as Exhibit C and incorporated herein, Design-Builder hereby affirms it is not currently engaged in and shall not, for the duration of the contract, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

Article 3

Owner's Services and Responsibilities

3.1 Duty to Cooperate

.1 Owner shall, throughout the performance of the Work, cooperate with Design-Builder and perform its responsibilities, obligations and services in a timely manner to facilitate Design-Builder's timely and efficient performance of the Work and so as not to delay or interfere with Design-Builder's performance of its obligations under the Contract Documents.

.2 Owner shall provide timely reviews and approvals of interim design submissions and Construction Documents consistent with the turnaround times set forth in Design-Builder's schedule.

.3 Owner shall give Design-Builder timely notice of any Work that Owner notices to be defective or not in compliance with the Contract Documents.

3.2 Furnishing of Services and Information

.1 Unless expressly stated to the contrary in the Contract Documents, Owner shall provide, at its own cost and expense, for Design-Builder's information and use the following, all of which Design-Builder is entitled to rely upon in performing the Work:

.1 Surveys describing the property, boundaries, topography and reference points for use during construction, including existing service and utility lines;

.2 Geotechnical studies describing subsurface conditions, and other surveys describing other latent or concealed physical conditions at the Site;

.3 Temporary and permanent easements, zoning and other requirements and encumbrances affecting land use, or necessary to permit the proper design and construction of the Project and enable Design-Builder to perform the Work;

.4 A legal description of the Site;

.5 To the extent available, record drawings of any existing structures at the Site; and

.6 To the extent available, environmental studies, reports and impact statements describing the environmental conditions, including Hazardous Conditions, in existence at the Site.

.2 Owner is responsible for securing and executing all necessary agreements with adjacent land or property owners that are necessary to enable Design-Builder to perform the Work. Owner is further responsible for all costs, including attorneys' fees, incurred in securing these necessary agreements.

3.3 Financial Information

.1 At Design-Builder's request, Owner shall promptly furnish reasonable evidence satisfactory to Design-Builder that Owner has adequate funds available and committed to fulfill all of Owner's contractual obligations under the Contract Documents. If Owner fails to furnish such financial information in a timely manner, Design-Builder may stop Work under Section 11.3 hereof or exercise any other right permitted under the Contract Documents.

.2 Design-Builder shall cooperate with the reasonable requirements of Owner's lenders or other financial sources. Notwithstanding the preceding sentence, after execution of the Agreement Design-Builder shall have no obligation to execute for Owner or Owner's lenders or other financial sources any documents or agreements that require Design-Builder to assume obligations or responsibilities greater than those existing obligations Design-Builder has under the Contract Documents.

.3 Any consent to assignment of this Agreement to Owner's lenders shall be conditioned upon Design-Builder being paid in full for all outstanding sums due at the time of the assignment, and upon the assignee being responsible for all of Owner's remaining obligations under this Agreement.

3.4 Owner's Representative

.1 Owner's Representative shall be responsible for providing Owner-supplied information and approvals in a timely manner to permit Design-Builder to fulfill its obligations under the Contract Documents. Owner's Representative shall also provide Design-Builder with prompt notice if it observes any failure on the part of Design-Builder to fulfill its contractual obligations, including any errors, omissions or defects in the performance of the Work. Owner's Representative shall communicate regularly with Design-Builder and shall be vested with the authority to act on behalf of Owner and be available to Design-Builder for the duration of the Project.

3.5 Government Approvals and Permits

.1 Owner shall obtain and pay for all necessary permits, approvals, licenses, government charges and inspection fees set forth in the Permit List attached as an exhibit to the Agreement.

.2 Owner shall provide reasonable assistance to Design-Builder in obtaining those permits, approvals and licenses that are Design-Builder's responsibility.

3.6 Owner's Separate Contractors

.1 Owner is responsible for all work performed on the Project or at the Site by separate contractors under Owner's control. Owner shall contractually require its separate contractors to cooperate with, and coordinate their activities so as not to interfere with, Design-Builder in order

to enable Design-Builder to timely complete the Work consistent with the Contract Documents.

.2 Design-Builder will be entitled, in accordance with these General Conditions of Contract, to an adjustment in its Contract Price and/or Contract Time(s) to the extent Design-Builder's cost and/or time of performance have been adversely and materially impacted by Owner's separate contractors.

.3 Owner shall require its separate contractors to name Design-Builder as an additional insured on their general liability and excess/umbrella liability insurance and to waive rights of subrogation against Owner, Design-Builder and its Design Consultant, consistent with Section 5.3.5, below.

Article 4

Hazardous Conditions and Differing Site Conditions

4.1 Hazardous Conditions

.1 Design-Builder is not responsible for any Hazardous Conditions encountered at the Site. Owner, or other third-party owners, shall retain title to all Hazardous Conditions or other contaminants originating at or removed from the Site, as appropriate. Under no circumstances shall Design-Builder assume ownership of or legal liability for Owner's or other third parties' Hazardous Conditions. Upon encountering any Hazardous Conditions, Design-Builder will stop Work immediately in the affected area and duly notify Owner and, if required by Legal Requirements, all government or quasi-government entities with jurisdiction over the Project or Site.

.2 Upon receiving notice of the presence of suspected Hazardous Conditions, Owner shall take the necessary measures required to ensure that the Hazardous Conditions are remediated or rendered harmless. Such necessary measures shall include Owner retaining qualified independent experts and contractors to (i) ascertain whether Hazardous Conditions have actually been encountered, and, if they have been encountered, (ii) prescribe the remedial measures that Owner must take either to remove the Hazardous Conditions or render the Hazardous Conditions harmless, (iii) remove, abate and remediate such Hazardous Conditions. Design-Builder is entitled to rely on the information and work of Owner's separate experts and contractors as being complete and accurate.

.3 Design-Builder shall be obligated to resume Work at the affected area of the Project only after Owner's expert provides it with written certification that (i) the Hazardous Conditions have been removed or rendered harmless and (ii) all necessary approvals have been obtained from all government and quasi-government entities having jurisdiction over the Project or Site.

.4 Design-Builder will be entitled, in accordance with these General Conditions of Contract, to an adjustment in its Contract Price and/or Contract Time(s) to the extent Design-Builder's cost and/or time of performance have been adversely impacted by the presence of Hazardous Conditions.

.5 To the fullest extent permitted by law, Owner shall indemnify, defend and hold harmless Design-Builder, Design Consultants, Subcontractors, anyone employed directly or indirectly by any of them, and their officers, directors, employees and agents, from and against any and all claims, losses, damages, liabilities and expenses, including attorneys' fees and expenses, arising out of or resulting from the presence, removal or remediation of Hazardous Conditions at the Site.

.6 Notwithstanding the preceding provisions of this Section 4.1, Owner is not responsible for Hazardous Conditions brought to the Site by Design-Builder, Subcontractors or anyone for whose

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acts they may be liable. To the fullest extent permitted by law, Design-Builder shall indemnify, defend and hold harmless Owner and Owner's officers, directors, employees and agents from and against all claims, losses, damages, liabilities and expenses, including attorneys' fees and expenses, arising out of or resulting from those Hazardous Conditions brought to the Site by Design-Builder, Subcontractors or anyone for whose acts they may be liable.

4.2 Differing Site Conditions

.1 Concealed or latent physical conditions or subsurface conditions at the Site that (i) materially differ from the conditions indicated in the Contract Documents or (ii) are unforeseen, misidentified, or of an unusual nature, differing materially from the conditions ordinarily encountered and generally recognized as inherent in the Work are collectively referred to herein as "Differing Site Conditions." If Design-Builder encounters a Differing Site Condition, Design-Builder will be entitled to an adjustment in the Contract Price and/or Contract Time(s) to the extent Design-Builder's cost and/or time of performance are adversely impacted by the Differing Site Condition.

.2 Upon encountering a Differing Site Condition, Design-Builder shall provide prompt written notice to Owner of such condition, which notice shall not be later than fourteen (14) days after such condition has been encountered. Design-Builder shall, to the extent reasonably possible, provide such notice before the Differing Site Condition has been substantially disturbed or altered.

Article 5

Insurance and Bonds

5.1 Design-Builder's Insurance Requirements

.1 Design-Builder is responsible for procuring and maintaining the insurance for the coverage amounts all as set forth in the Insurance Exhibit to the Agreement. Coverage shall be secured from insurance companies authorized to do business in the state in which the Project is located, and with a minimum AM Best rating set forth in the Agreement.

.2 Design-Builder's insurance shall specifically delete any design-build or similar exclusions that could compromise coverages because of the design-build delivery of the Project.

.3 Prior to commencing any construction services hereunder, Design-Builder shall provide Owner with certificates evidencing that (i) all insurance obligations required by the Contract Documents are in full force and in effect and will remain in effect for the duration required by the Contract Documents and (ii) no insurance coverage will be canceled or renewal refused unless at least thirty (30) days prior written notice is given to Owner. If any of the foregoing insurance coverages are required to remain in force after final payment are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the Final Application for Payment.

.4 Nothing in this Agreement shall require the Design-Builder or its Design Consultants to name the Owner or others as additional insureds on any Professional Liability or Workers Compensation/Employer's Liability policies.

5.2 Owner's Liability Insurance

.1 Owner shall procure and maintain from insurance companies authorized to do business in the state in which the Project is located such liability insurance as set forth in the Insurance Exhibit to the Agreement, except Builder's Risk, to protect Owner from claims which may arise

from the performance of Owner's obligations under the Contract Documents or Owner's conduct during the course of the Project.

5.3 Owner's Existing Property Insurance

.1 Owner shall procure and maintain from insurance companies authorized to do business in the state in which the Project is located property insurance for any and all existing property at the Project and for the Work upon Substantial Completion to the full insurable value of the property and the Work, including professional fees, overtime premiums and all other expenses incurred to replace or repair the insured property. The property insurance obtained by Owner shall be the broadest coverage commercially available. Such insurance shall include but not be limited to the perils of fire and extended coverage, theft, vandalism, malicious mischief, collapse, flood, earthquake, windstorm, debris removal and other perils or causes of loss as called for in the Contract Documents. The property insurance shall include physical loss or damage to the existing property at the Project and the Work upon Substantial Completion. The Owner is responsible for the payment of any deductibles under the insurance required by this Section 5.3.1.

.2 Prior to Design-Builder commencing any Work, Owner shall provide Design-Builder with certificates evidencing that (i) all Owner's insurance obligations required by the Contract Documents are in full force and in effect and (ii) no insurance coverage will be canceled or renewal refused unless at least thirty (30) days prior written notice is given to Design-Builder.

.3 Owner and Design-Builder waive against each other and Owner's separate contractors, Design Consultants, Subcontractors, agents and employees of each and all of them, all damages covered by property insurance provided herein or that could be covered by property insurance, if self-insured, including deductibles, and including rights of subrogation, except such rights as they may have to the proceeds of such insurance. Design-Builder and Owner shall, where appropriate, require similar waivers of subrogation from Owner's separate contractors, Design Consultants and Subcontractors and shall require each of them to include similar waivers in their contracts. These waivers of subrogation shall not contain any restriction or limitation that will impair the full and complete extent of its applicability to any person or entity unless agreed to in writing prior to the execution of this Agreement.

5.4 Bonds

.1 Owner requires Design-Builder to obtain performance and payment bonds.

.2 All bonds furnished by Design-Builder shall be on the Design-Builder's form. The surety shall be a company qualified and registered to conduct business in the state in which the Project is located.

Article 6

Payment

6.1 Schedule of Values

.1 Unless required by the Owner upon execution of this Agreement, within ten (10) days of execution of the Agreement, Design-Builder shall submit for Owner's review and approval a schedule of values for all of the Work. The Schedule of Values will (i) subdivide the Work into its respective parts, (ii) include values for all items comprising the Work and (iii) serve as the basis for monthly progress payments made to Design-Builder throughout the Work.

.2 The Owner will timely review and approve the schedule of values so as not to delay the

submission of the Design-Builder's first application for payment. The Owner and Design-Builder shall timely resolve any differences so as not to delay the Design-Builder's submission of its first application for payment.

6.2 Monthly Progress Payments

.1 On or before the date established in the Agreement, Design-Builder shall submit for Owner's review and approval its Application for Payment requesting payment for all Work performed as of the date of the Application for Payment. The Application for Payment shall be accompanied by all supporting documentation required by the Contract Documents and/or established at the meeting required by Section 2.1.4 hereof.

.2 The Application for Payment may request payment for equipment and materials not yet incorporated into the Project, provided that (i) Owner is satisfied that the equipment and materials are suitably stored at either the Site or another acceptable location, (ii) the equipment and materials are protected by suitable insurance and (iii) upon payment, Owner will receive the equipment and materials free and clear of all liens and encumbrances.

.3 All discounts offered by Subcontractor, Sub-Subcontractors and suppliers to Design-Builder for early payment shall accrue one hundred percent to Design-Builder to the extent Design-Builder advances payment. Unless Owner advances payment to Design-Builder specifically to receive the discount, Design-Builder may include in its Application for Payment the full undiscounted cost of the item for which payment is sought.

.4 The Application for Payment shall constitute Design-Builder's representation that the Work described herein has been performed consistent with the Contract Documents, has progressed to the point indicated in the Application for Payment, and that title to all Work will pass to Owner free and clear of all claims, liens, encumbrances, and security interests upon Design-Builder's receipt of payment in good funds.

6.3 Withholding of Payments

.1 On or before the date established in the Agreement, Owner shall pay Design-Builder all amounts properly due. If Owner determines that Design-Builder is not entitled to all or part of an Application for Payment as a result of Design-Builder's failure to meet its obligations hereunder, it will notify Design-Builder in writing at least five (5) days prior to the date payment is due. The notice shall indicate the specific amounts Owner intends to withhold, the reasons and contractual basis for the withholding, and the specific measures Design-Builder must take to rectify Owner's concerns. Design-Builder and Owner will attempt to resolve Owner's concerns prior to the date payment is due. If the parties cannot resolve such concerns, Design-Builder may pursue its rights under the Contract Documents, including those under Article 10 hereof.

.2 Notwithstanding anything to the contrary in the Contract Documents, Owner shall pay Design-Builder all undisputed amounts in an Application for Payment within the times required by the Agreement.

6.4 Right to Stop Work and Interest

.1 If Owner fails to pay timely Design-Builder any amount that becomes due, Design-Builder, in addition to all other remedies provided in the Contract Documents, may stop Work pursuant to Section 11.3 hereof. All payments due and unpaid shall bear interest at the rate set forth in the Agreement.

6.5 Design-Builder's Payment Obligations

.1 Design-Builder will pay Design Consultants and Subcontractors, in accordance with its contractual obligations to such parties. Design-Builder will impose similar requirements on

Design Consultants and Subcontractors to pay those parties with whom they have contracted. Provided Owner makes all payments to Design-Builder when due and in accordance with this Agreement, Design-Builder will indemnify and defend Owner against any claims for payment and mechanic's liens as set forth in Section 7.3 hereof.

6.6 Substantial Completion

.1 Design-Builder shall notify Owner when it believes the Work, or to the extent permitted in the Contract Documents, a portion of the Work, is Substantially Complete. Within five (5) days of Owner's receipt of Design-Builder's notice, Owner and Design-Builder will jointly inspect such Work to verify that it is Substantially Complete in accordance with the requirements of the Contract Documents. The Owner and Design-Builder shall prepare a written list ("Punch List") of all incomplete items of Work existing at the time, including any deficiencies noted. If such Work is Substantially Complete, Owner shall prepare and issue a Certificate of Substantial Completion that will set forth (i) the date of Substantial Completion of the Work or portion thereof, (ii) the remaining items of Work that have to be completed before final payment, (iii) provisions (to the extent not already provided in the Contract Documents) establishing Owner's and Design-Builder's responsibility for the Project's security, maintenance, utilities and insurance pending final payment, and (iv) an acknowledgment that warranties commence to run on the date of Substantial Completion, except as may otherwise be noted in the Certificate of Substantial Completion.

.2 Upon Substantial Completion of the entire Work or, if applicable, any portion of the Work, Owner shall release to Design-Builder all retained amounts relating, as applicable, to the entire Work or completed portion of the Work, less an amount equal to the reasonable value of all remaining or incomplete items of Work as noted in the Certificate of Substantial Completion.

.3 Owner, at its option, may use a portion of the Work which has been determined to be Substantially Complete, provided, however, that (i) a Certificate of Substantial Completion has been issued for the portion of Work addressing the items set forth in Section 6.6.1 above, (ii) Design-Builder and Owner have obtained the consent of their sureties and insurers, and to the extent applicable, the appropriate government authorities having jurisdiction over the Project, and (iii) Owner and Design-Builder agree that Owner's use or occupancy will not interfere with Design-Builder's completion of the remaining Work.

.4 If Owner occupies or attempts to use any portion of the Work prior to Substantial Completion, it agrees to it does so at its own risk and shall sign any reasonable release or indemnity agreement required by Design-Builder as a condition of such use or occupancy.

6.7 Final Payment

.1 After receipt of a Final Application for Payment from Design-Builder, Owner shall make final payment by the time required in the Agreement, provided that Design-Builder has achieved Final Completion.

.2 At the time of submission of its Final Application for Payment, Design-Builder shall provide the following information:

> **.1** an affidavit that there are no claims, obligations or liens outstanding or unsatisfied for labor, services, material, equipment, taxes or other items performed, furnished or incurred for or in connection with the Work which will in any way affect Owner's interests, or that any existing liens have been bonded by Design-Builder;
>
> **.2** a general release executed by Design-Builder waiving, upon receipt and bank clearance of final payment by Design-Builder, all claims, except those claims previously made in writing to Owner and remaining unsettled at the time of

final payment;

.3 consent of Design-Builder's surety, if any, to final payment;

.4 all operating manuals, warranties and other deliverables required by the Contract Documents; and

.5 certificates of insurance confirming that required coverages will remain in effect consistent with the requirements of the Contract Documents.

.3 Upon making final payment, Owner waives all claims against Design-Builder except claims relating to (i) Design-Builder's failure to satisfy its payment obligations, if such failure affects Owner's interests, (ii) Design-Builder's failure to complete the Work consistent with the Contract Documents, including defects appearing after Substantial Completion and (iii) the terms of any special warranties required by the Contract Documents.

.4 Deficiencies in the Work discovered after Substantial Completion, whether or not such deficiencies would have been included on the Punch List if discovered earlier, shall be deemed warranty Work. Such deficiencies shall be corrected by Design-Builder under Sections 2.9 and 2.10 herein, and shall not be a reason to withhold final payment from Design Builder, provided, however, that Owner shall be entitled to withhold from the Final Payment the reasonable value of completion of such deficient work until such work is completed.

Article 7

Indemnification

7.1 Patent and Copyright Infringement

.1 Design-Builder shall defend any action or proceeding brought against Owner based on any claim that the Work, or any part thereof, or the operation or use of the Work or any part thereof, constitutes infringement of any United States patent or copyright, now or hereafter issued. Owner shall give prompt written notice to Design-Builder of any such action or proceeding and will reasonably provide authority, information and assistance in the defense of same. Design-Builder shall indemnify and hold harmless Owner from and against all damages and costs, including but not limited to attorneys' fees and expenses awarded against Owner or Design-Builder in any such action or proceeding. Design-Builder agrees to keep Owner informed of all developments in the defense of such actions.

.2 If Owner is enjoined from the operation or use of the Work, or any part thereof, as the result of any patent or copyright suit, claim, or proceeding, Design-Builder shall at its sole expense take reasonable steps to procure the right to operate or use the Work. If Design-Builder cannot so procure such right within a reasonable time, Design-Builder shall promptly, at Design-Builder's option and at Design-Builder's expense, (i) modify the Work so as to avoid infringement of any such patent or copyright or (ii) replace said Work with Work that does not infringe or violate any such patent or copyright.

.3 Sections 7.1.1 and 7.1.2 above shall not be applicable to any suit, claim or proceeding based on infringement or violation of a patent or copyright (i) relating solely to a particular process or product of a particular manufacturer specified by Owner and not offered or recommended by Design-Builder to Owner or (ii) arising from modifications to the Work by Owner or its agents after acceptance of the Work. If the suit, claim or proceeding is based upon events set forth in the preceding sentence, Owner shall defend, indemnify and hold harmless Design-Builder to the same extent Design-Builder is obligated to defend, indemnify and hold harmless Owner in Section 7.1.1 above.

.4 The obligations set forth in this Section 7.1 shall constitute the sole agreement between the parties relating to liability for infringement of violation of any patent or copyright.

7.2 Tax Claim Indemnification

.1 If, in accordance with Owner's direction, an exemption for all or part of the Work is claimed for taxes, Owner shall indemnify, defend and hold harmless Design-Builder from and against any liability, penalty, interest, fine, tax assessment, attorneys' fees or other expenses or costs incurred by Design-Builder as a result of any action taken by Design-Builder in accordance with Owner's directive. Owner shall furnish Design-Builder with any applicable tax exemption certificates necessary to obtain such exemption, upon which Design-Builder may rely.

7.3 Payment Claim Indemnification

.1 Providing that Owner is not in breach of its contractual obligation to make payments to Design-Builder for the Work, Design-Builder shall indemnify, defend and hold harmless Owner from any claims or mechanic's liens brought against Owner or against the Project as a result of the failure of Design-Builder, or those for whose acts it is responsible, to pay for any services, materials, labor, equipment, taxes or other items or obligations furnished or incurred for or in connection with the Work. Within three (3) days of receiving written notice from Owner that such a claim or mechanic's lien has been filed, Design-Builder shall commence to take the steps necessary to discharge said claim or lien, including, if necessary, the furnishing of a mechanic's lien bond or Owner's indemnity bond. If Design-Builder fails to do so within thirty (30) days after receipt of written notice from Owner to do so, Owner will have the right to discharge the claim or lien and hold Design-Builder liable for costs and expenses incurred, including attorneys' fees. However, in the event that a lien is a result of disputed sums, the Owner shall give the Design-Builder reasonable time and opportunity to negotiate settlement with its Subcontractor prior to the Owner taking steps to discharge the lien directly.

7.4 Design-Builder's General Indemnification

.1 Subject to Section 10.5 and any limitations in the Agreement, Design-Builder, to the fullest extent permitted by law, shall indemnify, hold harmless and defend Owner, its officers, directors, and employees from and against third party claims, losses, damages, and expenses, including reasonable attorneys' fees and expenses, for bodily injury, sickness or death, and third party property damage to the extent resulting from the negligent acts or omissions of Design-Builder, Design Consultants, Subcontractors, anyone employed directly or indirectly by any of them or anyone for whose acts any of them may be liable.

.2 If a third party such as an employee of Design-Builder, Design Consultants, Subcontractors, anyone employed directly or indirectly by any of them or anyone for whose acts any of them may be liable has a claim against Owner, its officers, directors, employees, or agents, Design-Builder's indemnity obligation set forth in Section 7.4.1 above shall not be limited by any limitation on the amount of damages, compensation or benefits payable by or for Design-Builder, Design Consultants, Subcontractors, or other entity under any employee benefit acts, including workers' compensation or disability acts.

7.5 Owner's General Indemnification

.1 In addition to other specific indemnities elsewhere in this Agreement, Owner, to the fullest extent permitted by law, shall indemnify, hold harmless and defend Design-Builder and any of Design-Builder's officers, directors, and employees, from and against claims, losses, damages, and expenses, including reasonable attorneys' fees and expenses, for bodily injury, sickness or death, and property damage or destruction (other than to the Work itself) to the extent resulting from the negligent acts or omissions of Owner's separate contractors or anyone for whose acts any of them may be liable.

.2 If a third party such as an employee of Owner or its separate contractors, anyone employed directly or indirectly by any of them or anyone for whose acts any of them may be liable has a claim against Design-Builder, its officers, directors, employees, or agents, Owner's indemnity obligation set forth in Section 7.5.1 above shall not be limited by any limitation on the amount of damages, compensation or benefits payable by or for Owner, Owner's separate contractors, or other entity under any employee benefit acts, including workers' compensation or disability acts.

Article 8

Time

8.1 Obligation to Achieve the Contract Times

.1 Design-Builder agrees that it will commence performance of the Work and achieve the Contract Time(s) in accordance with Article 5 of the Agreement.

8.2 Delays to the Work

.1 If Design-Builder is delayed in the performance of the Work due to acts, omissions, conditions, events, or circumstances beyond its control and due to no fault of its own or those for whom Design-Builder is responsible, the Contract Time(s) for performance shall be reasonably extended by Change Order. By way of example, events that will entitle Design-Builder to an extension of the Contract Time(s) include acts or omissions of Owner or anyone under Owner's control (including separate contractors), changes in the Work, Differing Site Conditions, Hazardous Conditions, Legal Requirements, and Force Majeure Events.

.2 In addition to Design-Builder's right to a time extension for those events set forth in Section 8.2.1 above, Design-Builder shall also be entitled to an appropriate adjustment of the Contract Price.

.3 For purposes of this Article 8, Force Majeure Events include not only adverse weather conditions, but the resulting impact on the Project after such weather condition ceases, such as mud, standing water, frozen soil or weather damage due to hail, high wind or other weather event.

Article 9

Changes to the Contract Price and Time

9.1 Change Orders

.1 A Change Order is a written instrument issued after execution of the Agreement signed by Owner and Design-Builder, stating their agreement upon all of the following:

.1 The scope of the change in the Work;

.2 The amount of the adjustment to the Contract Price; and

.3 The extent of the adjustment to the Contract Time(s).

.2 All changes in the Work authorized by applicable Change Order shall be performed under the applicable conditions of the Contract Documents. Owner and Design-Builder shall negotiate

in good faith and as expeditiously as possible the appropriate adjustments for such changes.

.3 If Owner requests a proposal for a change in the Work from Design-Builder and subsequently elects not to proceed with the change, a Change Order shall be issued to reimburse Design-Builder for reasonable costs incurred for estimating services, design services and services involved in the preparation of proposed revisions to the Contract Documents.

9.2 Work Change Directives

.1 A Work Change Directive is a written order prepared and signed by Owner, directing a change in the Work prior to agreement on an adjustment in the Contract Price and/or the Contract Time(s).

.2 Owner and Design-Builder shall negotiate in good faith and as expeditiously as possible the appropriate adjustments for the Work Change Directive. Upon reaching an agreement, the parties shall prepare and execute an appropriate Change Order reflecting the terms of the agreement.

9.3 Minor Changes in the Work

.1 Minor changes in the Work do not involve an adjustment in the Contract Price and/or Contract Time(s) and do not materially and adversely affect the Work, including the design, quality, performance and workmanship required by the Contract Documents. Design-Builder may make minor changes in the Work consistent with the intent of the Contract Documents, provided, however that Design-Builder shall promptly inform Owner, in writing, of any such changes and record such changes on the documents maintained by Design-Builder.

9.4 Contract Price Adjustments

.1 The increase or decrease in Contract Price resulting from a change in the Work shall be determined by one or more of the following methods:

> **.1** Unit prices set forth in the Agreement or as subsequently agreed to between the parties;
>
> **.2** A mutually accepted, lump sum, properly itemized and supported by sufficient substantiating data to permit evaluation by Owner;
>
> **.3** Costs, fees and any other markups set forth in the Agreement; and
>
> **.4** If an increase or decrease cannot be agreed to as set forth in items .1 through .3 above and Owner issues a Work Change Directive, the cost of the change of the Work shall be determined by the reasonable expense and savings in the performance of the Work resulting from the change, including a reasonable overhead and profit, as may be set forth in the Agreement.

.2 If unit prices are set forth in the Contract Documents or are subsequently agreed to by the parties, but application of such unit prices will cause substantial inequity to Owner or Design-Builder because of differences in the character or quantity of such unit items as originally contemplated, such unit prices shall be equitably adjusted.

.3 If Owner and Design-Builder disagree upon whether Design-Builder is entitled to be paid for any services required by Owner, or if there are any other disagreements over the scope of Work or proposed changes to the Work, Owner and Design-Builder shall resolve the disagreement pursuant to Article 10 hereof. As part of the negotiation process, Design-Builder shall furnish Owner with a good faith estimate of the costs to perform the disputed services in accordance with Owner's interpretations. If the parties are unable to agree and Owner expects

Design-Builder to perform the services in accordance with Owner's interpretations, Design-Builder shall proceed to perform the disputed services, conditioned upon Owner issuing a written order to Design-Builder (i) directing Design-Builder to proceed and (ii) specifying Owner's interpretation of the services that are to be performed. If this occurs, Design-Builder shall be entitled to submit in its Applications for Payment an amount equal to fifty percent (50%) of its reasonable estimated direct cost to perform the services, and Owner agrees to pay such amounts, with the express understanding that (i) such payment by Owner does not prejudice Owner's right to argue that it has no responsibility to pay for such services and (ii) receipt of such payment by Design-Builder does not prejudice Design-Builder's right to seek full payment of the disputed services if Owner's order is deemed to be a change to the Work.

9.5 Emergencies

.1 In any emergency affecting the safety of persons and/or property, Design-Builder shall act, at its discretion, to prevent threatened damage, injury or loss. Any change in the Contract Price and/or Contract Time(s) on account of emergency work shall be determined as provided in this Article 9.

Article 10

Contract Adjustments and Disputes

10.1 Requests for Contract Adjustments and Relief

.1 If either Design-Builder or Owner believes that it is entitled to relief against the other for any event arising out of or related to the Work or Project, such party shall provide written notice to the other party of the basis for its claim for relief. Such notice shall, if possible, be made prior to incurring any cost or expense and in accordance with any specific notice requirements contained in applicable sections of these General Conditions of Contract. In the absence of any specific notice requirement, written notice shall be given within a reasonable time, not to exceed twenty-one (21) days, after the impact of the occurrence giving rise to the claim for relief or after the claiming party reasonably should have recognized the event or condition giving rise to the request, whichever is later. Such notice shall include sufficient information to advise the other party of the circumstances giving rise to the claim for relief, the specific contractual adjustment or relief requested and the basis of such request.

10.2 Dispute Avoidance and Resolution

.1 The parties are fully committed to working with each other throughout the Project and agree to communicate regularly with each other at all times so as to avoid or minimize disputes or disagreements. If disputes or disagreements do arise, Design-Builder and Owner each commit to resolving such disputes or disagreements in an amicable, professional and expeditious manner so as to avoid unnecessary losses, delays and disruptions to the Work.

.2 Design-Builder and Owner will first attempt to resolve disputes or disagreements at the field level through discussions between Design-Builder's Representative and Owner's Representative which shall conclude within fourteen (14) days of the written notice provided for in Section 10.1.1 unless the Owner and Design-Builder mutually agree otherwise.

.3 If a dispute or disagreement cannot be resolved through Design-Builder's Representative and Owner's Representative, Design-Builder's Senior Representative and Owner's Senior Representative, upon the request of either party, shall meet as soon as conveniently possible, but in no case later than thirty (30) days after such a request is made, to attempt to resolve such dispute or disagreement unless the Owner and Design-Builder mutually agree otherwise. Five (5) days prior to any meetings between the Senior Representatives, the parties will exchange

relevant information that will assist the parties in resolving their dispute or disagreement.

.4 If after meeting the Senior Representatives determine that the dispute or disagreement cannot be resolved on terms satisfactory to both parties, the parties shall submit within thirty (30) days of the conclusion of the meeting of Senior Representatives the dispute or disagreement to non-binding mediation. The mediation shall be conducted by a mutually agreeable impartial mediator, or if the parties cannot so agree, a mediator mutually designated by the parties. The mediation will be governed by and conducted pursuant to a mediation agreement negotiated by the parties or, if the parties cannot so agree, by procedures established by the mediator. Unless otherwise mutually agreed by the Owner and Design-Builder and consistent with the mediator's schedule, the mediation shall commence within ninety (90) days of the submission of the dispute to mediation.

.5 In the event that a dispute arises between the parties is submitted to mediation under this Section, the parties agree to split the mediator's and any filing fees equally. The mediation shall be held in Kansas City, Missouri. In the event that it is necessary to file a lawsuit or demand arbitration in order to meet the requirements of a statute of limitations which is about to expire, the parties agree, nonetheless, to submit the dispute to mediation within thirty (30) days after the filing of such lawsuit or demand. Any agreements reached in mediation shall be enforceable as a settlement agreement.

10.3 Arbitration

.1 Any claims, disputes or controversies between the parties arising out of or relating to the Agreement, or the breach thereof, which have not been resolved in accordance with the procedures set forth in Section 10.2 above shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the AAA then in effect, unless the parties mutually agree otherwise. The number of arbitrators shall be one (1) and the place of the arbitration shall be Kansas City, Missouri, unless the parties agree otherwise in writing.

.2 The award of the arbitrator(s) shall be final and binding upon the parties without the right of appeal to the courts. Judgment may be entered upon it in accordance with applicable law by any court having jurisdiction thereof.

.3 Design-Builder and Owner expressly agree that any arbitration pursuant to this Section 10.3 may be joined or consolidated with any arbitration involving any other person or entity (i) necessary to resolve the claim, dispute or controversy, or (ii) substantially involved in or affected by such claim, dispute or controversy. Both Design-Builder and Owner will include appropriate provisions in all contracts they execute with other parties in connection with the Project to require such joinder or consolidation.

.4 The prevailing party in any arbitration, or any other final, binding dispute proceeding upon which the parties may agree, shall be entitled to recover from the other party reasonable attorneys' fees and expenses incurred by the prevailing party. A "prevailing party" is one who wins more than 75% of what it claimed was owed, or one who defends more than 75% of the opposing party's claim.

10.4 Duty to Continue Performance

.1 Unless provided to the contrary in the Contract Documents, Design-Builder shall continue to perform the Work and Owner shall continue to satisfy its payment obligations to Design-Builder, pending the final resolution of any dispute or disagreement between Design-Builder and Owner.

10.5 CONSEQUENTIAL DAMAGES

.1 NOTWITHSTANDING ANYTHING HEREIN TO THE CONTRARY (EXCEPT AS SET FORTH IN SECTION 10.5.2 BELOW), NEITHER DESIGN-BUILDER NOR OWNER SHALL BE LIABLE TO THE OTHER FOR ANY SPECIAL, INDIRECT, EXEMPLARY, PUNITIVE, OR CONSEQUENTIAL LOSSES OR DAMAGES, WHETHER ARISING IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO LOSSES OF USE, FACILITY SHUTDOWN OR SERVICE INTERRUPTION, ANTICIPATED PROFITS, BUSINESS, RETURN ON INVESTMENT, INCREASED COST OF OPERATION, REPUTATION OR FINANCING.

.2 The consequential damages limitation set forth in Section 10.5.1 above is not intended to affect the payment of liquidated damages or lost early completion bonus, if any, set forth in Article 5 of the Agreement, which both parties recognize has been established, in part, to reimburse Owner or reward Design-Builder for some damages that might otherwise be deemed to be consequential.

10.6 COMMENCEMENT OF STATUTORY PERIOD

.1 Causes of action between the parties to this Agreement pertaining to acts or failures to act shall be deemed to have accrued and the applicable statutes of limitations shall commence to run not later than either the date of Substantial Completion, or the date of issuance of final payment (for acts or failures to act occurring after Substantial Completion).

Article 11

Stop Work and Termination for Cause

11.1 Owner's Right to Stop Work

.1 Owner may, without cause and for its convenience, order Design-Builder in writing to stop and suspend the Work. Such suspension shall not exceed sixty (60) consecutive days or aggregate more than ninety (90) days during the duration of the Project.

.2 Design-Builder is entitled to an adjustment of the Contract Price and/or Contract Time(s) if its cost or time to perform the Work has been adversely impacted by any suspension of stoppage of the Work by Owner.

11.2 Owner's Right to Perform and Terminate for Cause

.1 If Design-Builder persistently fails to (i) provide a sufficient number of skilled workers, (ii) supply the materials required by the Contract Documents, (iii) comply with applicable Legal Requirements, (iv) timely pay, without cause, Design Consultants or Subcontractors, (v) prosecute the Work with promptness and diligence to ensure that the Work is completed by the Contract Time(s), as such times may be adjusted, or (vi) perform material obligations under the Contract Documents, then Owner, in addition to any other rights and remedies provided in the Contract Documents or by law, shall have the rights set forth in Sections 11.2.2 and 11.2.3 below.

.2 Upon the occurrence of an event set forth in Section 11.2.1 above, Owner shall provide written notice to Design-Builder that it intends to terminate the Agreement unless the problem cited is cured, or commenced to be cured, within seven (7) days of Design-Builder's receipt of such notice. If Design-Builder fails to cure, or reasonably commence to cure, such problem, then Owner shall give a second written notice to Design-Builder of its intent to terminate within an additional seven (7) day period. If Design-Builder, within such second seven (7) day period, fails to cure, or reasonably commence to cure, such problem, then Owner may declare the Agreement terminated for default by providing written notice to Design-Builder of such declaration.

.3 Upon declaring the Agreement terminated pursuant to Section 11.2.2 above, Owner may enter upon the premises and take possession, for the purpose of completing the Work, of all materials, equipment, scaffolds, tools, appliances and other items thereon, which have been purchased or provided for the Work, which are planned to be turned-over as part of the Work or planned for consumption of the Work, all of which Design-Builder hereby transfers, assigns and sets over to Owner for such purpose, and to employ any person or persons to complete the Work and provide all of the required labor, services, materials, equipment and other items. In the event of such termination, Design-Builder shall not be entitled to receive any further payments under the Contract Documents until the Work shall be finally completed in accordance with the Contract Documents. At such time, if the unpaid balance of the Contract Price exceeds the cost and expense incurred by Owner in completing the Work, such excess shall be paid by Owner to Design-Builder. Notwithstanding the preceding sentence, if the Agreement establishes a Guaranteed Maximum Price, Design-Builder will only be entitled to be paid for Work performed prior to its default. If Owner's cost and expense of completing the Work exceeds the unpaid balance of the Contract Price, then Design-Builder shall be obligated to pay the difference to Owner. Such costs and expense shall include not only the cost of completing the Work, but also losses, damages, costs and expense, including attorneys' fees and expenses, incurred by Owner in connection with the reprocurement and defense of claims arising from Design-Builder's default, subject to the waiver of consequential damages set forth in Section 10.5 hereof.

.4 If Owner improperly terminates the Agreement for cause, the termination for cause will be converted to a termination for convenience in accordance with the provisions of Article 8 of the Agreement.

.5 Design-Builder shall not be liable for the Work (including, but not limited to, equipment installation) that is incomplete due to a termination by Owner for cause or for convenience under this Agreement, including without limitation, any errors, omissions or defects in such designs or Work which Design-Builder is prevented from correcting and completing due to any termination.

.6 Owner shall pay Design-Builder as a Cost of the Work to make reasonably safe any incomplete Work or Site conditions left open due to any termination under this Agreement. Thereafter, Owner assumes full risk and control of the Site.

11.3 Design-Builder's Right to Stop Work

.1 Design-Builder may, in addition to any other rights afforded under the Contract Documents or at law, stop the Work for the following reasons:

> **.1** Owner's failure to provide financial assurances as required under Section 3.3 hereof; or
>
> **.2** Owner's failure to pay amounts properly due under Design-Builder's Application for Payment.

.2 Should any of the events set forth in Section 11.3.1 above occur, Design-Builder has the right to provide Owner with written notice that Design-Builder will stop the Work unless said event is cured within seven (7) days from Owner's receipt of Design-Builder's notice. If Owner does not cure the problem within such seven (7) day period, Design-Builder may stop the Work. In such case, Design-Builder shall be entitled to make a claim for adjustment to the Contract Price and Contract Time(s) to the extent it has been adversely impacted by such stoppage.

11.4 Design-Builder's Right to Terminate for Cause

.1 Design-Builder, in addition to any other rights and remedies provided in the Contract Documents or by law, may terminate the Agreement for cause for the following reasons:

.1 The Work has been stopped for sixty (60) consecutive days, or more than ninety (90) days during the duration of the Project, because of court order, any government authority having jurisdiction over the Work, or orders by Owner under Section 11.1.1 hereof, provided that such stoppages are not due to the acts or omissions of Design-Builder or anyone for whose acts Design-Builder may be responsible.

.2 Owner's failure to provide Design-Builder with any information, permits or approvals that are Owner's responsibility under the Contract Documents which result in the Work being stopped for sixty (60) consecutive days, or more than ninety (90) days during the duration of the Project, even though Owner has not ordered Design-Builder in writing to stop and suspend the Work pursuant to Section 11.1.1 hereof.

.3 Owner's failure to cure the problems set forth in Section 11.3.1 above after Design-Builder has stopped the Work.

.2 Upon the occurrence of an event set forth in Section 11.4.1 above, Design-Builder shall provide written notice to Owner that it intends to terminate the Agreement unless the problem cited is cured, or commenced to be cured, within seven (7) days of Owner's receipt of such notice. If Owner fails to cure, or reasonably commence to cure, such problem, then Design-Builder shall give a second written notice to Owner of its intent to terminate within an additional seven (7) day period. If Owner, within such second seven (7) day period, fails to cure, or reasonably commence to cure, such problem, then Design-Builder may declare the Agreement terminated for default by providing written notice to Owner of such declaration. In such case, Design-Builder shall be entitled to recover in the same manner as if Owner had terminated the Agreement for its convenience under Article 8 of the Agreement.

11.5 Bankruptcy of Owner or Design-Builder

.1 If either Owner or Design-Builder institutes or has instituted against it a case under the United States Bankruptcy Code (such party being referred to as the "Bankrupt Party"), such event may impair or frustrate the Bankrupt Party's ability to perform its obligations under the Contract Documents. Accordingly, should such event occur:

.1 The Bankrupt Party, its trustee or other successor, shall furnish, upon request of the non-Bankrupt Party, adequate assurance of the ability of the Bankrupt Party to perform all future material obligations under the Contract Documents, which assurances shall be provided within ten (10) days after receiving notice of the request; and

.2 The Bankrupt Party shall file an appropriate action within the bankruptcy court to seek assumption or rejection of the Agreement within sixty (60) days of the institution of the bankruptcy filing and shall diligently prosecute such action.

If the Bankrupt Party fails to comply with its foregoing obligations, the non-Bankrupt Party shall be entitled to request the bankruptcy court to reject the Agreement, declare the Agreement terminated and pursue any other recourse available to the non-Bankrupt Party under this Article 11.

.2 The rights and remedies under Section 11.5.1 above shall not be deemed to limit the ability of the non-Bankrupt Party to seek any other rights and remedies provided by the Contract Documents or by law, including its ability to seek relief from any automatic stays under the United States Bankruptcy Code or the right of Design-Builder to stop Work under any applicable provision of these General Conditions of Contract.

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Article 12

Electronic Data

12.1 Electronic Data. The parties recognize that Contract Documents, including drawings, specifications and three-dimensional modeling (such as Building Information Models) and other Work Product may be transmitted among Owner, Design-Builder and others in electronic media as an alternative to paper hard copies (collectively "Electronic Data").

12.2 Transmission of Electronic Data

.1 Owner and Design-Builder shall agree upon the software and the format for the transmission of Electronic Data. Each party shall be responsible for securing the legal rights to access the agreed-upon format, including, if necessary, obtaining appropriately licensed copies of the applicable software or electronic program to display, interpret and/or generate the Electronic Data.

.2 Neither party makes any representations or warranties to the other with respect to the functionality of the software or computer program associated with the electronic transmission of Work Product. Unless specifically set forth in the Agreement, ownership of the Electronic Data does not include ownership of the software or computer program with which it is associated, transmitted, generated or interpreted.

.3 By transmitting Work Product in electronic form, the transmitting party does not transfer or assign its rights in the Work Product. The rights in the Electronic Data shall be as set forth in Article 4 of the Agreement. Under no circumstances shall the transfer of ownership of Electronic Data be deemed to be a sale by the transmitting party of tangible goods.

12.3 Electronic Data Protocol

.1 The parties acknowledge that Electronic Data may be altered or corrupted, intentionally or otherwise, due to occurrences beyond their reasonable control or knowledge, including but not limited to compatibility issues with user software, manipulation by the recipient, errors in transcription or transmission, machine error, environmental factors, and operator error. Consequently, the parties understand that there is some level of increased risk in the use of Electronic Data for the communication of design and construction information and, in consideration of this, agree, and shall require their independent contractors, Subcontractors and Design Consultants to agree, to the following protocols, terms and conditions set forth in this Section 12.3.

.2 Electronic Data will be transmitted in the format agreed upon in Section 12.2.1 above, including file conventions and document properties, unless prior arrangements are made in advance in writing.

.3 The Electronic Data represents the information at a particular point in time and is subject to change. Therefore, the parties shall agree upon protocols for notification by the author to the recipient of any changes which may thereafter be made to the Electronic Data, which protocol shall also address the duty, if any, to update such information, data or other information contained in the electronic media if such information changes prior to Final Completion of the Project.

.4 The transmitting party specifically disclaims all warranties, expressed or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose, with respect to the media transmitting the Electronic Data. However, transmission of the Electronic Data via electronic means shall not invalidate or negate any duties pursuant to the applicable standard of care with respect to the creation of the Electronic Data, unless such data is

materially changed or altered after it is transmitted to the receiving party, and the transmitting party did not participate in such change or alteration.

Article 13

Miscellaneous

13.1 Confidential Information

.1 Confidential Information is defined as information which is determined by the transmitting party to be of a confidential or proprietary nature and: (i) the transmitting party identifies as either confidential or proprietary; (ii) the transmitting party takes steps to maintain the confidential or proprietary nature of the information; (iii) the document is not otherwise available in or considered to be in the public domain, (iii) information which the receiving party developed independently; or (e) information which a party is required by Legal Requirements to disclose. The receiving party agrees to maintain the confidentiality of the Confidential Information and agrees to use the Confidential Information solely in connection with the Project.

13.2 Assignment

.1 Neither Design-Builder nor Owner shall, without the written consent of the other assign, transfer or sublet any portion or part of the Work or the obligations required by the Contract Documents.

13.3 Successorship

.1 Design-Builder and Owner intend that the provisions of the Contract Documents are binding upon the parties, their employees, agents, heirs, successors and assigns.

13.4 Governing Law

.1 The Agreement and all Contract Documents shall be governed by the laws of Missouri, without giving effect to its conflict of law principles. Arbitration shall be governed by the Federal Arbitration Act, 9 U.S.C. sec. 1, et seq.

13.5 Severability

.1 If any provision or any part of a provision of the Contract Documents shall be finally determined to be superseded, invalid, illegal, or otherwise unenforceable pursuant to any applicable Legal Requirements, such determination shall not impair or otherwise affect the validity, legality, or enforceability of the remaining provision or parts of the provision of the Contract Documents, which shall remain in full force and effect as if the unenforceable provision or part were deleted.

13.6 No Waiver

.1 The failure of either Design-Builder or Owner to insist, in any one or more instances, on the performance of any of the obligations required by the other under the Contract Documents shall not be construed as a waiver or relinquishment of such obligation or right with respect to future performance.

13.7 Headings

.1 The headings used in these General Conditions of Contract, or any other Contract Document, are for ease of reference only and shall not in any way be construed to limit or alter

the meaning of any provision.

13.8 Notice

.1 Whenever the Contract Documents require that notice be provided to the other party, notice will be deemed to have been validly given (i) if delivered in person to the individual intended to receive such notice, (ii) four (4) days after being sent by registered or certified mail, postage prepaid to the address indicated in the Agreement, or (iii) if transmitted by facsimile, by the time stated in a machine generated confirmation that notice was received at the facsimile number of the intended recipient, or by E-mail, by the time that the notice was received by the intended recipient.

13.9 Amendments

.1 The Contract Documents may not be changed, altered, or amended in any way except in writing signed by a duly authorized representative of each party.

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Exhibit A

Applicable Wage Rates for Pettis County, Missouri - Missouri Department of Labor

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Exhibit B

City of Sedalia, Missouri - Work Authorization Affidavit Pursuant to 285.530 RSMo.

Exhibit C

Compliance with the Angi-Discrimination Against Israel-Act Pursuant to 34.600 RSMo.

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Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 30

Section 080
PETTIS 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
Todd Smith, Director
Division of Labor Standards

Filed With Secretary of State: **March 10, 2023**

Last Date Objections May Be Filed: **April 10, 2023**

Prepared by Missouri Department of Labor and Industrial Relations

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Building Construction Rates for
PETTIS County

Section 080

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$47.39
Boilermaker	$25.65*
Bricklayer	$54.15
Carpenter	$45.62
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	$25.65*
Plasterer	
Communications Technician	$25.65*
Electrician (Inside Wireman)	$68.20
Electrician Outside Lineman	$25.65*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	$25.65*
Glazier	$43.48
Ironworker	$67.23
Laborer	$25.65*
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	$25.65*
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	$25.65*
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	$42.50
Plumber	$74.61
Pipe Fitter	
Roofer	$25.65*
Sheet Metal Worker	$25.65*
Sprinkler Fitter	$64.23
Truck Driver	$25.65*
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.

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Heavy Construction Rates for
PETTIS County

Section 080

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$25.65*
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$25.65*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	$48.89
General Laborer	
Skilled Laborer	
Operating Engineer	$58.01
Group I	
Group II	
Group III	
Group IV	
Truck Driver	$48.89
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.

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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.

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EXHIBIT B
CITY OF SEDALIA, MISSOURI
WORK AUTHORIZATION AFFIDAVIT
PURSUANT TO 285.530, RSMo
(FOR ALL CONTRACTS IN EXCESS OF $5,000.00)

STATE OF MISSOURI)
) ss.
COUNTY OF PETTIS)

As used in this Affidavit, the following terms shall have the following meanings:

EMPLOYEE: Any person performing work or service of any kind or character for hire within the State of Missouri.

FEDERAL WORK AUTHORIZATION PROGRAM: Any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, under the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603.

KNOWINGLY: A person acts knowingly or with knowledge, (a) with respect to the person's conduct or to attendant circumstances when the person is aware of the nature of the person's conduct or that those circumstances exist; or (b) with respect to a result of the person's conduct when the person is aware that the person's conduct is practically certain to cause that result.

UNAUTHORIZED ALIEN: An alien who does not have the legal right or authorization under federal law to work in the United States, as defined in 8 U.S.C. 1324a(h)(3).

BEFORE ME, the undersigned authority, personally appeared _____, who, being duly sworn, states on his oath or affirmation as follows:

1. My name is _____ and I am currently the _____ of _____ (hereinafter "Design-Builder"), whose business address is _____, and I am authorized to make this Affidavit.

2. I am of sound mind and capable of making this Affidavit and am personally acquainted with the facts stated herein.

3. Design-Builder is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the following services contracted between Design-Builder and the City of Sedalia, Missouri: _____.

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4. Design-Builder does not knowingly employ any person who is an unauthorized alien in connection with the contracted services set forth above.

5. Attached hereto is documentation affirming Design-Builder's enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services.

Further, Affiant saith not.

_____
AFFIANT SIGNATURE

_____
AFFIANT PRINTED NAME

Subscribed and sworn to before me this _____ day of _____, 20__.

_____
Notary Public

My Commission Expires:

_____

_____
(Printed Name)

PLEASE NOTE:

Acceptable enrollment and participation documentation consists of the following 2 pages of the E-Verify Memorandum of Understanding:

1. A valid, completed copy of the first page identifying the Design-Builder; and
2. A valid copy of the signature page completed and signed by the Design-Builder, and the Department of Homeland Security - Verification Division.

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EXHIBIT C
CITY OF SEDALIA, MISSOURI
COMPLIANCE WITH THE ANTI-DISCRIMINATION AGAINST ISRAEL ACT AFFIDAVIT PURSUANT TO 34.600, RSMo (FOR ALL CONTRACTS IN EXCESS OF $100,000.00 WITH A COMPANY WITH 10 OR MORE EMPLOYEES)

STATE OF MISSOURI)
) ss.
COUNTY OF PETTIS)

The undersigned, having been duly sworn, states as follows:

As used in this Affidavit, the following terms shall have the following meanings:

(1) "Boycott Israel" and "boycott of the State of Israel", engaging in refusals to deal, terminating business activities, or other actions to discriminate against, inflict economic harm, or otherwise limit commercial relations specifically with the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel, that are all intended to support a boycott of the State of Israel. A company's statement that it is participating in boycotts of the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel, or that it has taken the boycott action at the request, in compliance with, or in furtherance of calls for a boycott of the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel shall be considered to be conclusive evidence that a company is participating in a boycott of the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel; provided, however that a company that has made no such statement may still be considered to be participating in a boycott of the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel if other factors warrant such a conclusion;

(2) "Company", any for-profit or not-for-profit organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, limited liability company, or other entity or business association, including all wholly-owned subsidiaries, majority-owned subsidiaries, parent companies, or affiliates of those entities or business associations.

The undersigned, as a duly authorized representative of the Company hereby affirms that the Company is not currently engaged in and shall not, for the duration of the contract will engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by,

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or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

_____
AFFIANT SIGNATURE

_____
AFFIANT PRINTED NAME

Subscribed and sworn to before me this _____ day of _____, 20__.

_____
Notary Public

My Commission Expires:

_____

_____
(Printed Name)

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BURNS McDONNELL

EXHIBIT K – PRELIMINARY DESIGN DOCUMENTS

The Preliminary Design Documents consist of the Work Description and Concept Design Drawings.

Work Description

This Work Description identifies major definable components of the Project as they can be defined at the time that the Agreement was prepared. In addition to the major components called out herein, the Work Description outlines the general requirements for each design element. The intent of this document is to establish the scope and criteria of products, materials, and equipment to be furnished and install under the Agreement. The Design-Builder will develop the final design documents and construct the Work in accordance with the criteria identified herein.

01000 GENERAL CONDITIONS

1. All Supervision, Administrative Costs, and Temporary Facilities
2. No Sales Tax included for items that are exempt, Owner to provide Exemption Certificate for the project
3. No building permits fees included. Permits will be obtained as required, but no fees will be charged for the plan review or the permits.
4. No cost for water consumption during construction
5. Builders risk insurance is included
6. Design and construction administration fees are included for the duration of the schedule.
7. Performance & Payment Bonds for the total value of the project
8. Startup / Testing – Owner to provide any necessary chemicals for startup/testing, except for chemicals necessary for initial disinfection purposes
9. O&M's supplied by equipment suppliers shall be turned over to the Owner. All O&M manuals will be provided in paper (2 sets) and electronic PDF form
10. In the event that there are discrepancies between this and any other contract document, this document shall govern
11. This project is under current prevailing wage for Pettis County, MO dated 03/10/2023, Missouri Division of Labor Standards, Annual Wage Order No. 30, Heavy Construction Rates.
12. This agreement excludes any and all time delays and cost increases arising from or related to the COVID-19 virus, future pandemics, or epidemics, and any government or other third party action in response thereto.

01010 SPECIAL SITE CONDITIONS

1. No hazardous or special waste are known of at this time or anticipated to be encountered in the course of this project, except as noted in the allowances. If encountered, Design/Builder to stop work, Owner to provide abatement and disposal of any hazardous or special wastes prior to Design/Builder continuing work.
2. No provisions for extensive groundwater should it be encountered. Normal surface water will be handled by small localized pumps.

01015 OWNER FURNISHED ITEMS

1. Owner to procure three (3) Sulzer HST Blowers as specified (technical specification

provided by Design-Builder) for installation in the Blower Building by Design-Builder
2. Water at project site at no additional cost to Design-Builder
3. Operation and maintenance of existing facilities during construction
4. Access to project sites as needed to perform work.
5. Shut down of plant flows as coordinated with Design/Builder to accomplish project scope.
6. Land acquisition, easements, or Right-of-Way as required
7. Owner to provide electrical needed for construction and on site office trailer locations.
8. Owner to remove solids and empty Aeration Basin and coordinate efforts with Design/Builder to accommodate schedule and installation of diffusers within Aeration Basin.

01500 CONSTRUCTION EQUIPMENT

1. All construction equipment necessary to complete the work is included.

02050 DEMOLITION - GENERAL

1. Demolish existing storage building
2. Remove and dispose of existing diffuser equipment and support rails
3. Remove and dispose of existing PD blowers and associated piping
4. Remove and Dispose of two sections of the existing MCC setup

02250 SITE EXCAVATION / BACKFILL

1. Excavation shall be as necessary to construct structures in accordance with the drawings.
2. Spoils will be disposed of off site.

02260 STRUCTURAL EXCAVATION/BACKFILL

1. Soils under structures shall be over-excavated by 2'0" and replaced with clean rock aggregate to a minimum depth of 2'0".
2. Backfill around structure walls will be completed with excavated soils or crushed rock.

02280 AGGREGATE

1. 24" clean aggregate base below all building slabs
2. 6" AB-3 aggregate base below all roads

02300 SEEDING

1. Design/Builder to return topsoil and fine grade site and seed any disturbed areas
2. Seed will be standard contractor mix
3. Topsoil will be stockpiled at beginning of project and re-spread at the end
    a. All topsoil to be wasted on site

02500 PAVING

1. Replacement of existing pavement resulting from demolition of existing structure and

construction of new blower building. Existing pavement to be replaced with 8" Concrete pavement, tie into existing pavements.

03100 FORMWORK

1. Exterior Form -
    a. Fill any repairable honeycomb
    b. No architectural or rubbed finish; no grout finish
    c. No Paint
    d. Joints to be noticeable, but not protruding
    e. Chamfer tops on all exposed edges.

03200 REINFORCING

1. Deformed Bars: ASTM A615 Grade 60 - No Epoxy
2. Welded Wire Fabric: ASTM 1064

03300 CONCRETE

3. ASTM C150 Type I/II or ASTM C595 Type IL (MS) with Type F fly ash
    i. Fly ash shall be omitted if Type F is not available.
    ii. If ASTM C595 Portland Lime Cement (PLC) is used, Type IL (HS) is also acceptable. Silica fume may be substituted up to 10% replacement of Portland Cement (PC) or Portland Lime Cement (PLC)
    iii. 1" nominal maximum aggregate
4. Fill and encasement – 3,000 psi
5. Site pavements, curbs, gutters, roof toppings, and sidewalks – 4,000 psi
6. Structural concrete – 4,500 psi
7. All concrete supplied for the project will meet the latest applicable code.

03350 CONCRETE FINISH

1. Steel trowel finish on Blower Building floor.
2. Broomed finish at stoops and concrete walking surfaces.
3. Sawed joints where detailed in the drawings shall be cut as soon as the concrete surface is firm enough to resist tearing or damage by the blade and before random shrinkage cracks can occur.

050519 CONCRETE ANCHORS

1. Non-submerged anchors in moderate to severe corrosion potential: AISI Type 304 or 316 adhesive anchors or wedge anchors where indicated.
2. Low corrosion potential: galvanized wedge or adhesive anchors
3. Adhesive epoxy:
    a. Hilti HIT-HY 200 for dry installations or approved equal.

051200 STEEL

1. Shapes: Wide flange, ASTM A992. Channels, angles, and plates, ASTM A36.
2. Hot-dipped galvanized steel and hardware unless indicated otherwise.
3. Stainless steel:
    a. AISI Type 304 or 316 where indicated.

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4. Anchor Bolts:
    a. Cast-in-place: Galvanized or stainless steel ASTM F1554 Grade 36 anchor bolts

055000 MISCELLANEOUS METALS

1. Pipe Supports as required to adequately support piping
2. Bollards – 6-inch diameter Schedule 40 Steel, painted safety yellow, with rust-inhibitive paint

07900 JOINT SEALANTS

1. Doors, windows, louvers and constriction joints in metal building

08100 DOORS / FRAMES / HARDWARE

1. FRP Doors w/ Aluminum Frames, with FRP transom
    a. 6'4"x8'6" 1-3/4" thick with standard aluminum frame.
    b. Removable transom panel above door to allow for total opening height of 10'0".
2. Standard Door hardware; includes hinges, closers, locksets, astragals, raindrips, weatherseals,
3. Panic devices as required by code for egress and sensitive to environment

08900 LOUVER

1. Aluminum louvers with Kynar finish.

09900 PAINTING

1. Pipe bollards

13340 PRE-ENGINEERED METAL BUILDING

1. Blower Building 32'0 x 24'0
    a. Low Eave Ht: 14'8"
    b. High Eave Ht: 16'8"
    c. Monoslope: ½":12"
2. Hot dipped galvanized primary and secondary framing
3. Roof system: 24ga SS360 standing seam metal roofing, galvalume finish
4. Roof Insulation: R-30 double layer, Guardian Saver Energy System roof
5. insulation
6. Wall panels: 3" Mesa insulated metal wall panels, 26ga metal skins on insulated panels. 42" wide.

23000 HVAC

7. Materials:
    a. Ductwork: galvanized steel
8. Equipment:
    a. One (1) Exhaust Fan: 6,600 cfm, 1.5 HP, 480V
    b. Two (2) Control Dampers, 120VAC

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9. All appropriate ductwork, controls, and monitoring as required

260000 ELECTRICAL

1. All work to be completed per National Electric Code
2. Trench, excavation, unreinforced duct bank, ductbank will be reinforced within 10' of structures
3. and under roadways, marker tape, and backfill for electrical conduits
4. Includes install of instruments
5. Includes fiber optic cabling from solids handling building to existing MCC2 and from existing
6. MCC2 to new blower building
7. Includes electrical gear as shown on one-line
8. Includes LED lighting for building interior and exterior mounted wall packs
9. Includes grounding, bare copper for buried and tinned copper for risers and exposed grounds
10. General Material Uses and Types:
    a. All copper wiring shall be XHHW for exterior cable and THHN/THWN for interior cable only.
    b. Conduit in non-corrosive indoor environments shall be rigid steel or aluminum
    c. Conduit in exterior exposed locations shall be rigid aluminum
    d. Conduit in corrosive locations shall be PVC coated rigid steel or fiberglass
    e. Cable tray shall be aluminum, ladder type
    f. Underground conduit shall be PVC Sch 40 w/ PVC coated risers

40000 PIPING

1. Blower Piping:
    a. Pipe & Fittings: 304SS, Sch 10, 2500F temperature rating

40111 PIPE SUPPORTS

1. Structural steel pipe rack as shown on contract drawings
2. Hangers and pedestals as required for adequate support

400000 INSTRUMENTATION AND CONTROLS

1. PLC / HMI / Reports Programming Development, Testing, Startup, Training
2. Controls Startup, Configuration, Testing, Training, O&M Manuals

465146 RETRIEVABLE DIFFUSERS

1. Eleven (11) retrievable fine bubble diffuser racks complete with all framework, tie bars, leveling studs, supports, anchorage, diffusers, laterals, vertical air drop pipes, flexible air hoses, vertical track/beam, lifting cables, isolations valves, and all other parts, accessories and additional materials required to provide a complete and operable system
2. Design Parameters:
    a. Approved Manufacturer: SSI
    b. Diffuser Style: Flexible membrane tube
    c. Maximum Design Airflow: 5,400 scfm
    d. Minimum Design Airflow: 1,800 scfm

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e. Max Flux rate: 5.00 scfm/sf
f. Max air rate per diffuser assembly rack: 491 scfm
g. Maximum water depth above diffuser: 16 ft
h. Minimum oxygen transfer efficiency: 1.5% per foot of diffuser submergence

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Preliminary Design Drawings

Drawing No.	Title	Date	REV
	Cover Index		
A001	Architectural Legend & Abbreviations	8/30/2023	C
A003	Blower Building Floor Plan	8/30/2023	C
A004	Blower Building Roof Plan	8/30/2023	C
A005	Blower Building Elevations	8/30/2023	C
A006	Blower Building Sections	8/30/2023	A
A007	Blower Building Schedules and Details	8/30/2023	D
S001	Structural Legend, Abbreviations and Notes	8/30/2023	D
S002	Structural Standard Details	8/30/2023	D
S003	Blower Building Foundation Plan	8/30/2023	D
S004	Blower Building Sections and Details	8/30/2023	D
DI001	P&ID Legend and Abbreviations Sheet 1	8/30/2023	C
DI002	P&ID Legend and Abbreviations Sheet 2	8/30/2023	C
DI003	Blower P&ID	8/30/2023	B
DI004	Aeration Basin P&ID	8/30/2023	C
D001	Process Legend, General Notes, and Abbreviations	8/30/2023	C
D002	Process Standard Details	8/30/2023	C
D003	Blower Building Sequence of Operations and Schedules	8/30/2023	C
DD004	Aeration Basin and Blower Piping Demo Plan	8/30/2023	C
DD005	Aeration Basin and Blower Piping Demo Details	8/30/2023	C
D006	Aeration Basin and Blower Piping Plan	8/30/2023	C
D007	Blower Building Piping Floor Plan	8/30/2023	D
D008	Blower Building Sections	8/30/2023	C
E001	Electrical Legend	8/30/2023	D
E002	Electrical Details Sheet 1	8/30/2023	D
E003	Electrical Details Sheet 2	8/30/2023	D

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E004	Electrical Details Sheet 3	8/30/2023	D
E005	Electrical Details Sheet 4	8/30/2023	D
ED006	Blower Building Electrical Demo Plan	8/30/2023	D
ED007	Existing MCC2 One-Line Diagram Demo	8/30/2023	D
E008	Electrical Site Plan	8/30/2023	D
E009	Aeration Electrical Plan	8/30/2023	D
E010	Blower Building Plan	8/30/2023	D
E011	Existing MCC2 One-Line Diagram Demo	8/30/2023	D
E012	BLW-SWBD-030 One-Line Diagram and Panelboard Schedule	8/30/2023	D
E013	Network Architecture Diagram	8/30/2023	D
E014	Control Diagram Sheet 1	8/30/2023	D
E015	Control Diagram Sheet 2	8/30/2023	D
E016	Cable Schedule Sheet 1	8/30/2023	D

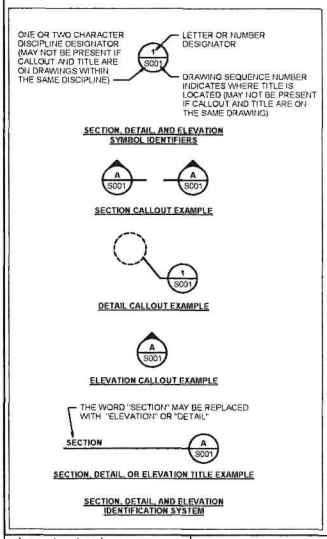
SEDALIA
Let's Cross Paths

City of Sedalia, MO

Central WWTP Aeration Improvements

August 2023

154865



Contract Drawings

General Drawings

DWG NO.	TITLE
G001	COVER-INDEX

Architectural Drawings

DWG NO.	TITLE
A001	ARCHITECTURAL LEGEND & ABBREVIATIONS
A003	BLOWER BUILDING FLOOR PLAN
A004	BLOWER BUILDING ROOF PLAN
A005	BLOWER BUILDING ELEVATIONS
A006	BLOWER BUILDING SECTIONS
A007	BLOWER BUILDING SCHEDULES AND DETAILS

Structural Drawings

DWG NO.	TITLE
S001	STRUCTURAL LEGEND, ABBREVIATIONS AND NOTES
S002	STRUCTURAL STANDARD DETAILS
S003	BLOWER BUILDING FOUNDATION PLAN
S004	BLOWER BUILDING SECTIONS AND DETAILS

Process & Instrumentation Drawings

DWG NO.	TITLE
DI001	P&ID LEGEND AND ABBREVIATIONS SHEET 1
DI002	P&ID LEGEND AND ABBREVIATIONS SHEET 2
DI003	BLOWERS P&ID
DI004	AERATION BASIN P&ID

Process Drawings

DWG NO.	TITLE
D001	PROCESS LEGEND, GENERAL NOTES, AND ABBREVIATIONS
D002	PROCESS STANDARD DETAILS
D003	BLOWER BUILDING SEQUENCE OF OPERATIONS AND SCHEDULES
DD004	ERATION BASIN AND BLOWER PIPING DEMO PLAN
DD005	AERATION BASIN AND BLOWER PIPING DEMO DETAILS
D006	AERATION BASIN AND BLOWER PIPING PLAN
D007	BLOWER BUILDING PIPING FLOOR PLAN
D008	BLOWER BUILDING SECTIONS

Electrical Drawings

DWG NO.	TITLE
E001	ELECTRICAL LEGEND
E002	ELECTRICAL DETAILS SHEET 1
E003	ELECTRICAL DETAILS SHEET 2
E004	ELECTRICAL DETAILS SHEET 3
E005	ELECTRICAL DETAILS SHEET 4
ED006	BLOWER BUILDING ELECTRICAL DEMO PLAN
ED007	EXISTING MCC2 ONE-LINE DIAGRAM DEMO
E008	ELECTRICAL SITE PLAN
E009	AERATION ELECTRICAL PLAN
E010	BLOWER BUILDING PLANS
E011	EXISTING MCC2 ONE-LINE DIAGRAM
E012	BLW-SWBD-030 ONE-LINE DIAGRAM AND PANELBOARD SCHEDULE
E013	NETWORK ARCHITECTURE DIAGRAM
E014	CONTROL DIAGRAM SHEET 1
E015	CONTROL DIAGRAM SHEET 2
E016	CABLE SCHEDULE SHEET 1

no.	date	by	ckd	description
A	8/14/23	KGD	DLW	ISSUED FOR PROCUREMENT
B	8/30/23	KGD	DLW	ISSUED FOR CLIENT REVIEW

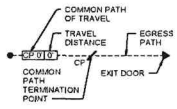
BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co. Inc
LICENSE NO. 000165

Cover-Index

PLAN LEGEND

PLAN LEGEND:

- EXISTING DOOR
- NEW DOOR
- EXISTING WALL
- NEW WALL (RE: PARTITION TYPE)
- ROOM NAME — ROOM NAME
- 101 — ROOM NUMBER
- DOOR NUMBER
- WINDOW WALL TYPE
- LT — LOUVER TAG
- GRID BUBBLE AND LINE
- T1 — TOILET ACCESSORY TAG
- 1' - 0" A.F.F. — CEILING HEIGHT TAG



MATERIAL SYMBOLS

- UNDISTURBED EARTH
- COMPACTED FILL
- GRAVEL
- GRASS
- FACE BRICK
- SPLIT FACE CONCRETE MASONRY VENEER (ELEVATION)
- CONCRETE MASONRY UNIT (PLAN)
- CONCRETE MASONRY UNIT (ELEVATION)
- CONCRETE
- RIGID INSULATION
- PLYWOOD
- GROUT OR GYPSUM BOARD
- SAND, PLASTER, OR PORTLAND CEMENT
- STEEL OR FERROUS METALS
- ALUMINUM OR NON-FERROUS METALS
- FINISHED WOOD
- GLUED-LAMINATED WOOD
- PLASTIC LAMINATE
- BATT INSULATION
- METAL STUD WALL
- BACKER ROD AND SEALANT
- DIMENSION LUMBER

ABBREVIATIONS

-A-

A/E	ARCHITECT/ENGINEER
ACOUST	ACOUSTICAL
ADJ	ADJACENT, ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECTURE, ARCHITECT

-B-

BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
BO	BOTTOM OF, AS IN "BO STEEL"
BTWN	BETWEEN

-C-

CAB	CABINET
CCTV	CLOSED CIRCUIT TELEVISION
CID	COMPREHENSIVE INTERIOR DESIGN
CJ	CONTROL JOINT, CONSTRUCTION JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMM	COMMUNICATION
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT, CONTRACTOR
COORD	COORDINATE
CORR	CORRUGATED OR CORRIDOR
CU	CUBIC
°C	CELSIUS

-D-

DBL	DOUBLE
DEMO	DEMOLITION
DESCR	DESCRIPTION
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DWG	DRAWING

-E-

E	EAST
EA	EACH
EEW	EMERGENCY EYEWASH
EEWS	EMERGENCY EYEWASH & SHOWER
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION, AS IN HEIGHT
ELAST	ELASTOMERIC
ELEC	ELECTRIC / ELECTRICAL
ELEV	ELEVATOR, OR ELEVATION AS IN NORTH ELEV
EQ	EQUAL
EQUIP	EQUIPMENT
ETC	AND SO FORTH (ETCETERA)
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR

-F-

FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER WITH WALL BRACKET
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FF&E	FURNITURE, FIXTURES & EQUIPMENT
FHC	FIRE HOSE CABINET (WITH EXTINGUISHER & BRACKET)
FHR	FIRE HOSE REEL (WITH EXTINGUISHER & BRACKET)
FIN	FINISHED, FINISH
FLR	FLOOR
FT	FEET / FOOT
FV	FIELD VERIFY
°F	FAHRENHEIT

-G-

GA	GAUGE
GALV	GALVANIZED
GL	GIRT LINE
GRTG	GRATING
GYP	GYPSUM
GYP BD	GYPSUM BOARD

-H-

H	HIGH
HD	HAND
HDWR	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HT	HEIGHT
HVAC	HEATING, VENTILATION & AIR CONDITIONING

-I-

ID	INSIDE DIAMETER
IN	INCH
INSUL	INSULATION
INT	INTERIOR

-J-

JAN	JANITOR'S CLOSET

-L-

L	LEFT, LONG, LENGTH
LAB	LABORATORY
LAT	LATITUDE
LAV	LAVATORY
LB or #	POUND
LH	LEFT HAND
LONG	LONGITUDE
LVR	LOUVER

-M-

M	METER
MACH	MACHINE
MAINT	MAINTENANCE
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MOVEMENT JOINT
MM	MILLIMETER
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL

-N-

N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTP	NOTICE TO PROCEED
NTS	NOT TO SCALE

-O-

OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OPNG	OPENING
OPP	OPPOSITE

-P-

PA	PUBLIC ADDRESS
PEMB	PRE-ENGINEERED METAL BUILDING
PERIM	PERIMETER
PKG	PACKAGE
PL	PLATE
PLMB	PLUMBING
PLYWD	PLYWOOD
PROC	PROCESS
PROJ	PROJECT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE

-R-

R	RADIUS
R/A	RETURN AIR
RCP	REFLECTIVE CEILING PLAN
RD	ROOF DRAIN
RECP	RECEPTACLE
REF	REFERENCE
REINF	REINFORCED
REQ'D	REQUIRED
REV	REVISION
RH	RIGHT HAND
RO	ROUGH OPENING

-S-

S	SOUTH
SA	SUPPLY AIR
SCHED	SCHEDULE
SECT	SECTION
SF	SQUARE FOOT
SID	STRUCTURAL INTERIOR DESIGN
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE, AS IN "SQ FT"
STC	SOUND TRANSMISSION COEFFICIENT
STD	STANDARD
STOR	STORAGE
STRUCT	STRUCTURAL
SUPP	SUPPORT
SUSP	SUSPENDED
SYS	SYSTEM

-T-

TD	TRENCH DRAIN
TECH	TECHNICAL
THRU	THROUGH
TLT	TOILET
TO	TOP OF, AS IN "TO STEEL"
TOR	TOP OF ROOF
TYP	TYPICAL

-U-

UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY

-V-

VENT	VENTILATE, VENTILATOR
VERT	VERTICAL
VJ	VENEER JOINT
VOL	VOLUME

-W-

W	WEST, WIDTH
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WH	WATER HEATER
WT	WEIGHT

no.	date	by	chkd	description
A	8/4/23	AEL		ISSUED FOR INTERNAL REVIEW
B	8/14/23	AEL	RPL	ISSUED FOR PROCUREMENT
C	8/30/12	AEL	RPL	ISSUED FOR CLIENT REVIEW

PRELIMINARY - NOT FOR CONSTRUCTION

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Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000185

date	detailed
MARCH 13, 2023	B. MADDOX
designed	checked
A. LEYVA	R. LANG

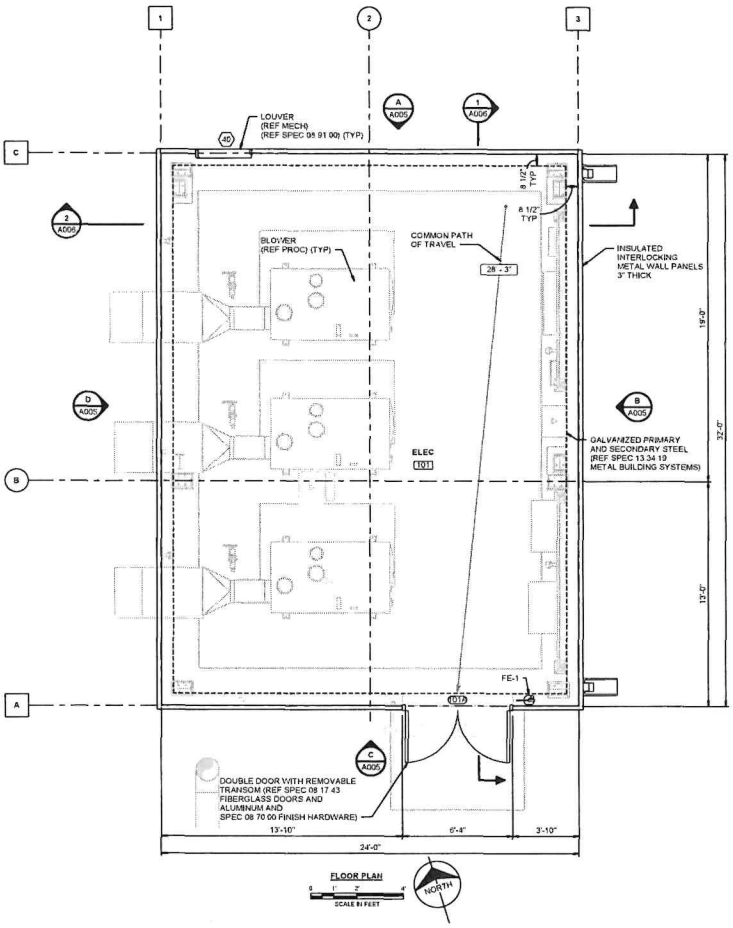
SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
ARCHITECTURAL LEGEND & ABBREVIATIONS

project	contract
154965	

drawing **A001** rev. **C**

sheet of sheets
file



OCCUPANCY TYPE: (SECTION 308 & 311):
F-1, MODERATE HAZARD FACTORY INDUSTRIAL

CONSTRUCTION TYPE (TABLE 601) : IIB (NON COMBUSTIBLE MATERIALS)
ALLOWABLE HEIGHT AND AREA: (TABLE 504.3, TABLE 504.4, AND TABLE 506.2)
BUILDING AREA: (794 SQ FT)
BUILDING HEIGHT: 1 STORY, (16'-11" HEIGHT TALLEST POINT)
F-1 OCCUPANCY
ALLOWABLE BUILDING AREA 15,500 SQ. FT.
ALLOWABLE BUILDING HEIGHT: 1 STORIES, 55 FEET

OCCUPANT LOAD AND REQUIRED EGRESS WIDTH (TABLE 1004.1.2 - 1005.3 SECTION 1015.1):
FUNCTION OF SPACE: INDUSTRIAL AREAS, 100 GROSS PER OCCUPANT
GROUP F-1 800 SQ. FT./ 100 SQ. FT. PER PERSON = 5 OCCUPANTS
5 TOTAL OCCUPANTS X .2 INCHES PER OCCUPANTS = 1 INCH OF EGRESS WIDTH REQUIRED
1 EXIT REQUIRED, 2 EXITS PROVIDED, FOR A TOTAL OF 72 INCHES OF EGRESS WIDTH

TRAVEL DISTANCE (TABLE 1016.2):
F-1 OCCUPANCY (WITHOUT SPRINKLER SYSTEM) - 200 FEET TRAVEL DISTANCE AND -75 FEET
COMMON PATH
COMMON PATH OF TRAVEL: 28'-3" TRAVEL DISTANCE

R-VALUES:
WALLS U-0.052 OR R= 19.2
ROOF: R-19 + R-11 LS
UNHEATED SLABS ON GRADE: R-10 FOR 24 BELOW

FIRE EXTINGUISHER LEGEND:
FE-1 MULTI-PURPOSE DRY CHEMICAL *TYPE EXTINGUISHER*; UL OR FM *RATED* 2-A:10B C, 10LB
NOMINAL CAPACITY IN ENAMEL-STEEL CONTAINER INSTALL W/TOP OF EXTINGUISHER @ 5'-0" AFF

ELECTRICAL BUILDING CODE INFORMATION
APPLICABLE CODE (PETTIS COUNTY ZONE 4a):
INTERNATIONAL BUILDING CODE, 2015 EDITION
INTERNATIONAL MECHANICAL CODE, 2015 EDITION
INTERNATIONAL PLUMBING CODE, 2015 EDITION
NATIONAL ELECTRIC CODE, 2014 EDITION
INTERNATIONAL ENERGY CONSERVATION CODE, 2015 EDITION
INTERNATIONAL FUEL GAS CODE, 2015 EDITION
INTERNATIONAL EXISTING BUILDING CODE, 2015 EDITION

no.	date	by	ckd	description
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B	8/14/23	AEL	RPL	ISSUED FOR PROCUREMENT
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BURNS MCDONNELL
9400 WARD PARKWAY
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Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000165

date	detailed
MARCH 13, 2023	B. MADDOX
designed	checked
A. LEYVA	R. LANG

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING
FLOOR PLAN

project	contract
154865	
drawing	rev.
A003	C
sheet	of sheets
file	

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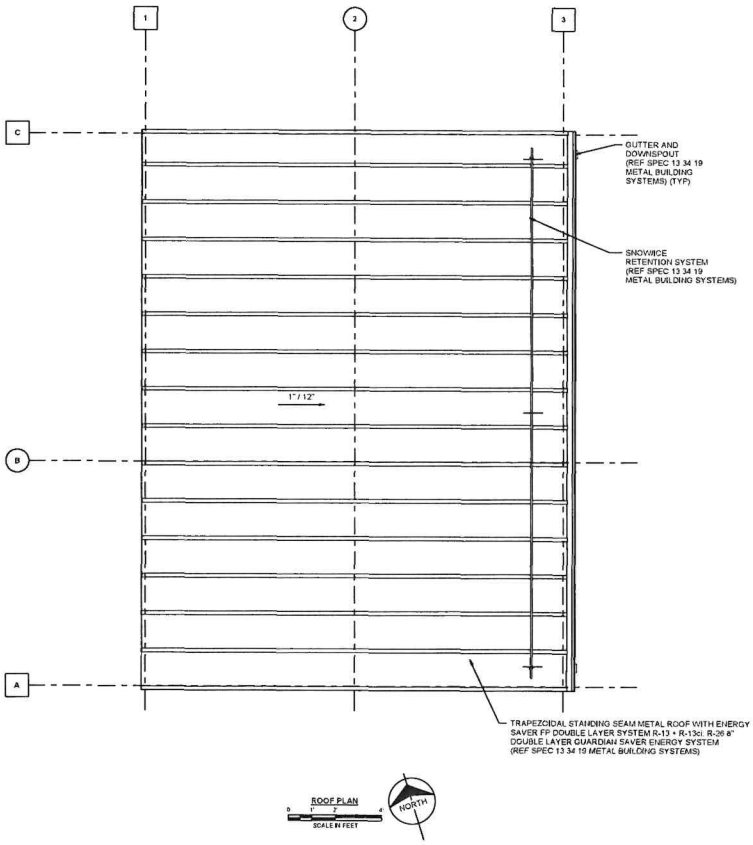

ROOF PLAN

0 1" 2" 4"

SCALE IN FEET

NORTH

no.	date	by	ckd	description
A	8/4/23	AEL		ISSUED FOR INTERNAL REVIEW
B	8/14/23	AEL	RPL	ISSUED FOR PROCUREMENT
C	8/30/12	AEL	RPL	ISSUED FOR CLIENT REVIEW

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS McDONNELL

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000165

date	detailed
JULY 27, 2023	E. FIELDS
designed	checked
A. LEYVA	R. LANG

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING
ROOF PLAN

project	contract
154865	
drawing	rev.
A004	C
sheet	of sheets
file	

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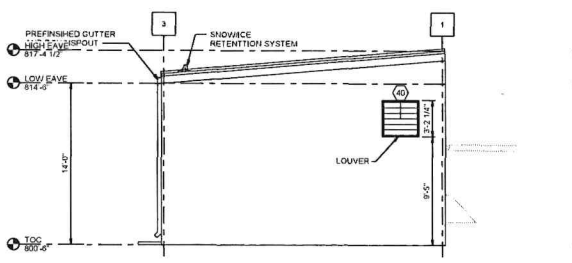

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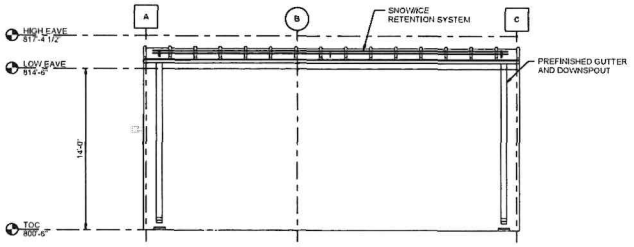
SOUTH
SCALE IN FEET



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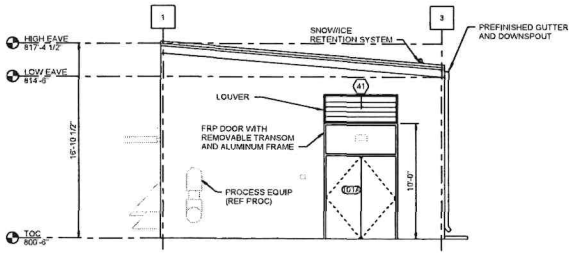

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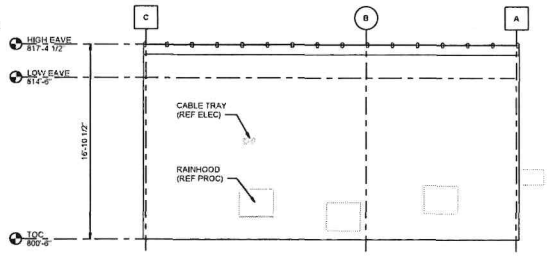

ELEVATION D A003
WEST
SCALE IN FEET

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9400 WARD PARKWAY
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Burns & McDonnell Engineering Co., Inc.
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date	detailed
APRIL 12, 2023	B. MADDOX
designed	checked
A. LEYVA	R. LANG

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING
ELEVATIONS

project	contract
154865	

drawing A005 — rev. C

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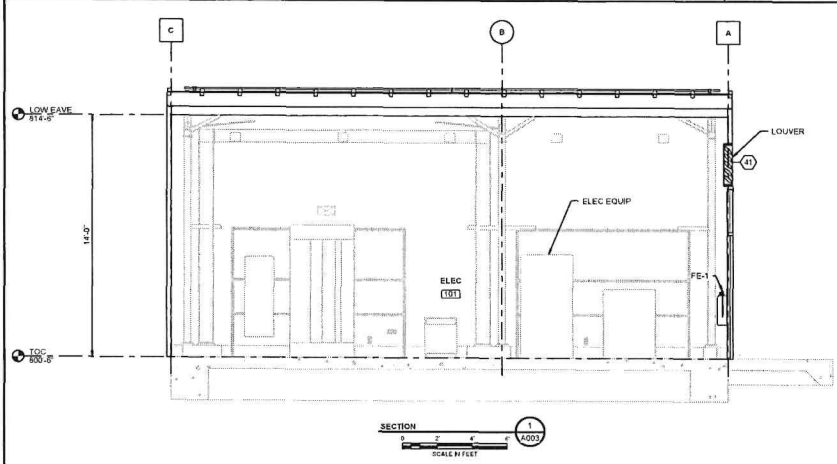

SECTION 1 A003
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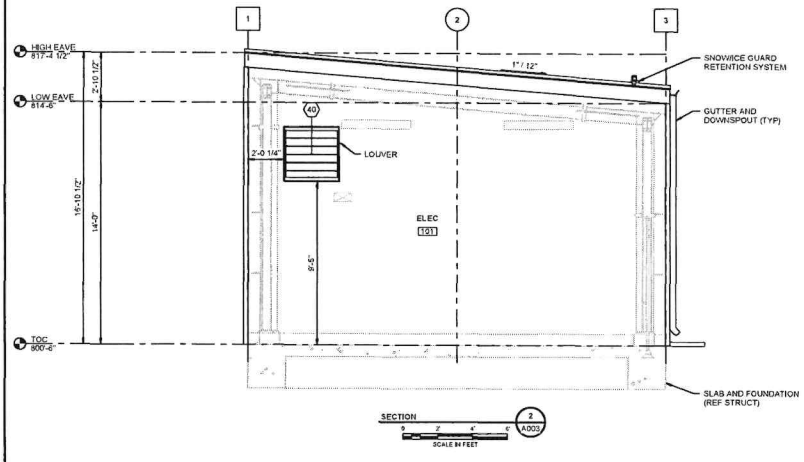

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SCALE IN FEET

no.	date	by	ckd	description
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BURNS McDONNELL
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date	detailed
MARCH 13, 2023	B. MADDOX
designed	checked
A. LEYVA	R. LANG

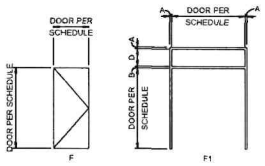
SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING
SECTIONS

project	contract
154865	
drawing	rev.
A006	A
sheet	of sheets
file	

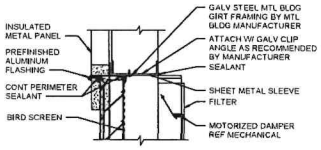
LOUVER SCHEDULE							
QUANTITY	TYPE	SIZE		DETAILS			REMARKS
		WIDTH	HEIGHT	HEAD	JAMB	SILL	
1	40	3'-2 1/4"	3'-2 1/4"	1	1	1	
1	41	6'-4"	2'-6"	-	-	-	

DOOR SCHEDULE												
DOOR NUMBER	DOOR					FRAME			DETAIL			REMARKS
	PAIR	SIZE		TYPE	FINISH	TYPE	MATERIAL	FINISH	HEAD	JAMB	SILL	
		WIDTH	HEIGHT									
101A		6'-4"	10'-0"	F	-	ALUM	-	PT	1	1	1	

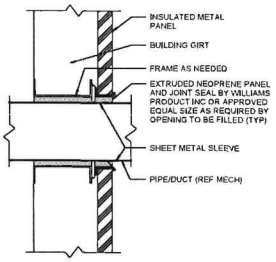


DOOR AND FRAME TYPES

SCALE IN FEET

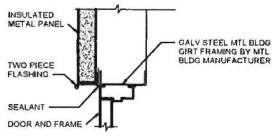


HEAD



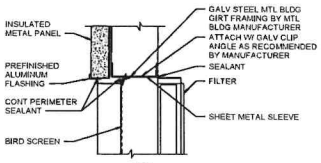
MTL PANEL PENETRATION

SCALE IN FEET

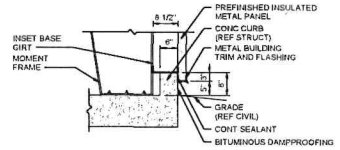


MTL PANEL DOOR HEAD 1

SCALE IN FEET

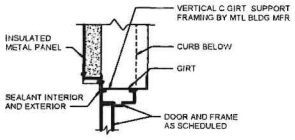


JAMB



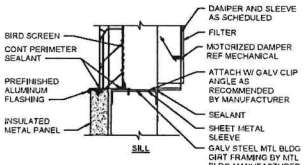
CURB DETAIL - PEMB BYPASS

SCALE IN FEET



MTL PANEL DOOR JAMB 1

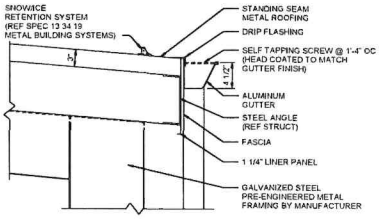
SCALE IN FEET



SILL

MTL PANEL LOUVER/ JAMB/ SILL 1

SCALE IN FEET



ROOF LOW SIDE

SCALE IN FEET

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LICENSE NO. 000185

date	detailed
MAY 15, 2023	B. MADDOX
designed	checked
A. LEYVA	R. LANG

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING
SCHEDULES AND DETAILS

project	contract
154865	

drawing A007 — rev. D

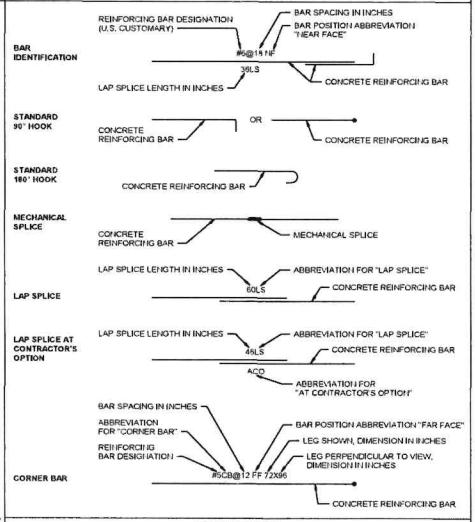
sheet of sheets

file

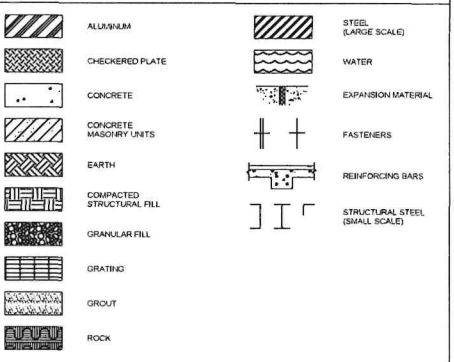
ABBREVIATIONS

AA	ALUMINUM ASSOCIATION	EW	EACH WAY	OZ	OUNCE
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	EXP	EXPANSION	Pa	PASCAL
		EXIST	EXISTING	PCA	PORTLAND CEMENT ASSOCIATION
		EXT	EXTERIOR		
AB	ANCHOR BOLT	FAB	FABRICATE	PCF	POUNDS PER CUBIC FOOT
ABT	ABOUT	f'c	SPECIFIED 28 DAY COMPRESSIVE STRENGTH OF CONCRETE	PCI	PRESTRESSED CONCRETE INSTITUTE, POUNDS PER CUBIC INCH
ACI	AMERICAN CONCRETE INSTITUTE				
ACO	AT CONTRACTOR'S OPTION	FD	FLOOR DRAIN	PED	PEDESTAL
ADH	ADHESIVE	FDN	FOUNDATION	PEN	PENETRATE
AGGR	AGGREGATE	FF	FAR FACE	PERP	PERPENDICULAR
AHR	ANCHOR	FL	FLOOR	PJE	PREFORMED JOINT FILLER
AHU	AIR HANDLING UNIT	FLG	FLANGE	PJTN	PROJECTION
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	f'm	SPECIFIED COMPRESSIVE STRENGTH OF MASONRY	PL	PLATE, PROPERTY LINE
				PLCS	PLACES
AISI	AMERICAN IRON AND STEEL INSTITUTE	FNISH	FINISH	PLF	POUNDS PER LINEAR FOOT
		FRP	FIBERGLASS REINFORCED PLASTIC	PREFAB	PREFABRICATED
AL, ALUM	ALUMINUM			PSF	POUNDS PER SQUARE FOOT
ALTN	ALTERNATE	fs	PERMISSIBLE STEEL STRESS	PSI	POUNDS PER SQUARE INCH
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	FS	FAR SIDE	PRV	PRESSURE RELIEF VALVE
		FT	FEET, FOOT	PT	POINT
APPROX	APPROXIMATE	FTG	FOOTING	PVC	POLYVINYL CHLORIDE
ARCH	ARCHITECTURAL	FUT	FUTURE	PWS	PLASTIC WATERSTOP
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	Fy, fy	YIELD STRESS	R	RISERS
		GA	GAGE, GAUGE	RAD	RADIUS
	INTERNATIONAL	GAL	GALLON	RD	ROOF DRAIN
AWS	AMERICAN WELDING SOCIETY	GALV	GALVANIZED	REF	REFERENCE
		GF	GRANULAR FILL	REINF	REINFORCEMENT
B, BOT	BOTTOM	GND	GROUND	REQD	REQUIRED
BBP	BOTTOM OF BASE PLATE	GR	GRADE	REV	REVISION
BC	BOLT CIRCLE	GRTG	GRATING	RJ	ROUGHENED JOINT
BETW	BETWEEN	GS	GRATING SUPPORT	RM	ROOM
BLDG	BUILDING	H	HIGH	S	SOUTH
BM	BEAM	HC	HOLLOW CORE	SCHED	SCHEDULE
BO	BOTTOM OF	HEX	HEXAGON	SD	SUBDRAIN
BOC	BOTTOM OF CONCRETE	HK	HOOK	SE	SOUTHEAST, STEEL EDGE
BOS	BOTTOM OF STEEL	HR	HANDRAIL	SECT	SECTION
BRG	BEARING	HORIZ	HORIZONTAL	SHT	SHEET
BRKT	BRACKET	HPT	HIGH POINT	SIM	SIMILAR
CAP	CAPACITY	HS	HIGH STRENGTH	SJ	SAWED JOINT
CB	CORNER BAR	HVAC	HEATING, VENTILATION, AND AIR CONDITIONING	SLO	SHORT LEG OUTSTANDING
CC	CLEAR COVER			SLP	SLOPE
C/C	CENTER TO CENTER	IBC	INTERNATIONAL BUILDING CODE	SLV	SLEEVE
CE	CONCRETE EDGE			SP	SPACE
CF	CUBIC FEET	ID	INSIDE DIAMETER	SPEC	SPECIFICATION
CHKR	CHECKERED	IF	INSIDE FACE	SQ	SQUARE
CIR	CIRCLE	IJ	ISOLATION JOINT	SS, SST	STAINLESS STEEL
CIRC	CIRCULAR	INTR	INTERIOR	ST	SINGLE TEE
CIRCUM	CIRCUMFERENTIAL	INVT	INVERT	STD	STANDARD
CIS	CENTERED IN SLAB	JT	JOINT	STIF	STIFFENER
CIW	CENTERED IN WALL	K	KIP (1000 POUNDS)	STIR	STIRRUP
CJ	CONSTRUCTION JOINT	KB	KNEE BRACE	STL	STEEL
CJP	COMPLETE JOINT PENETRATION	KPL	KICK PLATE	STR	STRAIGHT, STAIR
		kg	KILOGRAM	STRL	STRUCTURAL
CL	CENTER LINE	kN	KILONEWTON	STRUC	STRUCTURE
CLJ	CONTROL JOINT	KSF	KIPS PER SQUARE FOOT	SW	SOUTHWEST
CLR	CLEAR	KSI	KIPS PER SQUARE INCH	SYMM	SYMMETRICAL
CM	CENTIMETER	L	ANGLE, LONG	T	TON, TREAD, THICKNESS, TOP
CMU	CONCRETE MASONRY UNIT	LAD	LADDER	TEMP	TEMPERATURE, TEMPORARY
CO	CONCRETE OPENING	LB	POUND	THK	THICK
COL	COLUMN	LG	LENGTH, LONG	THD	THREAD
CONC	CONCRETE	LL	LIVE LOAD	THRU	THROUGH
CONN	CONNECTION	LLH	LONG LEG HORIZONTAL	T&B	TOP AND BOTTOM
CONSTR	CONSTRUCTION	LLV	LONG LEG VERTICAL	TOB	TOP OF BOLT
CONT	CONTINUOUS	LLO	LONG LEG OUTSTANDING	TOC	TOP OF CONCRETE
CONTR	CONTRACT	LNTL	LINTEL	TOF	TOP OF FLOOR
COORD	COORDINATE	LONG	LONGITUDINAL	TOG	TOP OF GRATING
COR	CORNER	LPT	LOW POINT	TOS	TOP OF STEEL
CRSI	CONCRETE REINFORCING STEEL INSTITUTE	LS	LAP SPLICE	TOW	TOP OF WALL
		M	METER	TSF	TONS PER SQUARE FOOT
CTR	CENTER	MATL	MATERIAL	TRD	TREAD
CWB	CAPILLARY WATER BARRIER	MAX	MAXIMUM	TYP	TYPICAL
CY	CUBIC YARD	MECH	MECHANICAL	UON	UNLESS OTHERWISE NOTED
dia	BAR DIAMETER	MEZZ	MEZZANINE	UNO	UNLESS NOTED OTHERWISE
DBL	DOUBLE	MFR	MANUFACTURE(R)	VAR	VARIES
DET	DETAIL	MH	MANHOLE	VERT	VERTICAL
DGA	DENSE GRADED AGGREGATE	MIN	MINIMUM	W	WEST, WIDE
DIA	DIAMETER	MISC	MISCELLANEOUS	WD	WIDTH
DIAG	DIAGONAL	MJ	MECHANICAL JOINT	WF	WIDE FLANGE
DIM	DIMENSION	MK	MARK	WP	WORK POINT
DK	DECKING	MM	MILLIMETER	WS	WATERSTOP
DL	DEAD LOAD	MPa	MEGAPASCAL	WT	WEIGHT, WATERTIGHT
DN	DOWN	MS	MECHANICAL SPLICE	WW	WASTEWATER
DT	DOUBLE TEE	N	NORTH	WWF	WELDED WIRE FABRIC
DWG	DRAWING	NA	NOT APPLICABLE	W/	WITH
DWL	DOWEL	NE	NORTHEAST	W/O	WITHOUT
E	EAST	NF	NEAR FACE	YD	YARD
EA	EACH	NIC	NOT IN CONTRACT	&	AND
ED	EQUIPMENT DRAIN	NO	NUMBER	±	APPROXIMATELY
EF	EACH FACE	NOM	NOMINAL	@	AT
EJ	EXPANSION JOINT	NS	NEAR SIDE	x	BY
EL	ELEVATION	NTS	NOT TO SCALE	°	DEGREE (PLANE ANGLE)
ELEC	ELECTRICAL	NW	NORTHWEST	Ø	DIAMETER
EMBED	EMBEDMENT	OC	ON CENTER	=	EQUAL
EP	EQUIPMENT PAD	OD	OUTSIDE DIAMETER	>	GREATER THAN
ERCP	ELLIPTICAL REINF CONC PIPE	OF	OUTER FACE	<	LESS THAN
EQ	EQUAL	OPNG	OPENING	#	NUMBER, POUND
EQ SP	EQUALLY SPACED	OPP	OPPOSITE	%	PERCENT
EQUIP	EQUIPMENT	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION		
EQUIV	EQUIVALENT				

CONCRETE REINFORCING BAR NOMENCLATURE



MATERIALS LEGEND



STRUCTURAL GENERAL NOTES:

1. APPLICABLE CODES:
   A. INTERNATIONAL BUILDING CODE (IBC), 2015 EDITION
   B. ASCE 7-10 MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR STRUCTURES.
   C. ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY.

2. MATERIALS:
   A. CAST-IN-PLACE CONCRETE: f'c = 4500 PSI @ 28 DAYS
   B. REINFORCING STEEL: fy = 60 KSI
   C. STRUCTURAL STEEL
      1. WIDE FLANGE (WF) SHAPES AND TEES CUT FROM WF: ASTM A992, GRADE 50
      2. OTHER SHAPES AND PLATES: ASTM A36
      3. RECTANGULAR AND SQUARE TUBING: ASTM A500, GR B
   D. STAINLESS STEEL
      1. AISI TYPE 304
      2. AISI TYPE 316
   E. ADHESIVE CONCRETE ANCHORS
      1. HILTI HIT-HY 200-V3 FOR DRY CONCRETE INSTALLATIONS
      2. OR APPROVED EQUAL

3. DESIGN LOADS PER IBC 2015:
   A. RISK CATEGORY: III
   B. DEAD LOADS
      1. MECHANICAL/ELECTRICAL = 5 PSF
      2. COLLATERAL LOAD: 5 PSF
   C. LIVE LOADS
      1. FLOOR LIVE LOAD: 250 PSF
      2. MINIMUM ROOF LIVE LOAD: 20 PSF
   D. SNOW LOADS
      1. GROUND SNOW LOAD, Pg = 20 PSF
      2. FLAT ROOF SNOW = 22 PSF
      3. EXPOSURE FACTOR, Ce = 0.9
      4. IMPORTANCE FACTOR, Is = 1.1
      5. THERMAL FACTOR, Ct = 1.2
   E. WIND LOADS
      1. ULTIMATE DESIGN WIND SPEED = 120 MPH
      2. WIND EXPOSURE FACTOR = C
   F. SEISMIC LOADS
      1. IMPORTANCE FACTOR, IE = 1.25
      2. SITE CLASS: D
      3. MAPPED SPECTRAL ACCELERATION PARAMETERS
         A. SS = 0.142g
         B. S1 = 0.083g
      4. DESIGN SPECTRAL ACCELERATION PARAMETERS:
         A. SDS = 0.151g
         B. SD1 = 0.132g
      5. SEISMIC DESIGN CATEGORY: A
      6. EQUIVALENT LATERAL FORCE ANALYSIS

4. GEOTECHNICAL CRITERIA: SOILS REPORT NOT PROVIDED. IBC 2015 TABLE 1806.2 PRESUMPTIVE LOAD-BEARING VALUES WERE USED.
   A. MATERIAL CLASS #5
   B. VERTICAL BEARING PRESSURE = 1,500 PSF
   C. LATERAL BEARING PRESSURE = 109 PSF/FT BELOW GRADE
   D. UNDER FOUNDATION SLABS, PROVIDE A 2'-0" THICK LOW VOLUME CHANGE MATERIAL.
   E. AT FLOOR SLABS, PROVIDE A 4" LEVELING COURSE CONSISTING OF CLEAN, MEDIUM TO COARSE GRAINED SAND, OR CLEAN GRAVEL/ROCK WITH LESS THAN 5 PERCENT FINES OVER A 1'-0" THICK LOW VOLUME CHANGE MATERIAL.

5. SEE CIVIL, ARCHITECTURAL, MECHANICAL, PROCESS AND ELECTRICAL DRAWINGS FOR MISCELLANEOUS STEEL, CONCRETE, ANCHORS AND OPENINGS NOT INDICATED ON STRUCTURAL DRAWINGS.

6. CONCRETE CLEAR COVER PROTECTION FOR REINFORCING UNLESS NOTED OTHERWISE.
   A. CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO EARTH = 3"
   B. CONCRETE EXPOSED TO EARTH, WEATHER & WASTEWATER
      a. #6 THRU #18 BARS = 2"
      b. #5 BAR, W31 OR D31 WIRE & SMALLER = 1 1/2"
   C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND
      a. SLABS, WALLS & JOISTS
         1. #14 & #18 BARS = 1 1/2"
         2. #11 & SMALLER = 3/4"
      b. BEAMS AND COLUMNS
         1. PRIMARY REINF, TIES, STIRRUPS & SPIRALS = 1 1/2"

no.	date	by	chkd	description
A	6/9/23	KJR		ISSUED FOR PROCUREMENT
B	8/4/23	KJR		ISSUED FOR INTERNAL REVIEW
C	8/14/23	KJR	JMW	ISSUED FOR PROCUREMENT
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BURNS MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000165

date: MARCH 21, 2023 | detailed: J. ANAYA
designed: K. REPASKEY | checked: J. WRONA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
STRUCTURAL LEGEND, ABBREVIATIONS AND NOTES

project: 154865 | contract:
drawing: S001 | rev.: D
sheet: | of: | sheets:
file: 154865_S_Central-WWTP_2022.rvt

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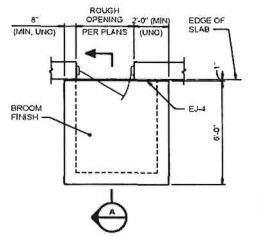
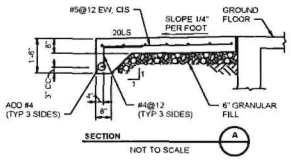


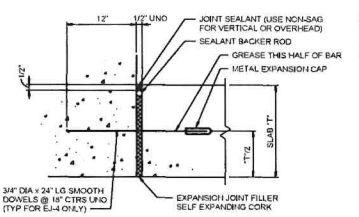
PLAN

TYPICAL DOOR STOOP
NOT TO SCALE



SECTION

NOT TO SCALE



EJ-3 WITHOUT DOWEL
EJ-4 WITH DOWEL

EXPANSION JOINT
NOT TO SCALE

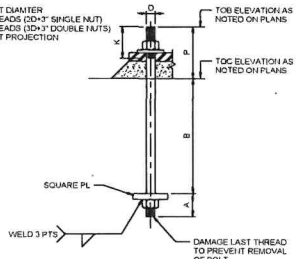
MINIMUM EMBEDMENT FOR EPOXY ADHESIVE ANCHORS UNO	
SIZE	STAINLESS STEEL
3/8"	3 1/2"
1/2"	4 1/2"
5/8"	5 5/8"
3/4"	6 3/4"
7/8"	7 7/8"
1"	9"
1 1/4"	11 1/4"

MINIMUM EMBEDMENT FOR WEDGE-TYPE ANCHORS	
SIZE	EMBEDMENT
1/4"	3"
3/8"	3 1/2"
1/2"	4 3/4"
5/8"	5 1/2"
3/4"	6"

NOTE:
EMBEDMENT SHOWN IS FOR ANCHORS POST-INSTALLED INTO CONCRETE. FOR POST-INSTALLED ANCHORS INTO MASONRY, FOLLOW MANUFACTURER RECOMMENDATIONS.

POST-INSTALLED ANCHOR EMBEDMENT
(UNLESS NOTED OTHERWISE)

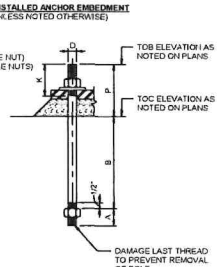
D = BOLT DIAMTER
K = THREADS (3D+3" SINGLE NUT)
THREADS (3D+3" DOUBLE NUTS)
P = BOLT PROJECTION



SCHEDULE				
D	A	B	SQUARE PL	REMARKS
5/8"	2"	8"	PL 1/2"x2 1/2" SQ	
3/4"	2"	10"	PL 1/2"x3" SQ	
7/8"	3"	1'-0"	PL 5/8"x3 1/2" SQ	
1"	3"	1'-2"	PL 5/8"x3 1/2" SQ	
1 1/8"	3"	1'-4"	PL 3/4"x4" SQ	
1 1/4"	3"	1'-6"	PL 3/4"x4 1/2" SQ	
1 3/8"	4"	1'-8"	PL 7/8"x5" SQ	
1 1/2"	4"	1'-10"	PL 7/8"x5 1/2" SQ	
1 3/4"	4"	2'-0"	PL 1"x6" SQ	
2"	4"	2'-2"	PL 1 1/4"x7" SQ	
2 1/4"	5"	2'-4"	PL 1 1/2"x7 1/2" SQ	
2 1/2"	6"	2'-6"	PL 1 3/4"x8 1/2" SQ	
2 3/4"	6"	2'-8"	PL 2"x9 1/2" SQ	
3"	7"	3'-0"	PL 2 1/4"x10" SQ	

TYPE II ANCHOR BOLT
UNSLEEVED BOLT

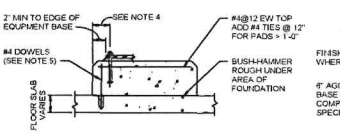
D = BOLT DIAMTER
K = THREADS (3D+3" SINGLE NUT)
THREADS (3D+3" DOUBLE NUTS)
P = BOLT PROJECTION



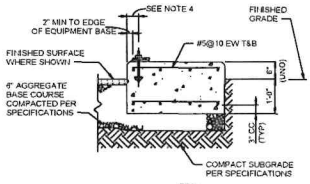
SCHEDULE			
D	A'	B	REMARKS
3/8"	2"	6"	
1/2"	2"	7"	
5/8"	2"	10"	
3/4"	2"	1'-0"	
7/8"	3"	1'-2"	
1"	3"	1'-4"	
1 1/8"	3"	1'-6"	
1 1/4"	3"	1'-8"	
1 3/8"	4"	1'-10"	
1 1/2"	4"	2'-0"	
1 3/4"	4"	2'-5"	
2"	4"	2'-10"	

NOTES:
1. * NOT REQUIRED FOR MACHINE BOLTS.
2. CONTRACTOR HAS OPTION OF USING HEADED MACHINE BOLTS IN LIEU OF THREADED RODS.
3. FULLY THREADED RODS ARE NOT PERMITTED.
4. MACHINE BOLTS SHALL CONFORM TO ASTM F1554, GRADE 36.

TYPE VII ANCHOR BOLT
THREADED ROD OR MACHINE BOLT

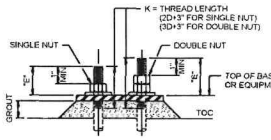


EP-1
SECTION
EQUIPMENT PAD FOUNDATION



EP-2
SECTION
EXTERIOR EQUIPMENT PAD FOUNDATION

NOTES:
1. PROVIDE EP-1 EQUIPMENT PAD FOUNDATION FOR EQUIPMENT WHEN OTHER FOUNDATIONS HAVE NOT BEEN INDICATED.
2. PROVIDE ANCHOR BOLTS AND GROUT AS REQUIRED BY EQUIPMENT MANUFACTURER.
3. EQUIPMENT PAD FOUNDATIONS SHALL CONFORM TO THIS DETAIL. EQUIPMENT MANUFACTURER'S REQUIREMENTS, AND THE FOLLOWING:
   A. REINFORCE PAD TO CONFORM WITH THIS DETAIL.
   B. EQUIPMENT SHALL BE GROUTED IN PLACE WITH NON-SHRINK GROUT, UNLESS OTHERWISE RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
   C. EQUIPMENT ANCHOR BOLTS SHALL BE STANDARD TYPE II ANCHOR BOLT, UNLESS OTHERWISE RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
4. DIMENSION SHALL BE 4-INCHES MINIMUM FOR PADS WITH 1-INCH OR LESS DIAMETER ANCHOR BOLTS, 6-INCHES MINIMUM FOR PADS WITH ANCHOR BOLTS GREATER THAN 1-INCH DIAMETER.
5. PROVIDE DOWELS AT 12-INCHES MINIMUM CENTER TO CENTER, OR PROVIDE NUMBER OF DOWELS TO EQUAL TOTAL CROSS SECTIONAL AREA OF ANCHOR BOLTS OF PAD, EQUALLY SPACED AROUND PAD. THE DOWELS SHALL BE INSTALLED USING AN ADHESIVE ANCHOR SYSTEM INTO THE FLOOR SLAB. DOWEL EMBEDMENT SHALL BE THE MAXIMUM OF THE TYPICAL POST-INSTALLED ANCHORD EMBEDMENT TABLE THIS SHEET AND THE SLAB THICKNESS MINUS 3 INCHES.
6. EXTERIOR EQUIPMENT PAD SHALL HAVE LIGHT BROOM FINISH.



EXTENSION TABLE DIM "E"		
AB DIA	SINGLE NUT	DOUBLE NUTS
5/8	2 1/4	2 3/4
3/4	2 1/4	3
7/8	2 1/2	3 1/2
1	2 3/4	3 3/4
1 1/8	3	4
1 1/4	3 1/4	4 1/2
1 3/8	3 1/4	4 3/4
1 1/2	3 1/2	5
1 3/4	4	5 3/4
2	4 1/4	6 1/4
2 1/4	4 3/4	7
2 1/2	5	7 1/2
2 3/4	5 1/2	8 1/4
3	5 3/4	8 3/4

ALL DIMENSIONS IN INCHES

ANCHOR BOLT PROJECTION
(FOR REFERENCE)

REINFORCING DEVELOPMENT AND SPLICES f'c=4500psi				
BAR SIZE	DEVELOPMENT LENGTH		SPLICE LENGTH	
	OTHER	TOP	OTHER	TOP
#3	1'-3"	1'-7"	1'-7"	2'-0"
#4	1'-3"	2'-1"	2'-1"	2'-8"
#5	2'-0"	2'-7"	2'-7"	3'-4"
#6	2'-5"	3'-1"	3'-1"	4'-0"
#7	3'-6"	4'-6"	4'-6"	5'-10"
#8	4'-0"	5'-2"	5'-2"	6'-8"
#9	4'-6"	5'-10"	5'-10"	7'-7"
#10	5'-1"	6'-7"	6'-7"	8'-6"
#11	5'-7"	7'-3"	7'-3"	9'-5"

TYPICAL REINFORCING DEVELOPMENT AND SPLICES

no.	date	by	ckd	description
B	8/4/23	KJR		ISSUED FOR INTERNAL REVIEW
C	8/14/23	KJR	JMV	ISSUED FOR PROCUREMENT
D	8/30/23	KJR	JMV	ISSUED FOR CLIENT REVIEW

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000165

date	detailed
MARCH 21, 2023	J. ANAYA
designed	checked
K. REPASKEY	J. WRONA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
STRUCTURAL STANDARD DETAILS

project	contract
154865	
drawing	rev.
S002	D
sheet	of sheets
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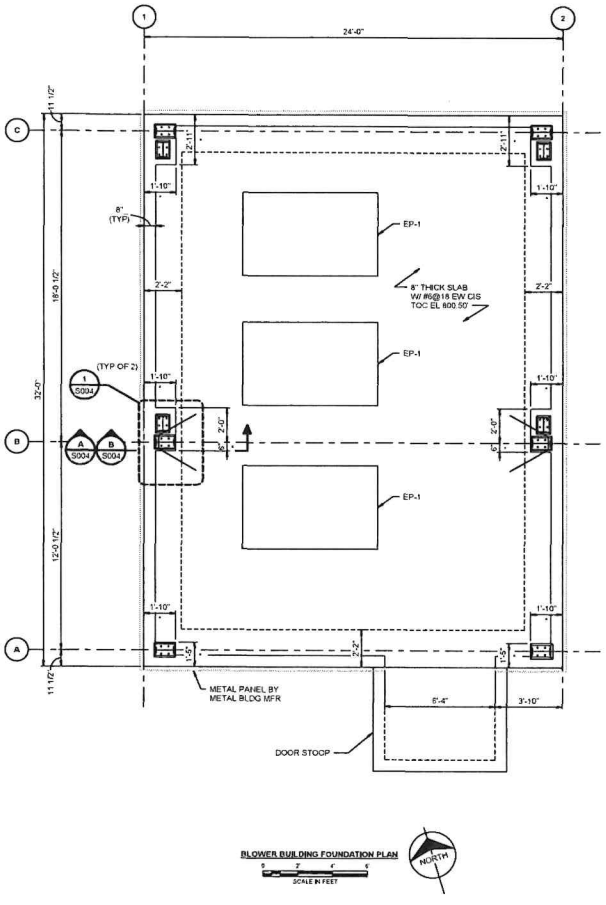

BLOWER BUILDING FOUNDATION PLAN

SCALE IN FEET

NORTH

DRAWING NOTES:

* CONCRETE PEDESTAL PLAN DIMENSIONS AT COLUMNS ARE PRELIMINARY AND SUBJECT TO CHANGE BASED ON FINAL BASEPLATE SIZES PROVIDED BY THE PRE-ENGINEERED METAL BUILDING SUPPLIER.

1. FOR STRUCTURAL GENERAL NOTES, SEE SHEET S001.
2. CONTRACTOR SHALL SUBMIT PROPOSED POUR SEQUENCE FOR REVIEW AND APPROVAL BY ENGINEER.
3. ANCHORS FOR THE METAL BUILDING COLUMNS SHALL BE IN ACCORDANCE WITH THE STANDARD ANCHOR BOLT DETAIL S002.
   A. ALL RIGID FRAME COLUMNS
      1. 3/4" DIA TYPE VII ANCHOR BOLTS
      2. SUPPLEMENTAL REINFORCEMENT REQUIRED, SEE ANCHOR REINFORCEMENT DETAIL ON SECTION B/S004.
      3. 1/4" THICK PLATE WASHERS REQUIRED, WASHERS TO BE PROVIDED BY METAL BUILDING MANUFACTURER, WASHERS SHALL BE WELDED TO BASEPLATE IN ACCORDANCE WITH AWS STANDARDS.
4. PORTAL FRAMES SHALL BE ACCOMMODATED ALONG FRAME LINES 1 AND 2 BETWEEN GRID LINES B AND C.

no.	date	by	ckd	description
B	8/4/23	KJR		ISSUED FOR INTERNAL REVIEW
C	8/14/23	KJR	JMV	ISSUED FOR PROCUREMENT
D	8/30/23	KJR	JMV	ISSUED FOR CLIENT REVIEW

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date	detailed
MARCH 23, 2023	J. ANAYA
designed	checked
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PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING FOUNDATION PLAN

project	contract
154865	

drawing **S003** – rev. **D**

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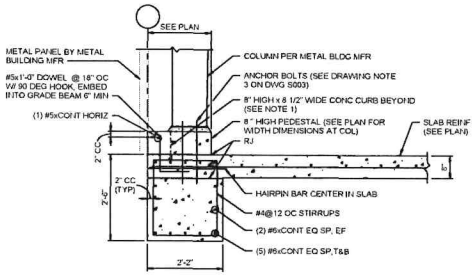
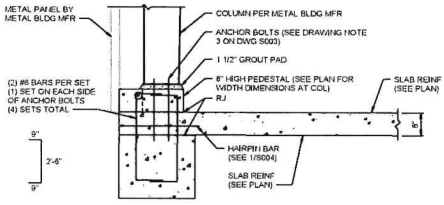




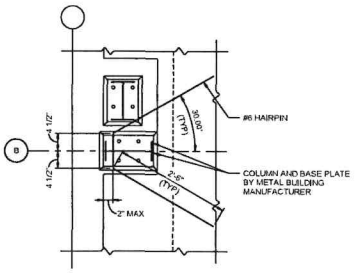
NOTES:

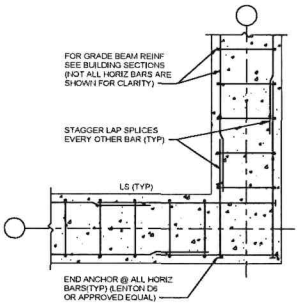
1. STOP CURB AT DOORWAYS.
2. SUBGRADE NOT SHOWN FOR CLARITY.
3. REINFORCE GRADE BEAM CORNERS PER DETAIL ON 2 THIS SHEET.
4. CONSTRUCTION JOINTS IN GRADE BEAM CAN BE ADDED AT SUBCONTRACTOR'S OPTION.
5. AT EXTERIOR SLAB EDGE CONDITIONS, EXTEND SLAB REINF INTO GRADE BEAM 2" CLEAR FROM OUTSIDE FACE.

NOTE:
REINFORCEMENT SHOWN SHALL BE IN ADDITION TO TYPICAL GRADE BEAM REINFORCEMENT. WHERE THE CONCRETE CURB DOES NOT OCCUR AT COLUMNS, ADJUST BAR SETS ACCORDINGLY.

SECTION A S003
0 1' 2' 3'
SCALE IN FEET

SECTION B S003
0 1' 2' 3'
SCALE IN FEET





DETAIL 1 S003
0 1/2" 1' 2'
SCALE IN FEET

DETAIL 2
0 1' 2' 3'
SCALE IN FEET

no.	date	by	ckd	description
C	8/14/23	KJR	JMW	ISSUED FOR PROCUREMENT
D	8/30/23	KJR	JMW	ISSUED FOR CLIENT REVIEW

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date	detailed
MARCH 23, 2023	J. ANAYA
designed	checked
K. REPASKEY	J. WRONA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING
SECTIONS AND DETAILS

project	contract
154865	

drawing S004 — rev. D

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VALVES SYMBOLS

- GATE (OR GENERIC)
- CHECK
- STOP CHECK
- GLOBE
- BUTTERFLY
- NEEDLE
- BALL
- GENERIC ROTARY (1/4 TURN)
- PLUG
- DIAPHRAGM
- 3-WAY
- 4-WAY
- PINCH
- ANGLE
- KNIFE
- SELF-CONTAINED PRESSURE REGULATING VALVE
- SURGE RELIEF VALVE
- AIR RELEASE VALVE
- MUD VALVE
- TELESCOPING VALVE

PIPING FITTINGS

- FLANGE (W/BLIND FLANGE)
- WELDED CONNECTION
- WELDOLET
- REMOVABLE CAP
- CONCENTRIC (OR GENERIC) REDUCER
- ECCENTRIC REDUCER
- HOSE CONNECTION
- SPACER
- BLANK
- OPEN FIGURE 8 BLIND
- CLOSED FIGURE 8 BLIND
- REMOVABLE PLUG
- COUPLING
- BLIND FLANGE

PIPING SPECIALTY ITEMS

- Y-TYPE STRAINER
- CONICAL STRAINER
- T-TYPE STRAINER
- DUPLEX STRAINER
- BFP — BACKFLOW PREVENTER
- BASKET STRAINER
- TEMPORARY STRAINER
- FILTER
- EJECTOR/EDUCTOR
- PULSATION DAMPENER
- SL — IN-LINE SILENCER
- VS — VENT SILENCER
- FLEXIBLE HOSE
- EXPANSION JOINT
- DAMPER
- BREATHER
- IN-LINE MIXER
- DIVERTER VALVE
- ROTARY VALVE
- EXCESS FLOW VALVE
- EXHAUST HEAD
- DRAIN
- DIFFUSER
- VENT TO ATMOSPHERE OR EXTERIOR
- PIPE WITH HEATING CABLE
- DEMISTER
- DESTRUCT CATAYST
- CALIBRATION COLUMN
- COOLING COILS
- OPEN DRAIN
- AIR GAP
- VENT

- VACUUM REGULATOR VALVE
- ROTAMETER
- SLIDE GATE
- WEIR PLATE
- PARSHALL FLUME
- VOLUMETRIC FLOW METER
- CHEMICAL SEAL/DIAPHRAGM
- M — ELECTRICALLY ACTUATED VALVE
- M — MAGNETIC FLOW METER

MISCELLANEOUS SYMBOLS

- M — MOTOR OPERATED
- POSITIVE DISPLACEMENT BLOWER

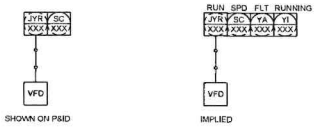
DRIVERS

- MOTOR

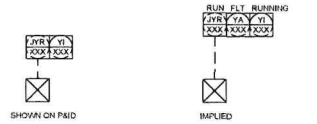
MISCELLANEOUS

- AGITATOR / MIXER

TYPICAL VARIABLE FREQUENCY DRIVE CONTROLS



TYPICAL MOTOR STARTER CONTROLS



NOTES:

1. THIS LEGEND IS TAKEN FROM A STANDARD PROCESS LEGEND AND NOT ALL ITEMS OR EQUIPMENT AS DESIGNATED HEREON ARE USED ON THIS PROJECT.
2. SOME ABBREVIATIONS MAY NOT BE USED.

no.	date	by	ckd	description
A	6/9/23	JMM		ISSUED FOR PROCUREMENT
B	6/14/23	JMM		ISSUED FOR PROCUREMENT
C	6/30/23	JMM	AW	ISSUED FOR CLIENT REVIEW

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BURNS McDONNELL
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date	detailed
APRIL 5, 2023	C. JENSEN
designed	checked
J. MACADAMS	

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
P&ID LEGEND AND ABBREVIATIONS SHEET 1

project	contract
154865	

drawing **DI001** – rev. **C**

sheet of sheets
file

INSTRUMENT SOCIETY OF AMERICA

LETTER	FIRST LETTER(S)		SUCCEEDING LETTER		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (*)		ALARM		
B	BURNER, COMBUSTION		USERS CHOICE (*)	CLOSE,STOP,DECREASE	USERS CHOICE (*)
C	CONDUCTIVITY			CONTROL	CLOSED
D	DENSITY (SG)	DIFFERENTIAL		OPEN,START,INCREASE	
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)	EMERGENCY	
F	FLOW RATE	RATIO/BIAS			
G	GAUGE		GLASS, VIEWING	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (AMPS)		INDICATE		
J	POWER	SCAN			
K	TIME, SCHEDULE	RATE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE, MOTOR	MOMENTARY			MIDDLE, INTRMDT
N	TORQUE		USERS CHOICE (*)	ISOLATOR	ON, OPERATE
O	USERS CHOICE (*)		ORIFICE		OPENED
P	PRESSURE, VAC		POINT (TEST CONN)		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD, PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (*)		MULTIFUNCTIONAL (*)		
V	VIBRATION			VALVE, DAMPER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (*)	X-AXIS	UNCLASSIFIED (*)	TRANSDUCER	
Y	EVENT, STATE (*)	Y-AXIS		RELAY, COMPUTER	
Z	POSITION	Z-AXIS		DRIVE, ACTUATOR	

(*) WHEN USED EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL.

PLC I/O SYMBOLS

OIT — OPERATOR INTERFACE TERMINAL

INSTRUMENT AND FUNCTION SYMBOLS

- XX / YYY — INSTRUMENT, FIELD MOUNTED
- XX / YYY — INSTRUMENT, PRIMARY LOCATION
- XX / YYY — SHARED DISPLAY, SHARED CONTROL, FIELD MOUNTED
- XX / YYY — SHARE DISPLAY, SHARED CONTROL, PRIMARY LOCATION
- INTERLOCK LOGIC
- ULTRASONIC
- RADAR
- FLOAT LEVEL SWITCH
- M — MAGNETIC FLOW METER
- MT — THERMAL MASS FLOW METER
- ROTAMETER

INSTRUMENT IDENTIFICATION

TAG NUMBER: AAA-BBB-XX-YYY

- LOCATION DESIGNATOR
- EQUIPMENT DESIGNATOR
- ISA FIRST LETTER
- INSTRUMENT/LOOP NUMBER

BBB ZZZ BBB ZZZ BBB ZZZ (XX / YYY)

XX = INSTRUMENT TYPE
YYY = NUMBER
ZZZ = DESCRIPTOR

CL	CLOSE
COMB	COMBUSTION (LEL)
DO	DISSOLVED OXYGEN
ES	EMERGENCY STOP
FAIL	FAILURE
FDR	FOWARD
FR	FORWARD-REVERSE
HA	HAND-AUTO
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
IAS	INSTRUMENT AIR SUPPLY
L	LOCAL
LOR	LOCAL-OFF-REMOTE
LR	LOCAL-REMOTE
LWCO	LOW WATER CUT OFF
OP	OPEN
O/C	OPEN-CLOSE
OL	OVERLOAD
O/C/A	OPEN-CLOSE-AUTO
O/O	ON-OFF
O/S/C	OPEN-STOP-CLOSE
ORP	OXIDATION-REDUCTION POTENTIAL
REV	JOG-REVERSE
RUN	RUNNING
S/S	START-STOP
STR	START
STP	STOP

MOTOR STARTER SYMBOLS

- MOTOR STARTER
- VFD — VARIABLE FREQUENCY DRIVE
- RVSS — REDUCED VOLTAGE SOLID-STATE STARTER

LINESTYLES AND INTERFACE SYMBOLS

- PROCESS LINE
- ELECTRICAL SIGNAL (ANALOG)
- ELECTRICAL SIGNAL (DISCRETE) (0.5)
- ELECTRICAL SIGNAL (POWER)
- SOFTWARE OR DATA LINK (1.75)
- SPECIAL SIGNAL CABLE (1.5)
- PNEUMATIC SIGNAL
- CABINET BOUNDARY
- EQUIPMENT OR SKID BOUNDARY
- FUTURE EQUIPMENT BOUNDARY
- DIRECTION OF FLOW
- SIGNAL CONNECTION
- CROSSOVER - NO CONNECTION

PROCESS

CONNECTOR NUMBER → SERVICE DESCRIPTION / NO. P&ID NO. / ORIGIN/ESTINATION

INTERFACE FROM PROCESS NOT SHOWN

SIGNAL

CONNECTOR NUMBER → SERVICE DESCRIPTION / NO. P&ID NO. / ORIGIN/ESTINATION

INTERFACE FROM PROCESS EXTERNAL TO PROJECT

BROKEN SIGNAL LINE
X = SAME SHEET DESTINATION NO.

CONTROL INTERLOCK

EQUIPMENT TAG NAME STRUCTURE

AAA - BBB - X X Y Z

- FACILITY AREA OR SYSTEM IDENTIFIER (SEE TABLE BELOW)
- EQUIPMENT/INSTRUMENT IDENTIFIER (SEE TABLE BELOW)
- LOOP NUMBER
- TRAIN
- UNIT NUMBER
- UNIT MODIFIER (WHEN APPLICABLE)

FACILITY AREA OR SYSTEM IDENTIFIER

IDENTIFIER (AAA)	IDENTIFIER DESCRIPTION
AER	AERATION - COMMON
CLR	CLARIFIER - COMMON
CLR1	CLARIFIER 1
CLR2	CLARIFIER 2
CLR3	CLARIFIER 3
BLW	BLOWER ELECTRICAL BUILDING
FNL	FINAL CLARIFIERS
RAS	RETURN ACTIVATED SLUDGE

EQUIPMENT IDENTIFIER

IDENTIFIER (BBB)	IDENTIFIER DESCRIPTION
AC	AIR COMPRESSOR
ACP	ACCESS CONTROL PANEL
AD	AIR DRYER
AS	ACOUSTIC SILENCER
ATS	AUTOMATIC TRANSFER SWITCH
B	BLOWER
BFV	BUTTERFLY VALVE
BV	BALL VALVE
C	COMPRESSOR
CB	CIRCUIT BREAKER
CC	CALIBRATION COLUMN
CD	CONTROL DAMPER
CP	CONTROL PANEL
CS	CONTROL STATION
CU	CONDENSING UNIT
CV	CHECK VALVE
CW	CLEAR WELL
DRV	DRIVE / DRIVE MOTOR
DS	DISCONNECT SWITCH
EPS	ELECTRIC DUCT HEATER
ES	EMERGENCY STOP
FCV	FLOW CONTROL VALVE
GAS	HAZARDOUS GAS
GEN	GENERATOR
GT	GRAVITY THICKENER
GV	GATE VALVE
HS	HAND SWITCH
LAG	LAGOONS
LC	LIGHTING CONTACTOR
LCP	LOCAL CONTROL PANEL
LS	LIMIT SWITCH
M	MOTOR
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
MCV	MOTOR OPERATED CONTROL VALVE
MP	METERING PUMP
MS	MOTOR STARTER
MXR	MIXER
NET	NETWORK EQUIPMENT RACK
NSW	NETWORK SWITCH
OIT	OPERATOR INTERFACE TERMINAL
OWS	OPERATOR WORKSTATION
P	PUMP
PCHV	PINCH VALVE
PCS	PLANT CONTROL SYSTEM
PD	PULSATION DAMPER
PDP	POWER DISTRIBUTION PANEL
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	LIGHTING PANEL
PP	POWER PANEL
PRV	PRESSURE REDUCING VALVE
PSU	POWER SUPPLY UNIT
PV	PLUG VALVE
RAW	RAW WATER SPLITTER
REG	REGULATOR
RO	ROTAMETER
SA	SODA ASH SILOS
SCA	SCALE
SF	SUPPLY FAN
SG	SLIDE GATE
SHK	SHAKER/VIBRATOR
SMP	SAMPLER
SOP	SOFTENING BASINS
SP	SUMP PUMP
SRV	SURGE RELIEF VALVE
ST	COMBINATION STARTER
STG	STOP GATE
STR	STRAINER
SV	SOLENOID VALVE
SVR	SERVER
SWBD	SWITCHBOARD
SWG	SWITCHGEAR
TK	TANK
TV	TELESCOPING VALVE
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VALVE
VAP	VAPORIZER
VFD	VARIABLE FREQUENCY DRIVE
WW	WASH WATER HOLDING
XF	TRANSFORMER

LOOP NUMBERS

PRECEDING DIGIT (XXX)	CONTROL FUNCTION
000	NO CONTROLLING FUNCTION
100	LEVEL CONTROLLED EQUIPMENT
200	FLOW CONTROLLED EQUIPMENT
300	ANALYTICAL CONTROLLED EQUIPMENT
400	PRESSURE CONTROLLED EQUIPMENT
500	TEMPERATURE CONTROLLED EQUIPMENT
600	WEIGHT CONTROLLED EQUIPMENT
700	TIMER CONTROLLED EQUIPMENT
800	HAND (OPERATOR) CONTROLLED EQUIPMENT
900	POSITION CONTROLLED EQUIPMENT

NOTES:

1. THIS LEGEND IS TAKEN FROM A STANDARD PROCESS LEGEND AND NOT ALL ITEMS OR EQUIPMENT AS DESIGNATED HEREON ARE USED ON THIS PROJECT.
2. SOME ABBREVIATIONS MAY NOT BE USED.

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C	8/30/23	JMM	AW	ISSUED FOR CLIENT REVIEW

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APRIL 5, 2023	C. JENSEN
designed	checked
J. MACADAMS	

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Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
P&ID LEGEND AND ABBREVIATIONS SHEET 2

project	contract
154865	

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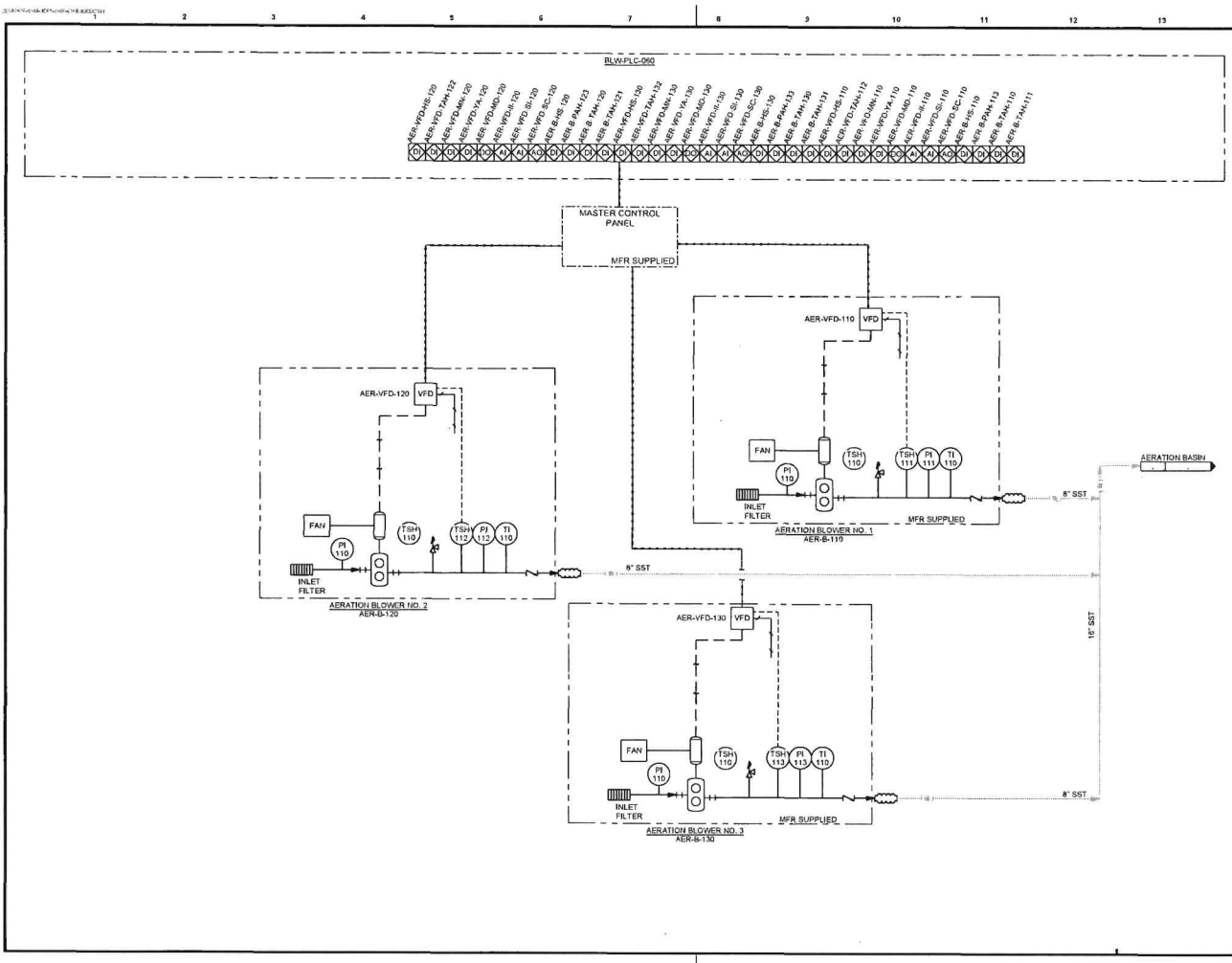

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CENTRAL WWTP AERATION IMPROVEMENTS
BLOWERS P&ID

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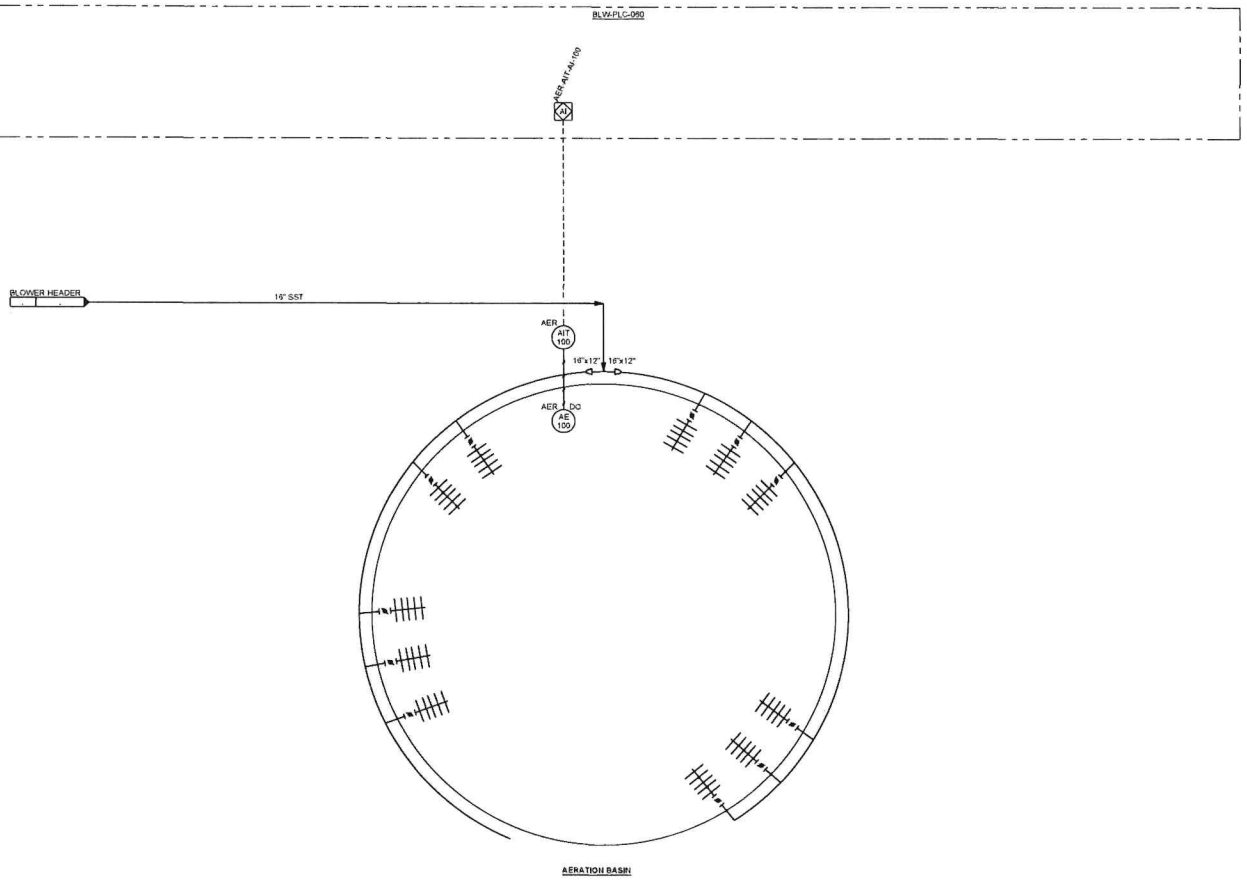

AERATION BASIN

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CENTRAL WWTP AERATION IMPROVEMENTS
AERATION BASIN P&ID

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PIPING

- GATE VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- STOP CHECK VALVE
- AUTOMATIC RECIRCULATION CHECK VALVE
- PLUG VALVE
- 3-WAY PLUG VALVE (2-PORT)
- 3-WAY PLUG VALVE (3-PORT)
- 4-WAY PLUG VALVE (4-PORT)
- 3-WAY VALVE
- ANGLE VALVE
- RELIEF OR SAFETY VALVE
- HOSE GATE DRAIN VALVE
- PINCH VALVE
- NEEDLE VALVE
- DIAPHRAGM VALVE
- BALL VALVE
- SELF-CONTAINED PRESSURE REDUCING (REGULATING VALVE)
- SURGE RELIEF VALVE
- KNIFE GATE VALVE
- CORPORATION STOP
- AIR RELEASE VALVE
- VACUUM VALVE
- AIR AND VACUUM VALVE
- LOCKED OPEN
- LOCKED CLOSED

VALVE OPERATORS

- C CYLINDER
- D DIAPHRAGM
- M MOTOR
- S SOLENOID
- HW DIAPHRAGM WITH HANDWHEEL
- CHAINWHEEL
- F FLOAT

- BP BACKFLOW PREVENTER
- VB VACUUM BREAKER
- MS MOISTURE SEPARATOR
- M IN-LINE FLOW METER
- SIGHT FLOW INDICATOR
- FLEXIBLE HOSE
- EXPANSION ELEMENT (JOINT)
- FLEXIBLE BALL JOINT
- BASKET TYPE STRAINER
- TEE TYPE STRAINER
- Y-TYPE STRAINER
- CONICAL STRAINER
- DUPLEX STRAINER
- STEAM TRAP ASSEMBLY
- SLEEVE COUPLING (SC)
- HARNESSED SLEEVE COUPLING (HSC)
- INSULATED SLEEVE COUPLING (ISC)
- FLANGED COUPLING ADAPTER (FCA)
- DRAINER ASSEMBLY
- SAMPLE COOLER
- INSULATING FLANGE (IF)
- RESTRICTING ORIFICE
- STRAIGHTENING VANE
- RUPTURE DISK
- PIPE GUIDE
- PIPE WITH HEATING CABLE
- DRIP POCKET ASSEMBLY
- UFRON
- PIPE ANCHOR
- REDUCER
- DISCHARGE ELBOW ASSEMBLY
- REMOVABLE PLUG
- REMOVABLE CAP
- WELDED CAP
- BF BLIND FLANGE
- CO CLEANOUT
- YH YARD HYDRANT
- AC AIR COCK
- HB HOSE BIBB
- WH WALL HYDRANT
- QUICK DISCONNECT COUPLING
- EXHAUST TO ATMOSPHERE (INSIDE)
- EXHAUST TO ATMOSPHERE (OUTSIDE)

PIPING ABBREVIATIONS

B x S	BELL AND SPIGOT	NPW	NON-POTABLE WATER
CL	CENTERLINE	PE	PLAIN END
CV	CHECK VALVE	PS	PIPE SUPPORT
DIA	DIAMETER	PV	PLUG VALVE
DIP	DUCTILE IRON PIPE	RAS	RETURN ACTIVATED SLUDGE
DJ	DISMANTLING JOINT	RCP	REINFORCED CONCRETE PIPE
DN	DOWN	SFP	SLUDGE FEED PUMP
EL	ELEVATION	SW	SOLVENT WELD
FCA	FLANGED COUPLING ADAPTER	UV	ULTRAVIOLET
FM	MAGNETIC IN-LINE FLOW METER	TYP	TYPICAL
GR	GRINDER	WAS	WASTE ACTIVATED SLUDGE
INV	INVERT	WP	WALL PIPE
MGD	MILLION GALLONS PER DAY		
MJ	MECHANICAL JOINT		
MV	MIXING VALVE		

INSTRUMENTS

- FLOW METERING ELEMENT
- GG - GAUGE GLASS
  LI - LEVEL INDICATOR
  LC - LEVEL CONTROLLER
  LLS - LIQUID LEVEL SWITCH
  LX - LEVEL TRANSMITTER
  FI - FLOW INDICATOR
  FC - FLOW CONTROLLER
  FS - FLOW SWITCH
  FX - FLOW TRANSMITTER
- T - THERMOMETER
  TC - THERMOCOUPLE
  TCT - TEMPERATURE CONTROLLER
  TS - TEMPERATURE SWITCH
  TX - TEMPERATURE TRANSMITTER
  RTD - RESISTANCE TEMPERATURE DETECTOR
- P - PRESSURE GAUGE
  PC - PRESSURE CONTROLLER
  PS - PRESSURE SWITCH
  PX - PRESSURE TRANSMITTER
- P - DIFFERENTIAL PRESSURE GAUGE
  P - DIFFERENTIAL PRESSURE CONTROLLER
  P - DIFFERENTIAL PRESSURE SWITCH
  P - DIFFERENTIAL PRESSURE TRANSMITTER
- TC - TEST CONNECTION
  PT - PRESSURE TAP
  SAMPLE CONNECTION
- CONTROL FUNCTION LINE

NOTE:
THIS LEGEND IS TAKEN FROM A STANDARD MECHANICAL LEGEND AND NOT ALL ITEMS OR EQUIPMENT AS DESIGNATED HEREON ARE USED ON THIS PROJECT

GENERAL NOTES

1. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION OF ALL UTILITIES WITH THEIR RESPECTIVE OWNER'S AS REQUIRED PRIOR TO BEGINNING WORK TO PREVENT DAMAGE BY CONTRACTOR'S OPERATION.
2. CONTRACTOR SHALL EXPOSE ALL UTILITIES TO VERIFY LOCATION AND DEPTHS PRIOR TO CONSTRUCTION. LOCATIONS AND ELEVATIONS SHALL BE RECORDED ON CONSTRUCTION RECORD DRAWINGS.
3. THE CENTERLINE COORDINATES SHOWN FOR THE YARD PROCESS PIPING LAYOUT DESIGN ALIGNMENTS ARE FOR GENERAL HORIZONTAL LAYOUT LOCATION AND ORIENTATION. THE ACTUAL LOCATION OF THE EXISTING FEATURE MAY VARY FROM FIELD LOCATION. CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO STAKING YARD PROCESS PIPING ALIGNMENTS.
5. CONTRACTOR SHALL LIMIT HIS WORK AREA TO PERMANENT PLANT SITE PROPERTY AS SHOWN FOR CONSTRUCTION OF THE PROJECT. NO ADDITIONAL TEMPORARY CONSTRUCTION EASEMENTS EXIST UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL OBTAIN ANY ADDITIONAL TEMPORARY EASEMENTS THAT HE DEEMS NECESSARY FOR CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.
7. CONTRACTOR SHALL PROVIDE PROTECTION TO PREVENT UNDERMINING OR DAMAGING THE STRUCTURAL INTEGRITY OF ALL POWER POLES, FENCES, BLOCK WALLS, SCREEN WALLS, RETAINING WALLS OR OTHER UTILITY POLES THAT PARALLEL OR CROSS THE YARD PROCESS PIPING DESIGN LAYOUTS, AND MAKE ARRANGEMENTS WITH THE OWNING UTILITY AS REQUIRED TO PROVIDE TEMPORARY SUPPORT OR PROTECTION DURING CONSTRUCTION WORK.
8. CONTRACTOR SHALL TAKE ALL APPROPRIATE STEPS TO MAINTAIN CONTINUAL SERVICE OF UTILITIES. CONTRACTOR SHALL PROVIDE SUPPORT AND PROTECTION OF ALL UTILITY LINES TO PREVENT UNDERMINING OR DAMAGING OF THE UTILITY LINES DURING CONSTRUCTION. METHOD OF CROSSING AND/OR SUPPORT OF UTILITIES SHALL BE APPROVED BY UTILITY OWNER. SUPPORT OF UTILITY LINES, POWER POLES, FENCES, HIGHWAY SIGNS OR OTHER UTILITY SIGNS SHALL BE CONSIDERED AS SUBSIDIARY TO YARD PROCESS PIPING CONSTRUCTION.
9. MAINTAIN THE MAXIMUM SEPARATION DISTANCE POSSIBLE BETWEEN WATER MAINS, SEWER LINES AND OTHER UTILITY LINES. SOME MINOR DEVIATION OF THE PIPING DESIGN LAYOUT ALIGNMENTS MAY BE ALLOWED DEPENDING ON ACTUAL LOCATION OF EXISTING WATER, SEWER AND UTILITY LINES.
10. REMOVE ASPHALT AND CONCRETE ROADS AS REQUIRED FOR CONSTRUCTION PURPOSES. RESTORE ALL REMOVED OR DAMAGED ITEMS TO CONDITION EQUAL TO OR BETTER THAN CONDITION BEFORE START OF WORK.
11. ALL GRAVEL DRIVES AND GRAVEL ROADS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED WITH A MINIMUM OF EIGHT (8) INCH THICKNESS OF GRANULAR BACKFILL.
12. CONTRACTOR SHALL SEED ALL OTHER NON-PAVED AREAS DISTURBED BY CONSTRUCTION.
13. CONTRACTOR SHALL TAKE APPROPRIATE STEPS TO PREVENT EROSION OF EARTHWORK AND DEPOSITION OF SEDIMENTS INTO WATER COURSES OR DRAINAGE SWALES.

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date: MAY 16, 2023 | detailed: C JENSEN
designed: J. MACADAM | checked:

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CENTRAL WWTP AERATION IMPROVEMENTS
PROCESS LEGEND, GENERAL NOTES AND ABBREVIATIONS

project: 154865 | contract:
drawing: D001 | rev.: C
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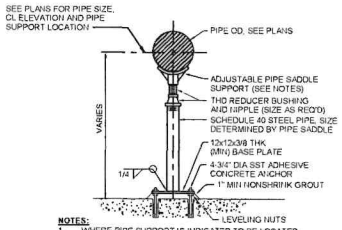
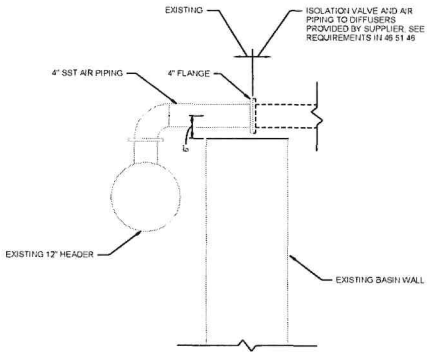


NOTES:

1 WHERE PIPE SUPPORT IS INDICATED TO BE LOCATED UNDER VALVE, PROVIDE ADJUSTABLE PLATE SUPPORT IN LIEU OF SADDLE SUPPORT

2 PROVIDE STAINLESS STEEL SUPPORTS FOR STAINLESS STEEL PROCESS AND MECHANICAL PIPING. ALL STAINLESS STEEL SHALL NOT BE COATED.

PS01 - PIPE SUPPORT



AIR HEADER CONNECTION DETAIL
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PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
PROCESS STANDARD DETAILS

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BLOWER BUILDING

1 VENTILATION SYSTEM

1.1 BLOWER BUILDING

THE BLOWER BUILDING VENTILATION SYSTEM SHALL OPERATE INTERMITTENTLY. THE SYSTEM SHALL BE CONTROLED BY ITS RESPECTIVE SPACE TEMPERATURE TRANSMITTER. THE TEMPERATURE TRANSMITTER SIGNAL SHALL BE SENT TO THE PLC AND THE PLC WILL RELAY THE SIGNAL TO THE VFD. MODERATE THE FAN SPEED, AND OPEN THE CONTROL DAMPERS WHEN THE SYSTEM IS ENERGIZED. FAN SPEED WILL BE CONTROLLED BY A TEMPERATURE TRANSMITTER PROGRAMMED IN THE BFD USING A PID LOOP. THE ROOM TEMPERATURE SETPOINT SHALL BE 50 DEG. IF THE ROOM TEMPERATURE DROPS BELOW 85 DEG, SHUT OFF THE FAN AND CLOSE THE DAMPERS. BEFORE THE SYSTEM IS ENERGIZED IN ANY MODE OF OPERATION. THE CONTROL DAMPERS SHALL BE PROVEN FULLY OPEN. WHEN THE AHU IS DE-ENERGIZED, THE CONTROL DAMPER SHALL CLOSE.

LOCATION	CONTROL DAMPERS	EXHAUST FAN	TEMPERATURE TRANSMITTER
BLOWER BUILDING	BLW-CD-001 BLW-CD-002	BLW EF 001	BLW TIT-001

EXHAUST FANS										
MOUNTING LOCATION	BOD MANUFACTURER	BOD MODEL NO.	MATERIAL	DRIVE TYPE	CFM	ESP (IN. W.C.)	MOTOR HP	WEIGHT (LBS)	V/PH/HZ	NOTES
WALL	GREENHECK	SBCE-3H30-15	GALVANIZED STEEL	BELT	6,600	0.5	1.5	308	480/60/3	NONE

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CENTRAL WWTP AERATION IMPROVEMENTS

BLOWER BUILDING SEQUENCE OF OPERATIONS AND SCHEDULES

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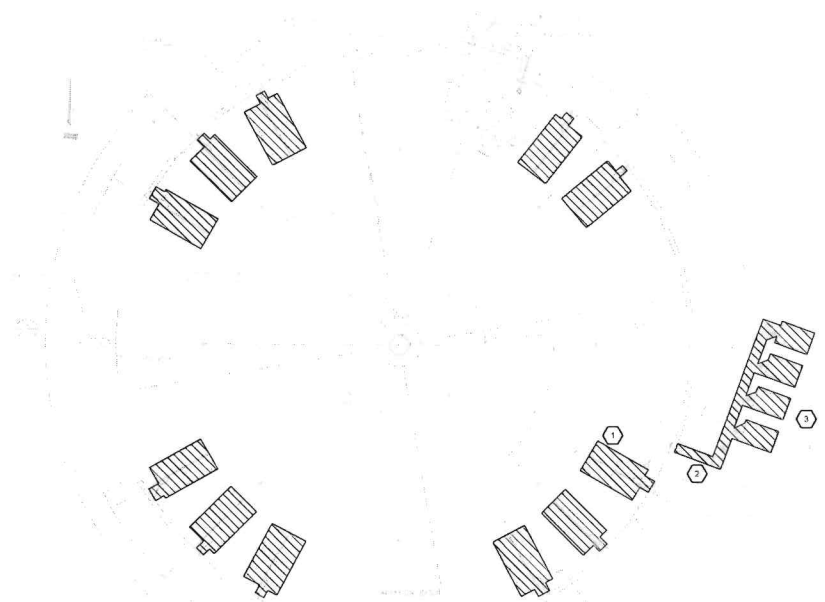
GENERAL DEMOLITION NOTES:

1. SUBCONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING THE EXISTING UTILITIES, STRUCTURE, PIPING, VALVES AND OTHER ITEMS NOT DESIGNATED TO BE DEMOLISHED.
2. EXISTING INFORMATION IS BASED ON 1996 CENTRAL WASTEWATER TREATMENT PLANT IMPROVEMENTS DRAWINGS PREPARED BY E.T. ARCHER CORPORATION. DRAWINGS TO BE USED FOR REFERENCE ONLY.
3. SUBCONTRACTOR TO COORDINATE WITH CONTRACTOR FOR ANY DISRUPTION TO PLANT OPERATIONS.

KEYED NOTES:

1. SUBCONTRACTOR TO REMOVE AND DEMOLISH EXISTING DIFFUSER RACKS INCLUDING DIFFUSERS, BALLASTS, GUIDE RAILS, GUIDE RAIL ANCHORS AND SUPPORTS, CRANE/MUCH ASSEMBLY, FLEXIBLE HOSE ASSEMBLY, AND PIPING UP TO THE 4" FLANGE. SEE PHOTO DETAIL ON DD005 (TYP 11)
2. SUBCONTRACTOR TO DEMOLISH EXISTING AIR HEADER PIPING FROM 16" FLANGE (IN VERTICAL) TO 16" BLIND FLANGE. SEE PHOTO DETAIL ON DD005
3. SUBCONTRACTOR TO DEMOLISH EXISTING BLOWER SKIDS AND ASSOCIATED DISCHARGE PIPING TO EXISTING AIR HEADER WYES. SEE PHOTO DETAIL ON DD005



DEMO PLAN

0 8' 16' 24'
SCALE IN FEET

NORTH

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CENTRAL WWTP AERATION IMPROVEMENTS
AERATION BASIN AND BLOWER PIPING
DEMO PLAN

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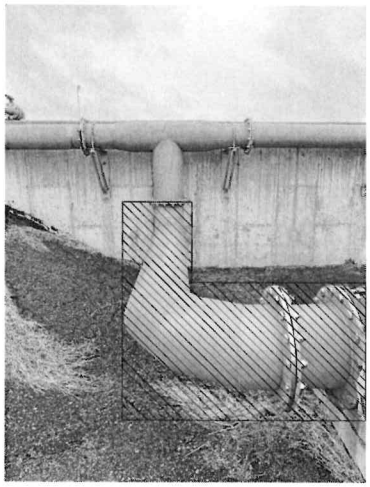
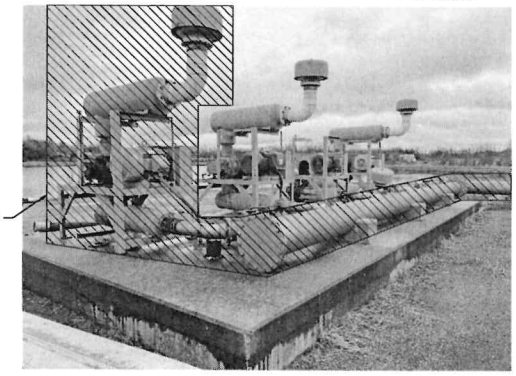
DIFFUSER RACK PIPING AND WINCH DEMOLITION
NOT TO SCALE



AIR HEADER PIPING DEMOLITION
NOT TO SCALE



BLOWERS AND PIPING DEMOLITION
NOT TO SCALE

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CENTRAL WWTP AERATION IMPROVEMENTS
AERATION BASIN AND BLOWER PIPING DEMO DETAILS

project	contract
154865	

drawing **DD005** rev. **C**

sheet of sheets
file

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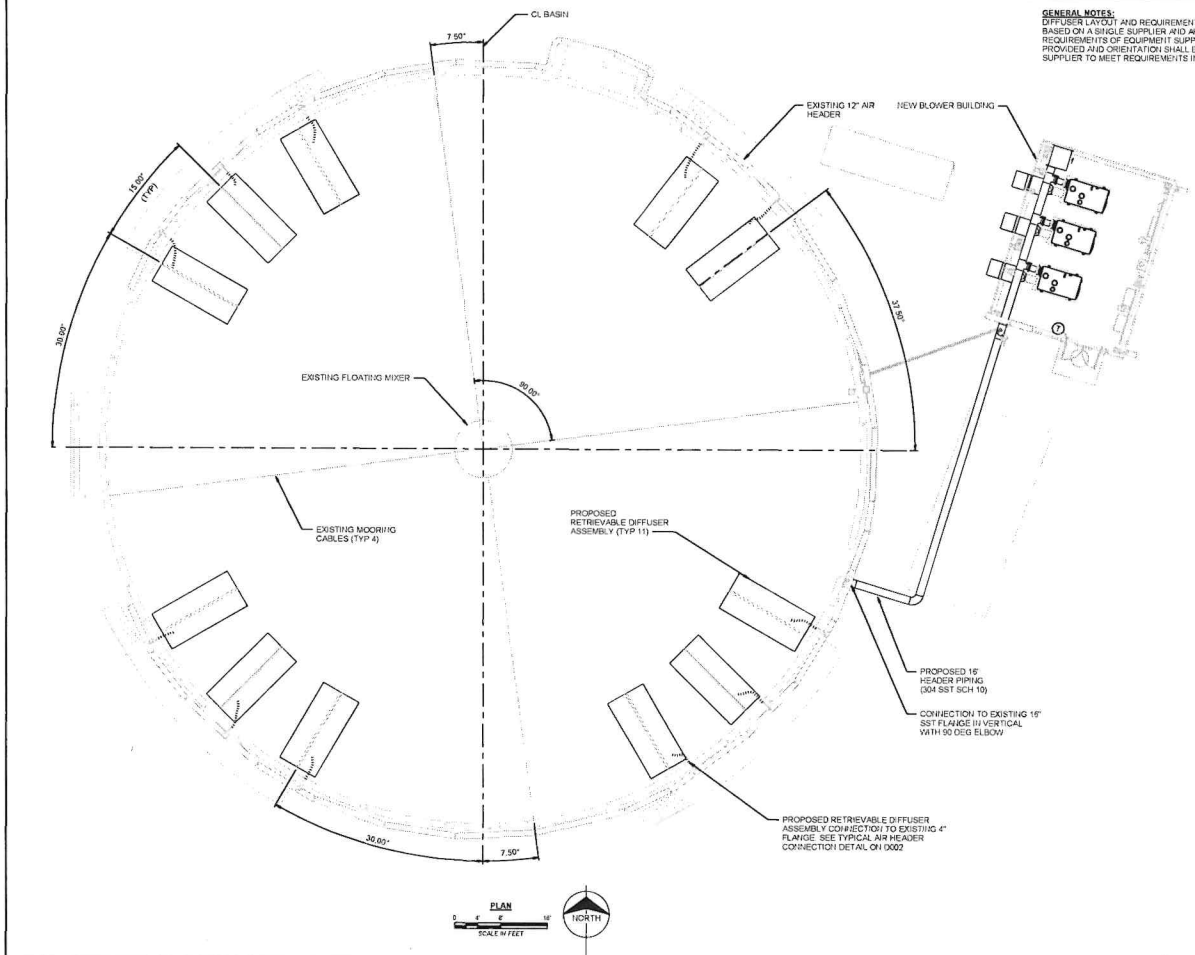

GENERAL NOTES:
DIFFUSER LAYOUT AND REQUIREMENTS SHOWN ARE BASED ON A SINGLE SUPPLIER AND ARE SUBJECT TO REQUIREMENTS OF EQUIPMENT SUPPLIED. EQUIPMENT PROVIDED AND ORIENTATION SHALL BE AS REQUIRED BY SUPPLIER TO MEET REQUIREMENTS IN SECTION 46 51 46

no	date	by	ckd	description
A	6/9/23	JMM		ISSUED FOR PROCUREMENT
B	8/4/23	JMM		ISSUED FOR INTERNAL REVIEW
C	8/14/23	JMM	AW	ISSUED FOR PROCUREMENT
D	8/30/23	JMM	AW	ISSUED FOR CLIENT REVIEW

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 002165

date	detailed
MARCH 2, 2023	C. JENSEN
designed	checked
J. MACADAM	A. WADDOUPS

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
AERATION BASIN AND BLOWER PIPING PLAN

project	contract
154865	

drawing **D006** rev. **D**

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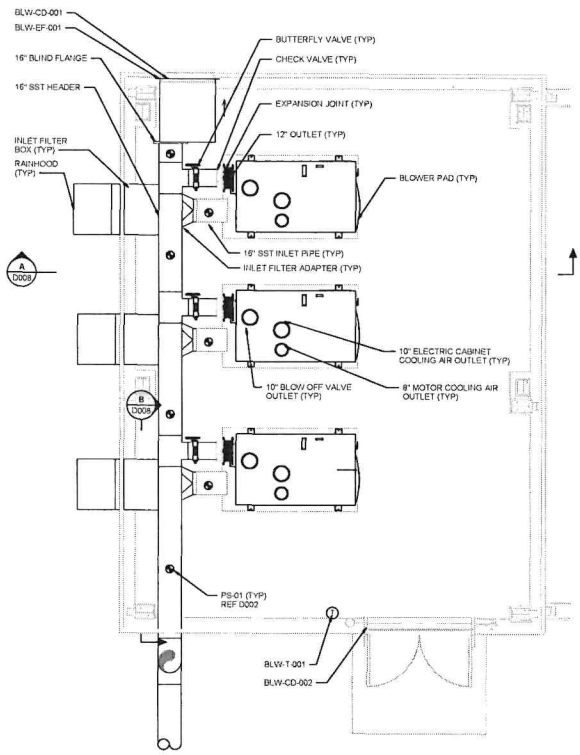
8/30/2023 4:49:59 PM Autodesk Docs://154865_Sedalia Central Plant I154865_Aeration Basin_D_R22.rvt

GENERAL NOTES:

1. BLOWER AND PIPING LAYOUT AND REQUIREMENTS SHOWN ARE BASED ON A SINGLE SUPPLIER AND ARE SUBJECT TO REQUIREMENTS OF EQUIPMENT SUPPLIED. EQUIPMENT PROVIDED AND ORIENTATION SHALL BE AS REQUIRED BY SUPPLIER TO MEET REQUIREMENTS IN SECTION 43 11 33. SUBCONTRACTOR TO ADJUST AIR PIPING ELEVATION AND CONFIGURATION ACCORDINGLY
2. AIR PIPING TO BE 304 STAINLESS STEEL SCH 10 UNLESS OTHERWISE NOTED



BLOWER BUILDING FLOOR PLAN

0 2 4 8
SCALE IN FEET

NORTH

no.	date	by	ckd	description
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B	8/4/23	JMM		ISSUED FOR INTERNAL REVIEW
C	8/14/23	JMM	AW	ISSUED FOR PROCUREMENT
D	8/30/23	JMM	AW	ISSUED FOR CLIENT REVIEW

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BURNS McDONNELL
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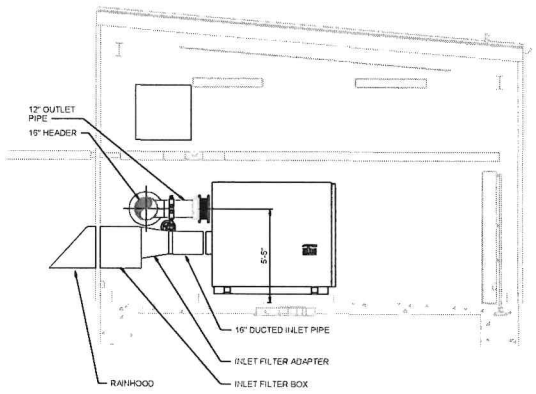
date	detailed
APRIL 3, 2023	C. JENSEN
designed	checked
J. MACADAM	A. WADDOUPS

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

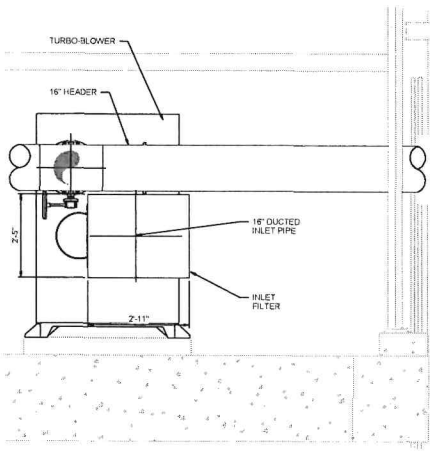
CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING PIPING FLOOR PLAN

project	contract
154865	
drawing	rev.
D007 –	D
sheet	of sheets
file	

GENERAL NOTES:
AIR PIPING TO BE 304 STAINLESS STEEL SCH 10 UNLESS OTHERWISE NOTED



SECTION A D007
0 2' 4' 6'
SCALE IN FEET



SECTION B D007
0 1' 2' 3'
SCALE IN FEET

no.	date	by	ckd	description
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B	8/14/23	JMM	AW	ISSUED FOR PROCUREMENT
C	8/30/23	JMM	AW	ISSUED FOR CLIENT REVIEW

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BURNS McDONNELL
9400 WARD PARKWAY
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Burns & McDonnell Engineering Co., Inc
LICENSE NO. 000165

date	detailed
AUGUST 7, 2023	C JENSEN
designed	checked
J. MACADAM	A. WADDOUPS

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING SECTIONS

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ONE-LINE AND CONTROL DIAGRAMS

LINES AND TERMINALS

- POWER CIRCUIT AND EQUIPMENT INSTALLED BY THIS CONTRACT
- EXISTING CIRCUIT AND EQUIPMENT
- FUTURE POWER CIRCUIT AND EQUIPMENT
- EQUIPMENT ENCLOSURE
- CONTROL OR INTERLOCK CIRCUIT
- REMOTE WIRING
- TERMINALS
- (A) POSITIVE TERMINAL, (B) NEGATIVE TERMINAL
- (A) CONDUCTOR CONNECTION, (B) NO CONNECTION

PROTECTION/DISCONNECTS

- PROTECTION DEVICE (ANSI C37.2 DEVICE NUMBER AS INDICATED)
- CIRCUIT BREAKER
- FUSE
- FUSED DISCONNECT SWITCH
- DISCONNECT SWITCH
- POLE MOUNTED FUSED DISCONNECT SWITCH
- PLUG-IN OR DRAWOUT CONNECTION
- CAPACITOR
- THERMAL OVERLOADS
- THERMAL OVERLOAD RELAY (SHOWN WITH QUANTITY) — O.L. (3)
- ARMS — ARC FLASH REDUCTION MAINTENANCE SWITCH
- TU — ELECTRONIC TRIP UNIT
- LSIG — LONG TIME, SHORT TIME, INSTANTANEOUS, AND GROUND TRIP SETTINGS

STARTERS

- SINGLE SPEED NON-REVERSING MANUAL MOTOR STARTER
- SINGLE SPEED NON-REVERSING MAGNETIC MOTOR STARTER
- SINGLE SPEED REVERSING MAGNETIC MOTOR STARTER
- TWO SPEED NON-REVERSING MAGNETIC MOTOR STARTER
- RVSS — REDUCED VOLTAGE SOLID-STATE STARTER
- RVAT — REDUCED VOLTAGE AUTOTRANSFORMER STARTER
- VFD — VARIABLE FREQUENCY DRIVE

TRANSFORMERS

- POWER TRANSFORMER (XFMR)
- (2) — POTENTIAL TRANSFORMER (SHOWN WITH QUANTITY)
- 200:5 (2) — CURRENT TRANSFORMER, SINGLE RATIO (SHOWN WITH QUANTITY)
- CONTROL POWER TRANSFORMER (ONE-LINE DIAGRAMS)
- CONTROL POWER TRANSFORMER (CONTROL SCHEMATIC DIAGRAMS)

LOADS/SOURCES

- GENERATOR
- ELECTRIC MOTOR - APPROX. HORSEPOWER AS INDICATED
- EQUIPMENT AS NOTED ON DIAGRAM

METERING/NETWORKING

- A — AMMETER
- V — VOLTMETER
- PQM — POWER QUALITY METER
- NSW — NETWORK SWITCH
- PSU — POWER SUPPLY UNIT

MISC ONE-LINE SYMBOLS

- (X) — "X" INDICATES NUMBER OF DEVICES WHEN MORE THAN ONE
- DELTA WINDING CONNECTION
- GROUNDING WYE WINDING CONNECTION
- GROUNDING CONNECTION
- LIGHTNING ARRESTOR

CONTROL DEVICES

- (A) LEVEL SWITCH - CLOSES WITH RISING LEVEL (B) LEVEL SWITCH - OPENS WITH RISING LEVEL
- (A) FLOW SWITCH - CLOSES WITH INCREASING FLOW (B) FLOW SWITCH - OPENS WITH INCREASING FLOW
- (A) MAINTAINED PUSH-BUTTON - N.O. (B) MAINTAINED PUSH-BUTTON - N.C.
- (A) LIMIT SWITCH - N.C. (B) LIMIT SWITCH - N.C. HELD OPEN
- (A) LIMIT SWITCH - N.O. (B) LIMIT SWITCH - N.O. HELD CLOSED
- (A) PRESSURE SWITCH - CLOSES WITH INCREASING PRESSURE (B) PRESSURE SWITCH - OPENS WITH INCREASING PRESSURE
- (A) MOMENTARY PUSH-BUTTON - N.O. (B) MOMENTARY PUSH-BUTTON - N.C.
- (A) TEMP. SWITCH - CLOSES WITH RISING TEMP. (B) TEMP. SWITCH - OPENS WITH RISING TEMP.
- (A) N.O. TIME DELAY CONTACT (B) N.C. TIME DELAY CONTACT
- XO — TWO POSITION SELECTOR SWITCH
- XOO — THREE POSITION SELECTOR SWITCH
- XOOO — FOUR POSITION SELECTOR SWITCH
- SOLENOID VALVE
- PHOTOCELL
- INDICATING LIGHT, COLOR AS INDICATED
- PUSH-TO-TEST INDICATING LIGHT, COLOR AS INDICATED

PLANS

LINES

- NEW CONSTRUCTION
- EXISTING CONSTRUCTION CONDUIT EXPOSED
- CONDUIT CONCEALED IN WALL, CEILING OR HIDDEN FROM VIEW
- CONDUIT CONCEALED IN FLOOR OR UNDERGROUND
- HOMERUN TO PANEL
- FLEXIBLE CONDUIT
- FO — FIBER-OPTIC CABLE
- UGE — UNDERGROUND ELECTRICAL
- OHE — OVERHEAD ELECTRICAL
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- CONDUIT TERMINATED AND CAPPED
- CONDUIT WITH BUSHING
- CONDUIT PASSING THRU ELEVATION

GROUNDING/LIGHTNING PROTECTION

- GROUND CABLE
- BOLTED CONNECTION
- WELDED CONNECTION
- BI-METALIC CONNECTION
- GROUND ROD
- GROUND TEST WELL
- AIR TERMINAL
- GROUND BUS BAR

EQUIPMENT

- NEW EQUIPMENT
- EXISTING EQUIPMENT
- FUTURE EQUIPMENT
- LIGHTING PANEL
- POWER PANEL
- DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- COMBINATION DISCONNECT/ MAGNETIC MOTOR STARTER
- REDUCED VOLTAGE COMBINATION DISCONNECT/MAG MOTOR STARTER
- M — MOTOR
- E — MISC. ELECTRICAL LOAD
- J — JUNCTION BOX
- P — PULL BOX

LIGHTING

- RECTANGULAR LUMINAIRE
- RECTANGULAR LUMINAIRE WITH EMERGENCY BACKUP
- CIRCULAR LUMINAIRE
- CIRCULAR LUMINAIRE WITH EMERGENCY BACKUP
- EMERGENCY WALL PACK UNIT
- CEILING MOUNTED EXIT SIGN
- WALL MOUNTED EXIT SIGN
- POLE-MOUNTED AREA LIGHT
- S — SINGLE POLE SWITCH
- S_3 — THREE-WAY SWITCH
- S_4 — FOUR-WAY SWITCH
- S_{WP} — WEATHERPROOF SWITCH
- S_D — DIMMER SWITCH
- S_{EXP} — EXPLOSIONPROOF SWITCH
- CEILING MOUNTED OCCUPANCY SENSOR
- WALL MOUNTED OCCUPANCY SENSOR
- CEILING/ROOF MOUNTED PHOTOCELL
- WALL MOUNTED PHOTOCELL

RECEPTACLES

- 208/240V RECEPTACLE
- 480V RECEPTACLE
- SURFACE, SIMPLEX RECEPTACLE
- SURFACE, SIMPLEX, GFI RECEPTACLE
- FLUSH, SIMPLEX RECEPTACLE
- FLUSH, SIMPLEX, GFI RECEPTACLE
- SURFACE, DUPLEX RECEPTACLE
- SURFACE, DUPLEX, GFI RECEPTACLE
- FLUSH, DUPLEX RECEPTACLE
- FLUSH, DUPLEX, GFI RECEPTACLE
- SURFACE, QUADPLEX RECEPTACLE
- SURFACE, QUADPLEX, GFI RECEPTACLE
- FLUSH, QUADPLEX RECEPTACLE
- FLUSH, QUADPLEX, GFI RECEPTACLE

DATA JACKS

- RECESSED DATA JACK
- RECESSED MIXED DATA JACK
- RECESSED TELEPHONE JACK
- SURFACE DATA JACK
- SURFACE MIXED DATA JACK
- SURFACE TELEPHONE JACK

INSTRUMENTS

- ACTUATED VALVE
- CONTROL STATION
- INSTRUMENT
- H — HORN
- X — STROBE LIGHT, COLOR AS INDICATED
- H — STROBE LIGHT AND HORN COMBINATION

TAG DESIGNATION SCHEMES

LUMINAIRE TAG SCHEME

LXX — LUMINAIRE TYPE
XXX-PNL-XXX-XX — CIRCUIT
SXXX — SWITCHING DEVICE(S)
XX'-XX" AFF — ELEVATION TO BOTTOM OF FIXTURE

RECEPTACLE TAG SCHEME

XXX-PNL-XXX — POWER SOURCE TAG
XX — CIRCUIT NUMBER
XXX — MODIFIER (IF APPLICABLE)

INSTRUMENT TAG SCHEME

EQUIPMENT/INSTRUMENT IDENTIFIER
FACILITY AREA OR SYSTEM
LOOP NUMBER
XXX-XXX
NOTES: XX'-XX" AFF
XXX-PLC-XXX — NOTES: INSTRUMENT ELEVATION, ASSOCIATED CONTROL PANEL

CABLE TRAY TAG SCHEME

XXX-CT-XXX — CABLE TRAY TAG
XX" x XX" — WIDTH x HEIGHT
XX'-XX" AFF — ELEVATION TO BOTTOM OF TRAY

ABBREVIATIONS

A	AMPERES	INDUST	INDUSTRIAL
AFG	ABOVE FINISHED GRADE	LC	LIGHTING CONTACTOR
AFF	ABOVE FINISHED FLOOR	GND	GROUND
AIC	AMPS INTERRUPTING CURRENT	MCC	MOTOR CONTROL CENTER
AWG	AMERICAN WIRE GAUGE	MUN	MUNICIPAL
BC	BARE COPPER WIRE	N.O.	NORMALLY OPEN
BF	BELOW FLOOR	N.C.	NORMALLY CLOSED
BG	BELOW GRADE	P	POLE
BKR	BREAKER	PP	POWER PANEL
C	CONDUIT	PLC	PROGAMMABLE LOGIC CONTROLLER
CHL	CHLORINE		
COND	CONDUCTIVITY	REC	RECEPTACLE
CP	CONTROL PANEL	RW	RAW WATER
CPT	CONTROL POWER TRANSFORMER	SP	SPARE
EL	ELEVATION	SPD	SURGE PROTECTIVE DEVICE
EO	ELECTRICALLY OPERATED	SW	SWITCH
EX	EXPOSED	TYP	TYPICAL
EXP	EXPLOSION-PROOF (CLASS 1, DIV 1, GROUP D)	UE	UNDERGROUND ELECTRICAL
		VFD	VARIABLE FREQUENCY DRIVE
EXT	EXTERIOR	WP	WEATHERPROOF
FACP	FIRE ALARM CONTROL PANEL	XFMR	TRANSFORMER

GENERAL NOTES:

1. ALL "SE" CIRCUITS SHALL BE TYPE "____" CABLE.
2. ALL "MCC", "PP", AND "PC" CIRCUITS SHALL BE TYPE "____" CABLE.
3. ALL "LP" CIRCUITS SHALL BE TYPE "____" CABLE.
4. ALL "C" CIRCUITS SHALL BE TYPE "____" CABLE UNLESS INDICATED OTHERWISE. TYPE "C" CIRCUITS DESIGNATED WITH A GROUND CONDUCTOR SHALL BE TYPE "____" CABLE.
5. ALL "I" CIRCUITS SHALL BE TYPE "____" CABLE.
6. ALL "H" CIRCUITS SHALL BE TYPE "____" CABLE.
7. THIS IS A STANDARD ELECTRICAL LEGEND AND NOT ALL DEVICES AND DEVICE DESIGNATIONS ARE USED ON THIS PROJECT.

no.	date	by	chkd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000165

date: MAR. 14, 2023 — detailed: C. BEHRENDS
designed: C. BEHRENDS — checked: N. GUNJA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
ELECTRICAL LEGEND

project: 154865 — contract:
drawing: E001 — rev.: D
sheet: — of: — sheets:
file:

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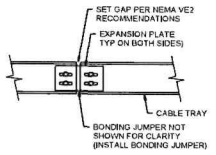
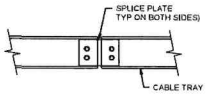


EXPANSION SPLICE PLATE

NOT TO SCALE



SPLICE PLATE

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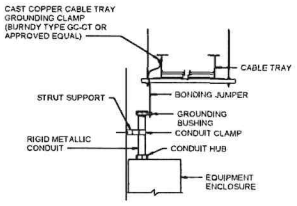
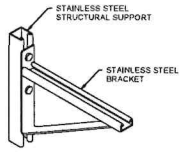


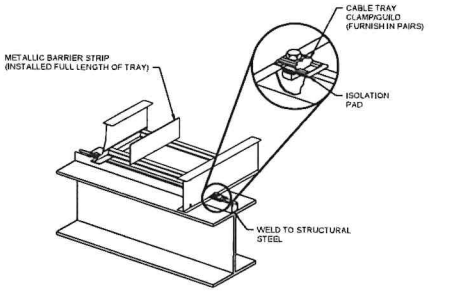
CONDUIT RISER TO CABLE TRAY GROUNDING DETAIL

NOT TO SCALE



WALL MOUNTED CABLE TRAY DETAIL

NOT TO SCALE

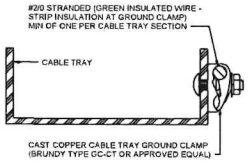


GENERAL NOTE:

1. INSTALL AS CLAMP OR GUIDE AS REQUIRED FOR APPLICATION. SHOWN INSTALLED AS CLAMP IN DETAIL.

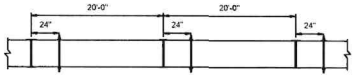
CABLE TRAY HOLD DOWN CLAMP DETAIL

NOT TO SCALE



CABLE TRAY GROUND CLAMP DETAIL

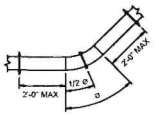
NOT TO SCALE



GENERAL NOTES:

1. ALL TRAY AND FITTINGS SHALL BE SUPPORTED IN ACCORDANCE WITH NEMA STANDARD VE 2. FURNISH AND INSTALL MATERIALS NECESSARY TO PROVIDE A COMPLETE INSTALLATION.
2. FOLLOW CABLE TRAY MANUFACTURER'S RECOMMENDATION FOR CABLE TRAY INSTALLATION.
3. VERTICAL TRAY SHALL BE SUPPORTED EVERY 20'-0" OR AS RECOMMENDED BY MANUFACTURER.

STRAIGHT RUNS



GENERAL NOTES:

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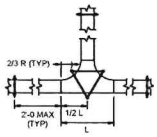
2. FOLLOW CABLE TRAY MANUFACTURER'S RECOMMENDATION FOR CABLE TRAY INSTALLATION.
3. VERTICAL TRAY SHALL BE SUPPORTED EVERY 20'-0" OR AS RECOMMENDED BY MANUFACTURER.
4. TYP FOR 30°, 45°, 60° AND 90° ELBOWS.
5. CENTER SUPPORT NOT REQUIRED FOR 30° AND 45° ELBOWS ON 12" RADIUS FITTINGS.

HORIZONTAL ELBOWS



GENERAL NOTES:

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2. FOLLOW CABLE TRAY MANUFACTURER'S RECOMMENDATION FOR CABLE TRAY INSTALLATION.
3. VERTICAL TRAY SHALL BE SUPPORTED EVERY 20'-0" OR AS RECOMMENDED BY MANUFACTURER.
4. CENTER SUPPORT NOT REQUIRED FOR 12" RADIUS FITTINGS.

HORIZONTAL TEE

no.	date	by	ckd	description
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B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
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9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000165

date	detailed
MAR. 23, 2023	C. BEHRENDS
designed	checked
C. BEHRENDS	N. GUNJA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
ELECTRICAL DETAILS SHEET 1

project	contract
154865	

drawing **E002** – rev. **D**

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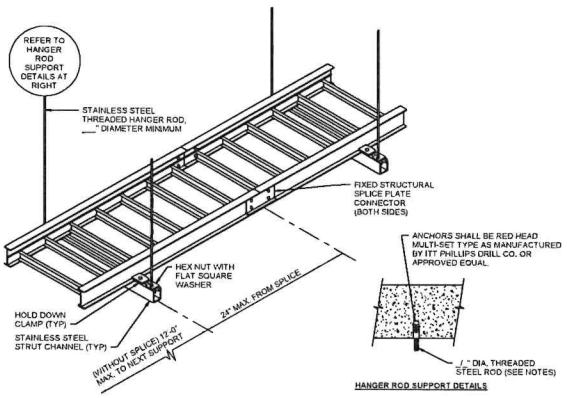
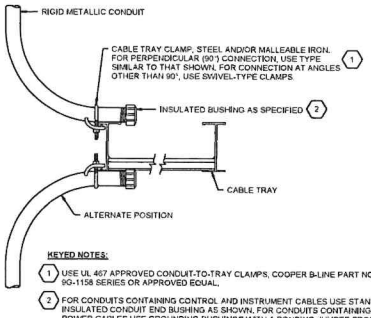


HANGER ROD SUPPORT DETAILS

GENERAL NOTES:

1. HANGER RODS OF TRAY SHALL HAVE A MAXIMUM ROD SPACING OF 8 FEET.
2. MAXIMUM DISTANCE FROM END OF TRAY TO NEAREST SUPPORT SHALL BE 2 FEET. THIS DOES NOT APPLY WHERE END OF TRAY IS RIGIDLY SUPPORTED BY OTHER MEANS SUCH AS A SPLICE PLATE TO ADJACENT TRAY SECTION.
3. ALL HANGER ROD SUPPORT TYPES USED MUST BE CAPABLE OF SUPPORTING A WORKING LOAD OF 1000 LBS. (ULTIMATE LOAD OF 4000 LBS.) EACH.
4. TRAY TO TRAY CONNECTIONS SHOULD NORMALLY BE MADE WITH RIGIDLY BOLTED TYPE CONNECTIONS (SPLICE PLATES). HOWEVER, WHERE SECTIONS OF TRAY SYSTEMS NEED TO BE ISOLATED CONTRACTOR SHALL INSTALL BONDING JUMPERS TO MAINTAIN ELECTRICAL CONTINUITY. REFER TO TYPICAL BONDING JUMPER AT CABLE TRAY CONNECTIONS DETAIL.

TYPICAL CABLE TRAY TRAPEZE SUPPORT

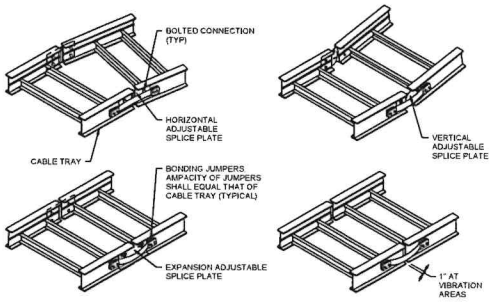


KEYED NOTES:

1. USE UL 467 APPROVED CONDUIT-TO-TRAY CLAMPS, COOPER B-LINE PART NO. 99-1158 SERIES OR APPROVED EQUAL.
2. FOR CONDUITS CONTAINING CONTROL AND INSTRUMENT CABLES USE STANDARD INSULATED CONDUIT END BUSHING AS SHOWN. FOR CONDUITS CONTAINING POWER CABLES USE GROUNDING BUSHINGS WITH A BONDING JUMPER FROM THE BUSHING TO THE TRAY GROUND CABLE. REFER TO TRAY GROUNDING DETAIL.

TYPICAL CONDUIT TO CABLE TRAY CONNECTIONS SIDE RAIL CLAMP

NOT TO SCALE



GENERAL NOTE:

1. TRAY TO TRAY CONNECTIONS SHOULD NORMALLY BE MADE WITH RIGIDLY BOLTED TYPE CONNECTIONS (ie. SPLICE PLATES AS SHOWN ON E010). HOWEVER, WHERE SECTIONS OF A TRAY SYSTEM NEED TO BE ISOLATED DUE TO VIBRATION (ie. TO ISOLATE TRAY SUPPORTED FROM A TURBINE FOUNDATION FROM TRAY SUPPORTED FROM BUILDING STEEL) OR WHERE SECTIONS OF A TRAY SYSTEM NEED TO BE SEPARATED TO ALLOW FOR EXPANSION AND CONTRACTION AT JOINTS, THE CONTRACTOR SHALL USE FLEXIBLE METALLIC STRAPS SUCH THAT ELECTRICAL CONTINUITY OF THE TRAY SYSTEM WILL BE MAINTAINED. CURRENT CARRYING CAPABILITY OF THE STRAPS MUST EQUAL THAT OF THE TRAY.

TYPICAL BONDING JUMPERS AT CABLE TRAY CONNECTIONS

NOT TO SCALE

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
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Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000165

date	detailed
MAR. 23, 2023	C. BEHRENDS
designed	checked
C. BEHRENDS	N. GUNJA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

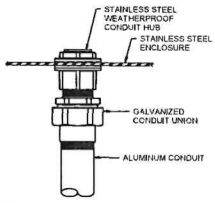
CENTRAL WWTP AERATION IMPROVEMENTS
ELECTRICAL DETAILS SHEET 2

project	contract
154865	

drawing **E003** – rev. **D**

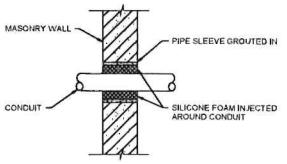
sheet _____ of _____ sheets

file

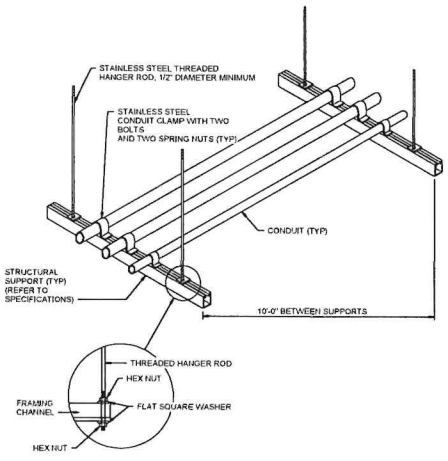


GENERAL NOTES:
1. CONTRACTOR SHALL APPLY A LAYER OF CORROSION INHIBITOR TO ALL THREADS.

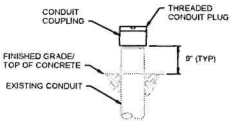
TYPICAL ALUMINUM CONDUIT INSTALLATION INTO STAINLESS STEEL ENCLOSURE
NOT TO SCALE



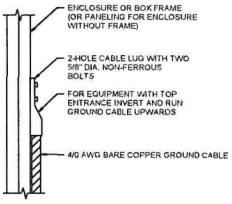
TYPICAL CONDUIT PENETRATION THROUGH INTERIOR MASONRY WALL
NOT TO SCALE



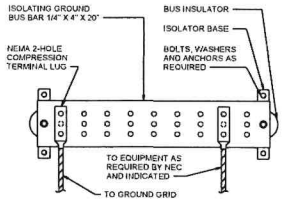
TYPICAL CONDUIT TRAPEZE SUPPORT
NOT TO SCALE



EXISTING EXTERIOR CONDUIT CAP DETAIL
NOT TO SCALE



TYPICAL EQUIPMENT ENCLOSURE OR BOX GROUNDING
NOT TO SCALE



TYPICAL GROUND BUS BAR
NOT TO SCALE

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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designed	checked
C. BEHRENDS	N. GUNJA

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CENTRAL WWTP AERATION IMPROVEMENTS
ELECTRICAL DETAILS SHEET 3

project	contract
154865	

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sheet of sheets
file

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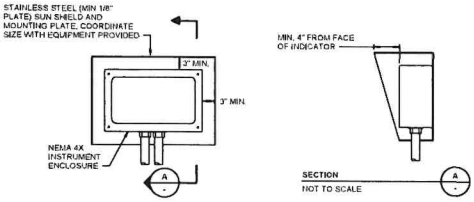
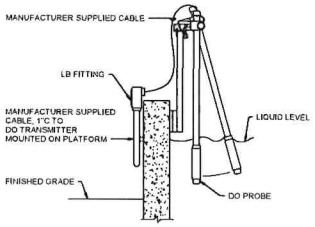


TYPICAL TRANSMITTER SUN SHADE
NOT TO SCALE



TYPICAL AERATION BASIN DO PROBE INSTALLATION DETAIL
NOT TO SCALE

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	9/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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CENTRAL WWTP AERATION IMPROVEMENTS
ELECTRICAL DETAILS SHEET 4

project	contract
154865	

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sheet of sheets
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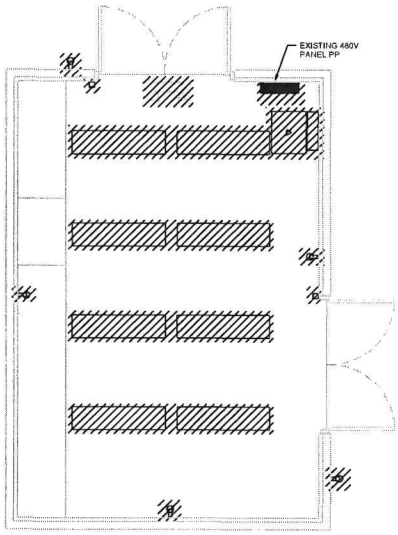
GENERAL NOTES:

1. EXISTING BUILDING TO BE DEMOLISHED IN ITS ENTIRETY. ALL ELECTRICAL EQUIPMENT, CONDUIT, WIRE, SUPPORTS, AND ASSOCIATED EQUIPMENT SHALL BE DEMOLISHED BACK TO THE SOURCE.



BLOWER BUILDING ELECTRICAL DEMO PLAN

0 1' 2' 4'
SCALE IN FEET

NORTH

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING ELECTRICAL DEMO PLAN

project	contract
154865	

drawing ED006 — rev. D

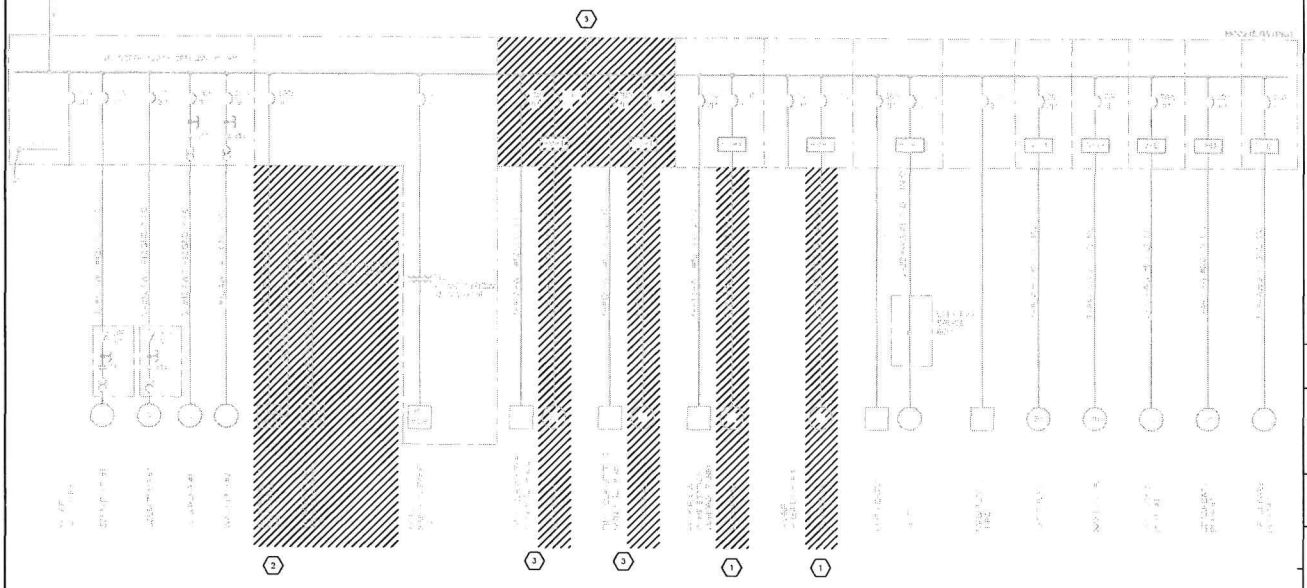
sheet of sheets
file

GENERAL NOTES:

1. ONE-LINE DIAGRAM RECREATED FROM EXISTING AS-BUILT DRAWINGS AND FIELD OBSERVATIONS. SUBCONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS.

KEYED NOTES:

1. DEMOLISH ALL CABLE AND EXPOSED CONDUIT. EXISTING STARTERS AND BREAKERS SHALL REMAIN AND BECOME SPARE. REPLACE NAMEPLATES WITH NEW NAMEPLATE INDICATING "SPARE". EXISTING CONDUIT STUB-UP AT BLOWER SHALL BE CAPPED AS INDICATED ON DETAIL ON E004.
2. DEMOLISH EXISTING POWER PANEL AND ALL ASSOCIATED CABLE AND CONDUIT. EXISTING CONDUIT STUB-UP AT BLOWER SHALL BE CAPPED AS INDICATED ON DETAIL ON E004.
3. EXISTING MCC SHIPPING SPLIT SHALL BE DEMOLISHED. PROTECT EXISTING CABLE FOR FINAL CLARIFIERS AND DEMOLISH ALL CABLE AND EXPOSED CONDUIT FOR EXISTING BLOWERS.



EXISTING MCC2 ONE-LINE DIAGRAM DEMO

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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date	detailed
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designed	checked
C. BEHRENDS	N. GUNJA

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CENTRAL WWTP AERATION IMPROVEMENTS
EXISTING MCC2 ONE-LINE DIAGRAM DEMO

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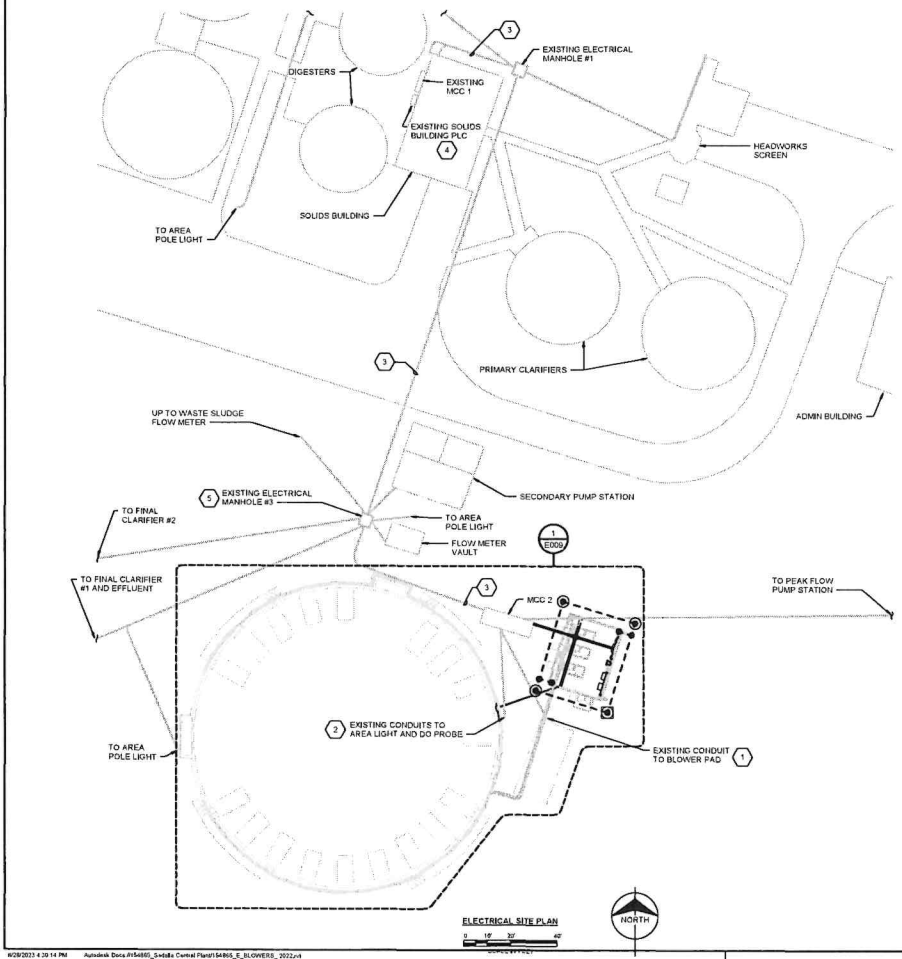

ELECTRICAL SITE PLAN

0 16' 32' 48'

SCALE: 1" = 16'-0"

GENERAL NOTES:

1. ALL DIMENSIONS AND LOCATIONS RECREATED FROM EXISTING DRAWING SET BY E. T. ARCHER CORPORATION DATED JAN, 1998 SUBCONTRACTOR SHALL CONFIRM ALL LOCATIONS AND DIMENSIONS.

KEYED NOTES:

1. EXISTING CONDUIT TO BLOWER SHALL BE ABANDONED AND CAPPED AT GRADE.
2. EXISTING CONDUIT TO DO PROBE SHALL BE ABANDONED AND CAPPED AT GRADE.
3. REUSE EXISTING SPARE 3" CONDUIT FOR NEW SET OF POWER CONDUCTORS FROM MCC1 TO MCC2. REUSE EXISTING SPARE 1" CONDUIT FOR NEW FIBER-OPTIC CABLE FROM SOLIDS BUILDING PLC TO MCC2.
4. FIELD ROUTE CONDUIT AS NECESSARY FOR FIBER TO PLC.
5. REROUTE EXISTING 120V CIRCUIT IN 4" CONDUIT AS NECESSARY TO OPEN DUCT FOR ADDITIONAL SET OF CONDUCTORS FOR CIRCUIT P-MCC1-01.

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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CENTRAL WWTP AERATION IMPROVEMENTS
ELECTRICAL SITE PLAN

project	contract
154865	

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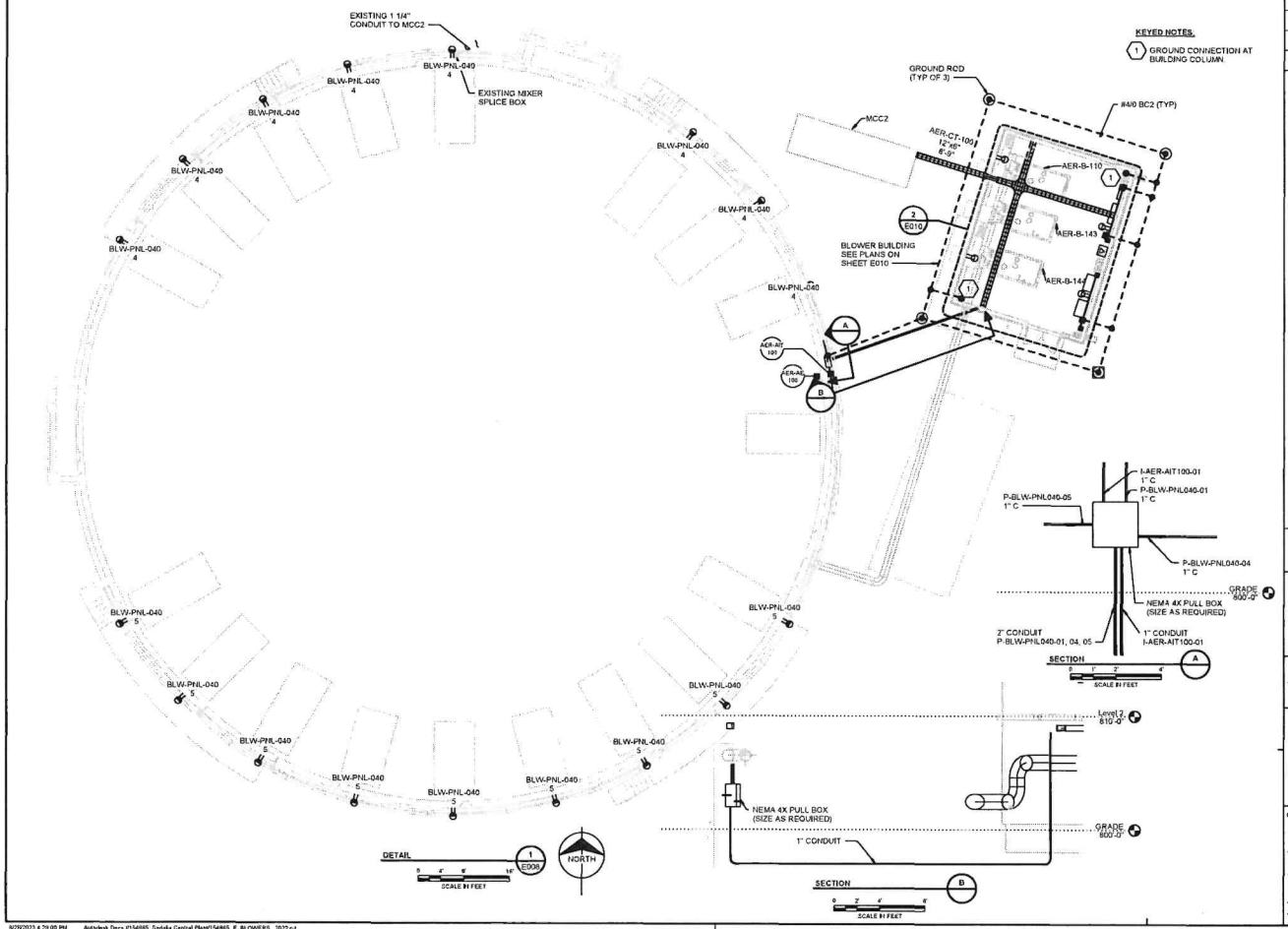

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A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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designed	checked
C. BEHRENDS	N. GUNJA

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CENTRAL WWTP AERATION IMPROVEMENTS
AERATION ELECTRICAL PLAN

project	contract
154865	

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sheet of sheets

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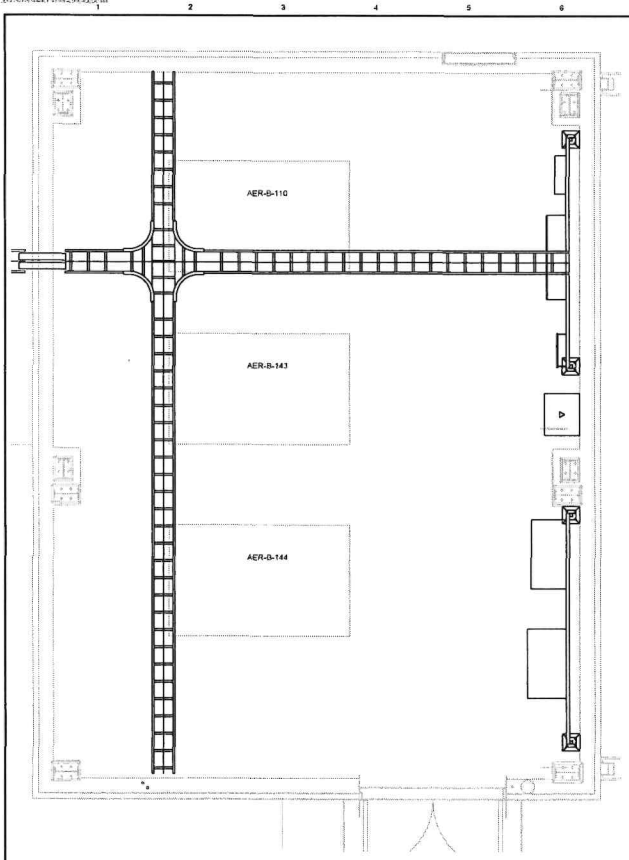
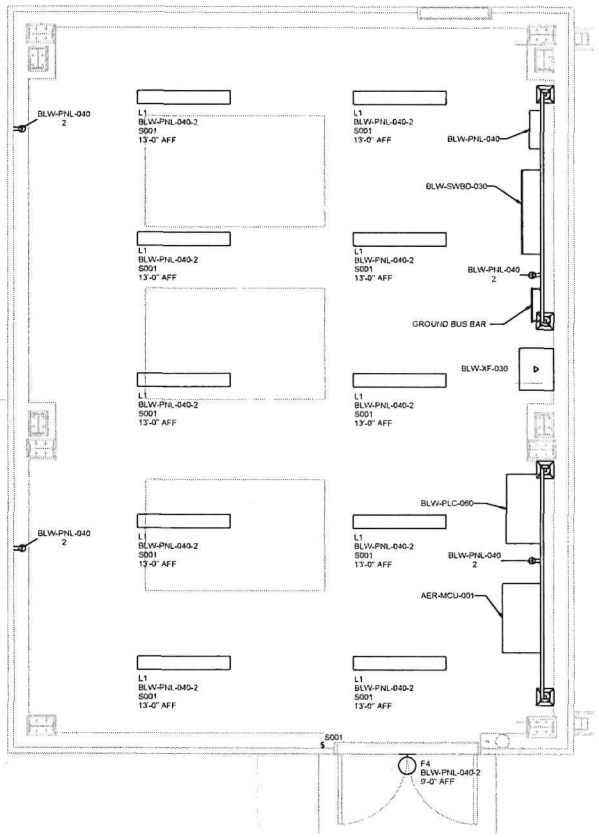


CABLE TRAY PLAN

SCALE IN FEET



LIGHTING PLAN

SCALE IN FEET

no.	date	by	ckd	description
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B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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C. BEHRENDS	N. GUNJA

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CENTRAL WWTP AERATION IMPROVEMENTS
BLOWER BUILDING PLANS

project	contract
154865	
drawing	rev.
E010	D
sheet	of sheets
file	

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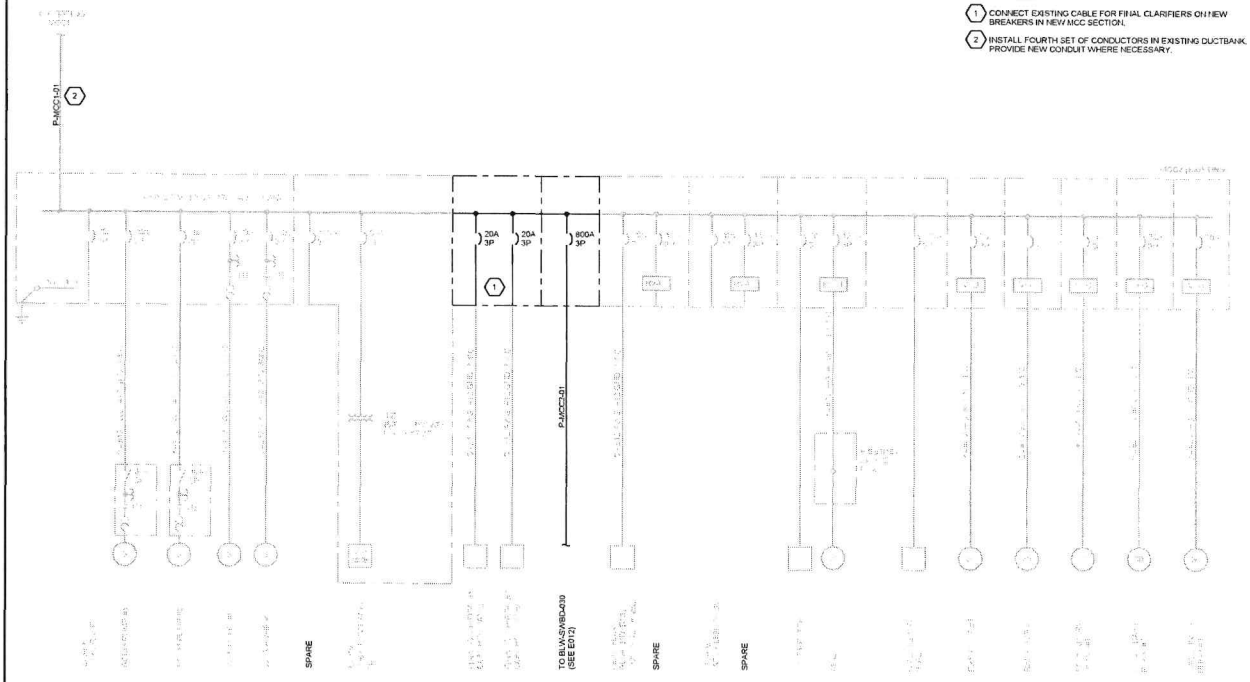
GENERAL NOTES:

1. ONE-LINE DIAGRAM RECREATED FROM EXISTING AS-BUILT DRAWINGS AND FIELD OBSERVATIONS. SUBCONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS.

KEYED NOTES:

1. CONNECT EXISTING CABLE FOR FINAL CLARIFIERS ON NEW BREAKERS IN NEW MCC SECTION.
2. INSTALL FOURTH SET OF CONDUCTORS IN EXISTING DUCTBANK. PROVIDE NEW CONDUIT WHERE NECESSARY.



MCC2 ONE-LINE DIAGRAM

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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MAR. 14, 2023	C. BEHRENDS
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C. BEHRENDS	N. GUNJA

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CENTRAL WWTP AERATION IMPROVEMENTS
EXISTING MCC2 ONE-LINE DIAGRAM

project	contract
154865	

drawing E011 – rev. D

sheet of sheets
file

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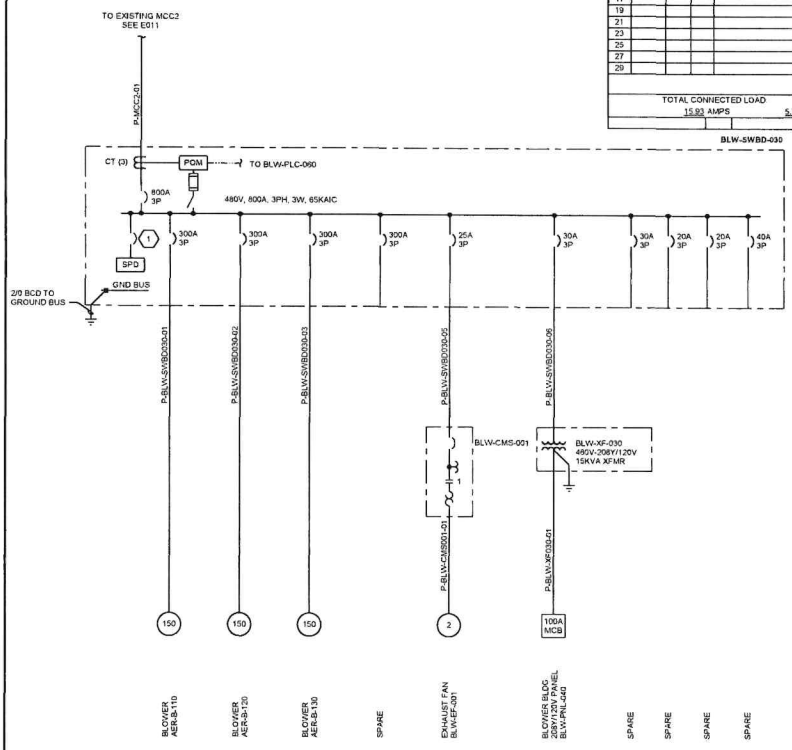
PANELBOARD: BLW-PNL-040 | 208Y/120V VOLTS | 3 PHASE | 4 WIRE | 100 AMP. MAINS

60 AMP. MAIN BKR. | SYM. A.I.C. MIN. | NEMA 1 ENCLOSURE | Surface MOUNTED

POLE NO.	CIRCUIT NO.	TRIP AMPS	WIRE SIZE	LOAD SERVED	A (VA)	B (VA)	C (VA)	LOAD SERVED	WIRE SIZE	TRIP AMPS	CIRCUIT NO.	POLE NO.
1					1576			BLOWER BLDG RECEPTS	#12	20 A	2	2
3	3	20 A	#12	BLW-PLC-060		500	1440	BASIN RECEPT - NORTH	#6	20 A	4	4
5	5	20 A	#6	BASIN RECEPT - SOUTH			1620	900	AER-MCU-001		20 A	6	6
7	7	20 A	#12	AER-AIT-100	100								8
9													10
11													12
13													14
15													16
17													18
19													20
21													22
23													24
25													26
27													28
29													30
					1576	1940	2120						

TOTAL CONNECTED LOAD: 15.93 AMPS | 5.74 KVA

BLW-SWBD-030



BLW-SWBD-030 ONE-LINE DIAGRAM

KEYED NOTES:

1. BREAKER SHALL BE SIZED BY EQUIPMENT MANUFACTURER.

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	6/14/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	6/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	6/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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date	detailed
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designed	checked
C. BEHRENDS	N. GUNJA

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PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
BLW-SWBD-030 ONE-LINE DIAGRAM AND PANELBOARD SCHEDULE

project	contract
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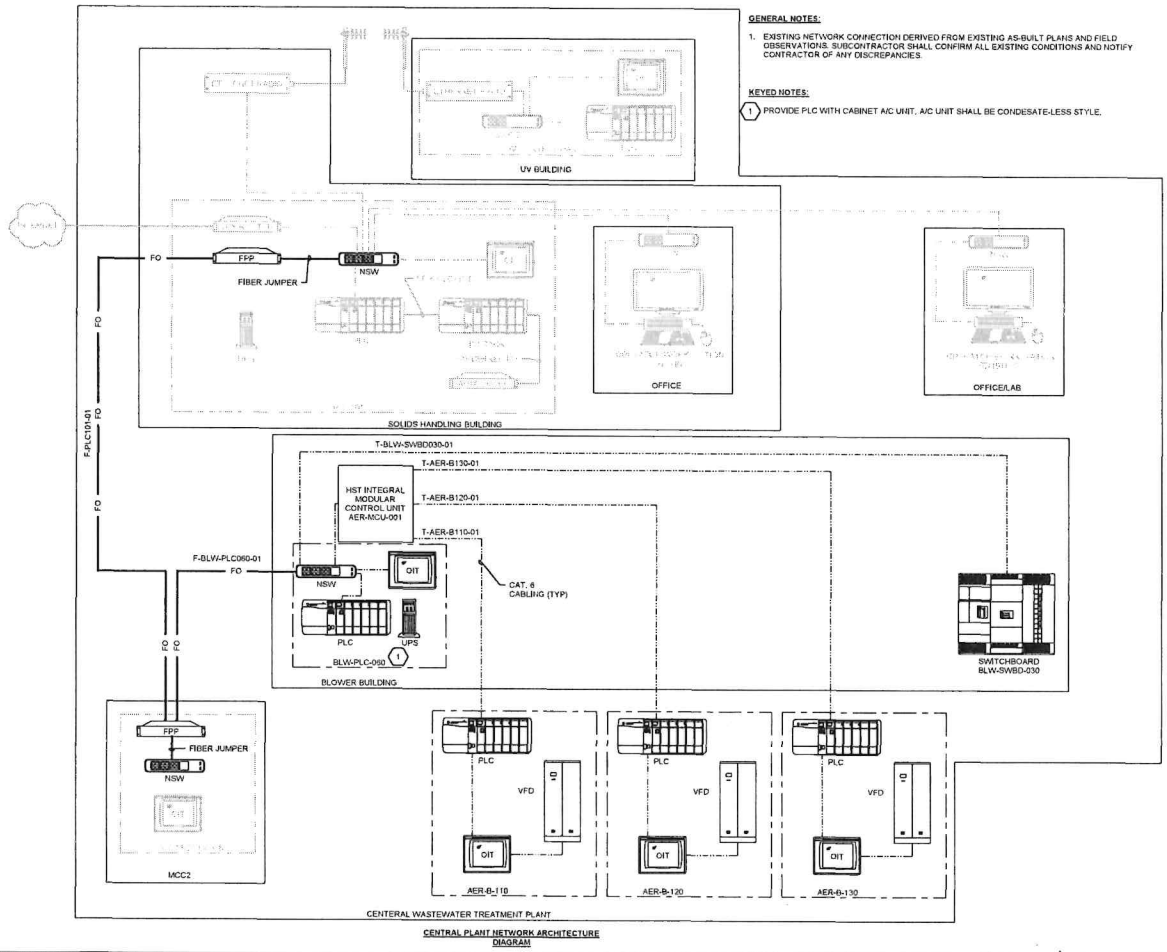
sheet of sheets

file



CENTRAL PLANT NETWORK ARCHITECTURE DIAGRAM

GENERAL NOTES:

1. EXISTING NETWORK CONNECTION DERIVED FROM EXISTING AS-BUILT PLANS AND FIELD OBSERVATIONS. SUBCONTRACTOR SHALL CONFIRM ALL EXISTING CONDITIONS AND NOTIFY CONTRACTOR OF ANY DISCREPANCIES.

KEYED NOTES:

1. PROVIDE PLC WITH CABINET A/C UNIT, A/C UNIT SHALL BE CONDESATE-LESS STYLE.

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

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CENTRAL WWTP AERATION IMPROVEMENTS
NETWORK ARCHITECTURE DIAGRAM

project	contract
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file

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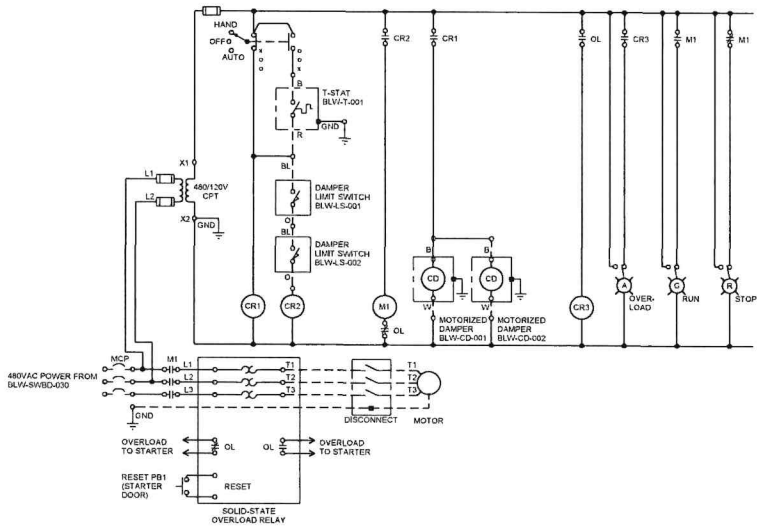

BLOWER BUILDING EXHAUST FAN MOTOR STARTER DIAGRAM (WITH DAMPERS)

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
B	8/4/23	CAB	NFG	ISSUED FOR INTERNAL REVIEW
C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
D	8/30/23	CAB	NFG	ISSUED FOR CLIENT REVIEW

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co., Inc.
LICENSE NO. 000165

date MAR. 22, 2023	detailed C. BEHRENDS
designed C. BEHRENDS	checked N. GUNJA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
CONTROL DIAGRAM SHEET 1

project 154665	contract
drawing E014	rev. D
sheet of	sheets
file	

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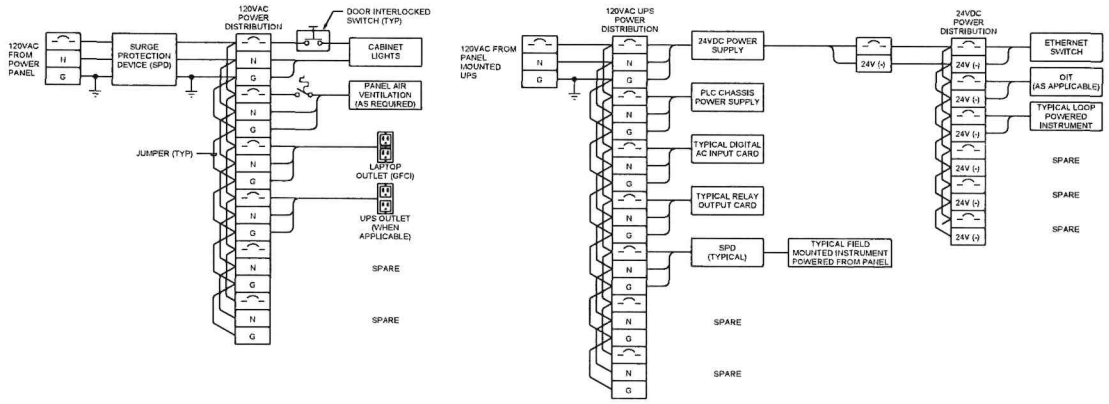
GENERAL NOTES:

1. THIS POWER DISTRIBUTION DIAGRAM IS TYPICAL. QUANTITIES FOR INSTRUMENTS, I/O CARDS, POWER SUPPLIES, AND OTHER DEVICES MAY VARY FOR EACH CABINET. INSTALL QUANTITIES AS REQUIRED.
2. ADDITIONAL SURGE PROTECTIVE DEVICES SHALL BE PROVIDED AS SPECIFIED FOR INSTRUMENTATION OUTSIDE OF THE BUILDING ENVELOPE. REFER TO SPECIFICATIONS FOR REQUIREMENTS.



TYPICAL PLC CABINET POWER DISTRIBUTION DIAGRAM

no.	date	by	ckd	description
A	6/9/23	CAB	NFG	ISSUED FOR PROCUREMENT
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C	8/14/23	CAB	NFG	ISSUED FOR PROCUREMENT
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BURNS McDONNELL
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date	detailed
MAR. 14. 2023	C. BEHRENDS
designed	checked
C. BEHRENDS	N. GUNJA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
CONTROL DIAGRAM SHEET 2

project	contract
154865	

drawing **E015** — rev. **D**

sheet of sheets
file

CABLE SCHEDULE

TERMINATION INFORMATION			CABLE							ROUTING						NOTES
CABLE #	FROM TAG #	TO TAG #	CLASS	TYPE	SETS	QTY	SIZE	GND	COND							
480V POWER																
P-MCC1-01	MCC1	MCC2	PWR	BMCD_SVN3	1	3	1/C #350	#2/0	3"	EXPOSED	EXISTING DUCTBANK					1
P-MCC2-01	MCC2	BLW-SWBD-030	PWR	BMCD_SVN3	2	3	1/C #500	#1/0	3"	EXPOSED	AER-CT-100	EXPOSED				
P-BLW-SWBD030-01	BLW-SWBD-030	AER-B-110	PWR	BMCD_SVN3	1	3	1/C #350	#4	3"	EXPOSED						
P-BLW-SWBD030-02	BLW-SWBD-030	AER-B-120	PWR	BMCD_SVN3	1	3	1/C #350	#4	3"	EXPOSED						
P-BLW-SWBD030-03	BLW-SWBD-030	AER-B-130	PWR	BMCD_SVN3	1	3	1/C #350	#4	3"	EXPOSED						
P-BLW-SWBD030-05	BLW-SWBD-030	BLW-CMS-001	PWR	BMCD_SVN3	1	3	1/C #10	#10	3/4"	EXPOSED						
P-BLW-CMS001-01	BLW-CMS-001	BLW-EF-001	PWR	BMCD_SVN3	1	3	1/C #10	#10	3/4"	EXPOSED						
P-BLW-SWBD030-06	BLW-SWBD-030	BLW-XF-030	PWR	BMCD_SVN3	1	3	1/C #10	#10	3/4"	EXPOSED						
208/120V POWER																
P-BLW-XF030-01	BLW-XF-030	BLW-PNL-040	PWR	BMCD_SVN3	1	4	1/C #6	#8	1"	EXPOSED						
P-BLW-PNL040-02	BLW-PNL-040	BLOWER BLDG LIGHTING	PWR	BMCD_SVN3	1	2	1/C #12	#12	3/4"	EXPOSED						
P-BLW-PNL040-03	BLW-PNL-040	BLW-PLC-060	PWR	BMCD_SVN3	1	2	1/C #12	#12	3/4"	EXPOSED						
P-BLW-PNL040-04	BLW-PNL-040	BLOWER BLDG RECEPTS	PWR	BMCD_SVN3	1	2	1/C #12	#12	3/4"	EXPOSED						
P-BLW-PNL040-05	BLW-PNL-040	BASIN RECEPT - SOUTH	PWR	BMCD_SEV1	1	1	2/c #6 w/GND		1"	EXPOSED	CABLE TRAY	EXPOSED	BURIED	EXPOSED		
P-BLW-PNL040-06	BLW-PNL-040	AER-MCU-001	PWR	BMCD_SVN3	1	2	1/C #12	#12	3/4"	EXPOSED						
P-BLW-PNL040-07	BLW-PNL-040	AER-AIT-100	PWR	BMCD_SEV1	1	1	2/C #12 w/GND		3/4"	EXPOSED	CABLE TRAY	EXPOSED	BURIED	EXPOSED		
P-BLW-PNL040-09	BLW-PNL-040	BASIN RECEPT - NORTH	PWR	BMCD_SEV1	1	1	2/c #6 w/GND		1"	EXPOSED	CABLE TRAY	EXPOSED	BURIED	EXPOSED		
CONTROL																
C-BLW-CMS001-01	BLW-CMS-001	BLW-T-001	CNTRL	BMCD_CEV1	1	1	3/C #14		3/4"	EXPOSED						
C-BLW-CMS001-02	BLW-CMS-001	BLW-CD-001	CNTRL	BMCD_CEV1	1	1	7/C #14		1"	EXPOSED						
C-BLW-CMS001-03	BLW-CMS-001	BLW-CD-002	CNTRL	BMCD_CEV1	1	1	7/C #14		1"	EXPOSED						
INSTRUMENTATION																
I-AER-AE100-01	AER-AIT-100	AER-AE-100	INST	MANUFACTURER PROVIDED CABLE					3/4"	EXPOSED						
I-AER-AIT100-01	BLW-PLC-060	AER-AIT-100	INST	BMCD_IVV1	1	1	1PR #16		3/4"	EXPOSED	BURIED	EXPOSED				
TELECOMMUNICATIONS																
T-AER-MCU001-01	BLW-PLC-060	AER-MCU-001	TC	ETHERNET	1	1	CAT-6		3/4"	EXPOSED						
T-AER-B110-01	AER-MCU-001	AER-B-110	TC	ETHERNET	1	1	CAT-6		3/4"	EXPOSED						
T-AER-B120-01	AER-MCU-001	AER-B-120	TC	ETHERNET	1	1	CAT-6		3/4"	EXPOSED						
T-AER-B130-01	AER-MCU-001	AER-B-130	TC	ETHERNET	1	1	CAT-6		3/4"	EXPOSED						
T-BLW-SWBD030-01	BLW-PLC-060	BLW-SWBD-030	TC	ETHERNET	1	1	CAT-6		3/4"	EXPOSED						
F-PLC101-01	PLC-101	MCC2	TC	MM FIBER	1	1	6-STRAND		3/4"	EXPOSED	EXISTING DUCTBANK					
F-BLW-PLC060-01	MCC2	BLW-PLC-060	TC	MM FIBER	1	1	6-STRAND		3/4"	EXPOSED	AER-CT-100	EXPOSED				

KEYED NOTES:

1. ADD ONE ADDITIONAL SET OF CABLES TO EXISTING CIRCUIT. CABLES SHALL BE LANDED ON EXISTING LUGS AND REUSE EXISTING DUCTBANK.

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LICENSE NO. 000165

date: MAR. 23, 2023 | detailed: C. BEHRENDS
designed: C. BEHRENDS | checked: N. GUNJA

SEDALIA
Let's Cross Paths
PETTIS COUNTY, MISSOURI

CENTRAL WWTP AERATION IMPROVEMENTS
CABLE SCHEDULE SHEET I

project: 154665 | contract:
drawing: E016 | rev.: D
sheet: of: sheets:
file: