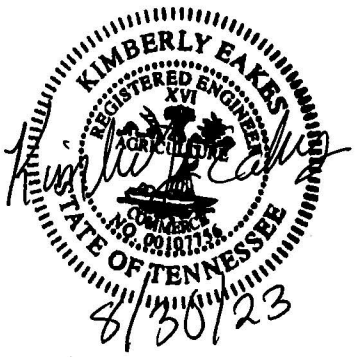
ADDENDUM FOUR
Water Treatment Plant
High Service Pump Upgrades
TDEC Project No.: DW20220948
City of Springfield, Tennessee
Bid No. 1250
Griggs & Maloney Project No. 1141-16



To: All Plan Holders

Owner: City of Springfield, Tennessee

Engineer: Griggs & Maloney, Inc.

Project: Water Treatment Plant
High Service Pump Upgrades
File 1141-16
TDEC Project No.: DW20220948

Bid Opening: 10:30 AM CDT **(unchanged), September 7, 2023 (unchanged)**

This addendum consists of five (5) 8.5" x 11" addendum pages, nine (9) 8.5" x 11" pages of Section 00410, seven (7) 8.5" x 11" pages of Section 00520, nineteen (19) 8.5" x 11" pages of Section 11214, seven (7) 8.5" x 11" pages of Appendix A, four (4) 8.5" x 11" pages of Appendix B, and fifteen (15) 24" x 36" Plan Sheet.

Acknowledge receipt of this addendum in the space provided on the Bid Form.

The Plan Holder's attention is hereby directed to the following changes:

IN THE SPECIFICATIONS

1. **GENERAL** – Any reference to "Section 262923" is changed to "Section 262923.23".

2. **SECTION 00410 LUMP SUM BID FORM FOR WATER TREATMENT PLANT HIGH SERVICE PUMP UPGRADES, CITY OF SPRINGFIELD, TENNESSEE, PROJECT NO. 1141-16, BID NO. 1250** – Replace the existing SECTION 00410 LUMP SUM BID FORM FOR WATER TREATMENT PLANT HIGH SERVICE PUMP UPGRADES, CITY OF SPRINGFIELD, TENNESSEE, PROJECT NO. 1141-16, BID NO. 1250 in its entirety with the attached SECTION 00410 LUMP SUM BID FORM FOR WATER TREATMENT PLANT HIGH SERVICE PUMP UPGRADES, CITY OF SPRINGFIELD, TENNESSEE, PROJECT NO. 1141-16, BID NO. 1250.

3. **SECTION 00520 AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACTOR (STIPULATED PRICE)**

Replace SECTION 00520 AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRCTION CONTRACT with **NEW** SECTION 00520 AGREEMENT in its entirety.

4. **SECTION 01010 SUMMARY OF WORK** – Add the following to Paragraph 1.02:

B. This project includes the cleaning and disinfection of the existing clearwell tank. The scope for this cleaning is outlined on Plan Sheet C-3, as amended. This cleaning will require the complete shutdown of the Water Treatment Plant. During this shutdown period, the Owner will purchase water from his alternate supplier. The Contractor shall have 14 calendar days to complete the cleaning and tank modifications for connecting the existing and new clearwells as detailed on Drawing Sheets C-3, C-4, S-100, and S-303. This includes the coring and placement of wall pipes.

The Contractor shall prepare a schedule detailing the completion of this cleaning, disinfection, and tank modifications that shows this work will be completed in either mid-October through mid-November 2024 or mid-February through mid-March 2025. These are the two periods of lowest plant production and represent the least possible expense to the City for water purchase.

C. This project includes the conversion of the existing High Service Pump Building from the existing 4160-volt electrical service to the new 480-volt electrical service for the new High Service Pumps.

This conversion includes the installation of a new power distribution panel, connection of this new panel to the existing 480-volt MCC within the existing High Service Pump Building, and conversion of the existing backwash pump 4160-volt motor to a new 480-volt motor and soft starter.

Conversion of the backwash pump must be completed prior to removing the 4160-volt service. This pump cannot be out of service for more than 24 hours. Contractor shall prepare a schedule detailing this conversion process for Engineer and Owner approval. Contractor shall notify Owner 14 calendar days prior to actual motor conversion, to allow the existing Water Treatment Plant preparation of operations without the pump.

D. This project includes the removal of the existing 4160-volt electrical service to the High Service Pumps. This removal will occur only after the new clearwell and new High Service Pumps are in full operation. The completion of this work is included in the Contract time as detailed in Section 00520, Article 4, Contract Times, Section 4.02. Contractor shall prepare a schedule detailing this removal operation, including procedures for protecting the clearwell water during pump removal operations. Equipment removal is detailed on the Drawings.

5. **SECTION 11214 VERTICAL TURBINE PUMPS** – Replace the existing SECTION 11214 in its entirety with the attached SECTION 11214 – VERTICAL TURBINE PUMPS - REVISED ADDENDUM FOUR.

6. **SECTION 263213 ENGINE GENERATORS** – Section 3.07.A. Replace “two years” with “three years”.

7. **APPENDIX A SCADA ASSISTANCE ALLOWANCE** – Replace the existing APPENDIX A SCADA ASSISTANCE ALLOWANCE in its entirety with the attached APPENDIX A SCADA ASSISTANCE SCOPE OF WORK – WATER TREATMENT PLANT HIGH SERVICE PUMP UPGRADES.

8. **APPENDIX B SCADA ASSISTANCE SCOPE OF WORK – 2021 EAST HILLCREST WATER PUMP STATION UPGRADE** – Replace the existing MR Systems Bill of Materials and Labor in its entirety with the attached MR System Bill of Material and Labor.

IN THE PLANS

1. **SHEET C2 SITE GRADING PLAN** - Add landing and ramp at North Side doors and eliminate reference to Spoil Stockpile. See re-issued Sheet C2 attached.

2. **SHEET C3 SITE PIPING PLAN** – Revise Clearwell cleaning notes and piping and add 24” valve. See re-issued Sheet C3 attached.

3. **SHEET C4 ENLARGED PIPING PLAN** – Revise piping and add 24” valve. See re-issued Sheet C4 attached.

4. **SHEET CD-3 SITE DETAILS** – Added Landing/Stair/Ramp Detail. See re-issued Sheet CD-3 attached.

5. **SHEET D1.0 SITE DEMOLITION PLAN** – Revised 24” pipe removal and abandon limits. See re-issued Sheet D1.0 attached.

6. **SHEET D1.1 DEMOLITION PLAN – HIGH SERVICE PUMP BUILDING** – See NEW Sheet D1.1 attached.

7. **SHEET M1 NEW CLEARWELL PLAN VIEW** – Redefine ports as one level measuring port and one float port. See re-issued Sheet M1 attached.

8. **SHEET M2 NEW CLEARWELL SECTION A & B AND DETAIL FOR CONNECTING TO EXISTING CLEARWLL** – Revised DETAIL FOR CONNECTION TO EXISTING CLEARWELL. See re-issued Sheet M2 attached.

9. **SHEET M3 NEW PUMP AREA – PLAN & SECTION A-A** – Revised Air Release Valve Reference. See re-issued Sheet M3 attached.

10. **SHEET M4 NEW PUMP AREA SECTIONS B-B, C-C & D-D** – NEW HIGH AND LOW WATER LEVEL FLOAT SWITCHES DETAIL. See re-issued Sheet M4 attached.

11. **ADDENDUM 1 SHEET 1 OF 3 SITE PLAN** – Add four new butterfly valves to table of owner supplied equipment. See re-issued Sheet 1 of 3 attached.

12. **SHEET E-101** – See re-issued Sheet E-101 attached.

13. **SHEET E-102** – See re-issued Sheet E-102 attached.

14. **SHEET E-201** – See re-issued Sheet E-201 attached.

15. **SHEET E-301** – See NEW Sheet E-302 attached.

CLARIFICATIONS

1. **ADDENDUM 1 SHEET 1 SITE PLAN** – Attached find quotes/proposals for all Owner Supplied Equipment which itemize everything included with each piece of equipment. Anything required for installation and NOT included on these pages must be provided by the Contractor.

2. **SECTION 00410** – Special Geotechnical allowance includes 3rd party oversight by TTL and includes execution of the grouting of subsurface feature by a qualified grouting contractor.

3. **Question:** Will a coordination and Arc Flash Study be required for this project? **Answer:** Coordination and Arc Flash Study are not required for this project.

4. **Question:** Sheet E-202 shows the Main MCC split into two line-ups. The One-Line and Floor Plan show the MCC as one Line-up. Please confirm all eleven (11) section of the MCC are intended to be bussed together as one unit. **Answer:** All eleven sections of the MCC are intended to be bussed together as one unit.

5. **Question:** Sheet E-202 shows two (2) single phase transformers in section 3T and 9T. These transformers do not show up on the One-Line. Please clarify if these transformers are required and their intended purpose. **Answer:** The transformers are part of the MCC and are for the controls required to transfer the power between the utility main breaker and the generator input main breaker. This is installed at the factory.

6. **Question:** Power Plan for East Hillcrest Pump Station – Will a cable section be supplied with the owner supplied MCC/VFD Section for routing of cables ((3)500kCMIL & (1)#3G))

from the existing MCC bus to the new MCC Section? **Answer:** No, a cable will not be supplied. This is contractor supplied and installed.

7. **Question:** Sheet E-102, Note 3. Please provide a spec for these door contacts. **Answer:** Door magnetic switch, single pole double throw with screw terminal connection, 30V, 250mA rated. Edwards Signaling Model 61 or equivalent.

8. **Question:** Sheet E-102 Note 9. I don't see Radar Level and Floats in MR Systems Scope. Please clarify if this is intended to be provided by MR Systems or the Contractor. **Answer:** These instruments are included in MR's scope (see last two items on page 3 of 6 and first item on page 4 or 6).

9. **Question:** Sheet E-102 Note 6. I don't see the New SCADA Panel and Kirk Key Interlock Panel in MR Systems Scope. Please clarify if this is intended to be provided by MR Systems or the Contractor. **Answer:** The new SCADA Panel is part of MR Systems scope and the Kirk Key Interlock Panel will be integral to the SCADA Panel. This is item PLC-HSPS on page 1 of 6 and the kirk keys are listed under the "Panel Front Devices" on page 2 of 6.

10. **Question:** Sheet E-101 Notes. Who provides/pulls primary wire? **Answer:** The primary wires are provided and installed by the utility. The Contractor is responsible for installing the conduits per the utility requirements.

11. **Question:** Sheet E-101 Notes. Who provides/installs utility transformer? **Answer:** The Contractor installs the transformer pad per the utility requirements. The utility company will provide and install the utility transformer.

12. **Question:** MR Systems quotes talk about door security. Electrical drawings do not reflect... what is electrical portion of this scope? If any? **Answer:** See Note/Flag 3 on Sheet E-102. Final door switch quantity in MR Systems quote to be verified during submittals.

13. **Question:** Drawings do not show locations of instruments referenced in MR Systems quote…how will locations be determined for pathway/circuit takeoff and install? **Answer:** Instruments FE/FIT-HSPS-1, PIT-HSPS-1 & PI-HSPS-1 are all shown in the meter vault detail on Sheet CD-4 and location on Sheet C3 and conduits on Sheet E-101. Instruments FE/FIT-HSPS-2, PIT-HSPS-2 & PI-HSPS-2 are all shown in the meter vault detail on Sheet CD-5 and location on Sheet C3 and conduits on Sheet E-101. The door switches as discussed above. The location of LT-HSPS-1, LSH-HSPS-1 & LSL-HSPS-1 are identified on Sheets M! and M4. Se revised Sheet M1 included with this Addendum 4 for clarification on float/radar locations. See Not/Flag 9 on Sheet E-102 regarding radar/floats.

14. **Questions:** Is this project tax exempt? **Answer:** Sales tax applies per Tennessee Laws. See Revied Appendix A and Appendix B documents for updated quotes as discussed in the pre-bid meeting, included with this Addendum 4.

END OF ADDENDUM FOUR

Bidder _____ Date _____

LUMP SUM BID FORM FOR

WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE
PROJECT NO. 1141-16
BID NO.: 1250

The undersigned, having examined the Contract Documents, Specifications, Construction Drawings, all related documents and data including a thorough examination of the site, hereby agrees to furnish all labor, materials, equipment and supervision to complete the project in accordance with the Contract Documents as listed following:

Bidder will complete all of the Work in accordance with the Contract Documents, within the times allotted for the following Lump Sum Price:

Item	Est Qty	Units	Cost Per Unit	Total Cost
1) High Service Pump Upgrades	1	LS		
2) High Service Pump SCADA Allowance			*$425,262.00*	*$425,262.00*
3) East Hillcrest Upgrade (Addendum One)	1	LS		
4) East Hillcrest Upgrade SCADA Allowance (Addendum One)			*$54,122.00*	*$54,122.00*
5) Geotech/Testing Allowance (Section 00800)			*$115,000.00*	*$115,000.00*
6) Special Geotechnical Services Allowance (Section 02250)			*$250,000.00*	*$250,000.00*
7) Equipment Salvage Credit	1	LS		

A. Equipment Salvage Credit includes one (1) 4160 Volt Generator, three (3) removed 800 hp motors, one (1) spare 800 hp motor, one (1) removed 150 hp motor, and one (1) spare 150 hp motor. Contractor to dispose of pumps, switchgear, wiring, piping, and any other miscellaneous materials of demolition not defined here and not include these items in this credit.

_____
(TOTAL LUMP SUM BID) IN FIGURES

_____
(TOTAL LUMP SUM BID) IN WORDS

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

A. City Recorder
City of Springfield
405 N. Main Street
Springfield, Tennessee 37172

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum, Date

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding

paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder acknowledges that (1) each Bid Lump Sum or Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Bidder _____ Date _____

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security in the form of Bid Bond, cashier's check, or money order;

B. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

C. Contractor's License No.:_____;

D. Drug Free Workplace Affidavit;

E. Statement of Compliance Certificate Illegal Immigrants;

F. Iran Divestment Act; and

G. Non Boycott of Israel Certification.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

Bidder _____ Date _____

ARTICLE 9 – BID SUBMITTAL

BIDDER: *Indicate correct name of bidding entity.*

_____

By:
Signature _____

Printed name _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
Signature _____

Printed name _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

Bidder's Contractor License No.: _____
(where applicable)

Bidder _____ Date _____

DRUG-FREE WORKPLACE AFFIDAVIT

(Submit with Bid)

STATE OF _____

COUNTY OF _____

The undersigned, principal officer of _____ employer of five (5) or more employees contracting with _____ to provide construction services hereby states under oath as follows:

1 The undersigned is a principal officer of _____ (hereinafter referred to as the "Company"), and is duly authorized to execute this Affidavit on behalf of the Company.

2. The Company submits this Affidavit pursuant to T.C.A. § 50-9-113, which requires each employer with no less than five (5) employees receiving pay who contracts with the state or any local government to provide construction services to submit an affidavit stating that such employer has a drug-free workplace program that complies with Title 50, Chapter 9, of the *Tennessee Code Annotated*.

3 The Company is in compliance with T.C.A. § 50-9-113.

Further affiant saith not.

_____
Principal Officer

STATE OF _____

COUNTY OF _____

Before me personally appeared with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who acknowledged that such person executed the foregoing affidavit for the purposes therein contained.

Witness my hand and seal at office this _____ day of _____, 20_____.

_____
Notary Public

My commission expires _____

Bidder _____ Date _____

STATEMENT OF COMPLIANCE CERTIFICATE
ILLEGAL IMMIGRANTS

EACH CONTRACTOR BIDDING SHALL FILL IN AND SIGN THE FOLLOWING

This is to certify that _____ have fully complied with all the requirements of Chapter No. 878 (House Bill No. 111 and Senate Bill No. 411) which serves to amend Tennessee Code Annotated Title 12, Chapter 4, Part I, attached herein for reference.

- All Bidders for construction services on this project shall be required to submit an affidavit (by executing this compliance document) as part of their bid, that attests that such Bidder shall comply with requirements of Chapter No. 878.

Signed: _____

State of _____

County of _____

Personally appeared before me, _____ the undersigned Notary Public, _____, the within named bargainor, with whom I am personally acquainted, and known to me to be the President / Owner / Partner (as applicable) of the _____, Corporation, Partnership, Sole Proprietorship (as applicable) and acknowledged to me that he executed the foregoing document for the purposes recited therein.

Witness my hand, at office, this _____ day of _____, 20_.

_____
Notary Public

My commission expires _____

_____ _____

Bidder Date

IRAN DIVESTMENT ACT

EACH VENDOR BIDDING SHALL FILL IN AND SIGN THE FOLLOWING

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to best of its knowledge and belief that each bidder is not a person included within the list created pursuant to TCA 12-12-106.

Bidder (*Indicate correct name of bidding entity)* _____

By: *(Signature)* _____

Printed Name*:* _____

Title*:* _____

Date: _____

STATE OF _____

COUNTY OF _____

Before me personally appeared with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who acknowledged that such person executed the foregoing affidavit for the purposes therein contained.

Witness my hand and seal at office this _____ day of _____ .

_____

Notary Public

My commission expires _____

Bidder _____ Date _____

NON-BOYCOTT OF ISRAEL CERTIFICATION

The Contractor certifies that it is not currently engaged in, and will not for the duration of the contract engage in, a boycott of Israel as defined by Tenn. Code Ann. § 12-4-119. This provision shall not apply to contracts with a total value of less than two hundred fifty thousand dollars ($250,000) or to contractors with less than ten (10) employees.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

END OF SECTION 004100

SECTION 00520

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is dated as of the _____ day of _____ in the year of 2023, by and between City of Springfield, Tennessee ("Owner") and _____("Contractor").

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Construction of the new high service pumping station, including concrete ground storage tank, all site work, building, new clearwell, new pumps, controls, piping, new water system wide SCADA equipment, and the work contained in Addendum One.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described in Article 1 above.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Griggs & Maloney, Inc.; P.O. Box 2968, Murfreesboro, Tennessee 37133.

3.02 The Owner has retained Griggs and Maloney, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Contract Times: Days

A. The Work for the project titled "High Service Pump Upgrades" shall be substantially completed within 500 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 530 calendar days after the date when the Contract Times commence to run. Contract extension due to equipment availability will be considered upon submittal of proof of equipment order date and letter from manufacturer confirming equipment delivery time.

B. It is the requirement of this Contract to clean and disinfect the existing clearwell and install the connection of the piping and valve for the new clearwell. These required improvements shall be completed within 14 calendar days. Notification of 14 days minimum is required prior to

shutdown of the water treatment plant operations. These 14 calendar days are included in the 530 calendar days identified in Paragraph A.

C. The Work for the project titled "2021 East Hillcrest Water Pump Station Upgrade," Addendum One, shall be substantially completed within 180 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 210 calendar days after the date when the Contract Times commence to run.

4.03 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones, if any, not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Clearwell cleaning and new clearwell connection:

a. Contractor shall pay Owner $10,000 per day for each day that expires after the time (as duly adjusted pursuant to Contract) specified in Paragraph 4.02B, because the Water Treatment Plant cannot be out service for more than 14 calendar days.

2. Substantial Completion: Contractor shall pay Owner $1,000.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A and 4.02.C above for Substantial Completion until the Work is substantially complete.

3. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $1,000.00 for each day that expires after such time until the Work is completed and ready for final payment.

4. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work other than Unit Price Work, a lump sum including allowances of $_____.

All specific allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item). The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the

General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

C. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment) is as follows:

_____

(Figures)

_____

(Words)

ARTICLE 6 – PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 Progress Payments; Retainage

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 25th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

a. 95 percent of Work completed (with the balance being retainage); and

b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 Final Payment

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due, as provided in Article 15 of the General Conditions, shall bear interest as may be required by law.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 Contents

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 7, inclusive).

2. Performance bond.
3. Payment bond.
4. General Conditions (pages 1 to 64, inclusive; Specification Section 00700).
5. Supplementary Conditions (pages 1 to 13, inclusive; Specification Section 00800).
6. Specifications as listed in the table of contents of the Project Manual.
7. Drawings (not attached but incorporated by reference) consisting of 33 sheets with each sheet bearing the following general title: New Mt. Denson Pumping Station.
8. Addenda (Specification Section 00900).
9. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid.
    b. Documentation submitted by Contractor prior to Notice of Award.
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 Terms

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 Assignment of Contract

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 Successors and Assigns

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 Severability

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 Contractor's Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
City of Springfield, Tennessee	_____
By: _____	By: _____
Title: Mayor	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
	License No.: _____ *(where applicable)*

END OF SECTION 00520

SECTION 11214
VERTICAL TURBINE PUMPS
REVISED ADDENDUM FOUR

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required, install, complete and ready for operation and field test, four vertical turbine pumps, and motors as shown on the Drawings and as specified herein.

B. These Specifications are intended to give a general description of what is required, but do not cover all details which will vary in accordance with the requirements of the equipment as offered. It is, however, intended to cover the furnishing, factory witness testing, delivery and complete installation and field testing of all materials, equipment and appurtenances for the complete pumping units as herein specified, whether specifically mentioned in these Specifications or not.

C. The work under this Section shall include supervisory services during installation and field testing of each unit and instructing the regular operating personnel in the proper care, operation and maintenance of the equipment.

D. Electric Motors shall be furnished and installed as part of the work of this Section.

1.02 RELATED WORK

A. Concrete work and the installation of anchor bolts are included; however, anchor bolts for these units as recommended by the pump manufacturer (Manufacturer) shall be furnished by the Contractor under this Section.

B. Instrumentation and control work, except as specified herein, is included in the SCADA integrator's scope of work. Any instrumentation and controls provided in this section shall adhere to instrumentation and control scope included in the SCADA integrator's scope of work.

C. Valves, mechanical piping and appurtenances and pipe hangers and supports are included in Division 2, unless specifically mentioned within this Section.

D. Electrical work except as hereinafter specified is included in Division 26.

1.03 REFERENCE STANDARDS

A. Design, manufacturing and assembly of elements of the equipment specified herein shall be in accordance with the following:

1. American Concrete Institute (ACI).

2. American Gear Manufacturers Association (AGMA).

3. American Institute of Steel Construction (AISC).

4. American Iron and Steel Institute (AISI).

5. American Society of Mechanical Engineers (ASME).

6. American National Standards Institute (ANSI).

7. American Petroleum Institute (API).

8. American Society for Testing Materials (ASTM).

9. American Water Works Association (AWWA).

10. American Welding Society (AWS).

11. American Bearing Manufacturers Association (ABMA).

12. Hydraulic Institute (HI) Standards.

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

14. International Organization for Standardization (ISO).

15. National Electrical Code (NEC).

16. National Electrical Manufacturers Association (NEMA).

17. National Sanitation Foundation (NSF).

18. Occupational Safety and Health Administration (OSHA).

19. The Society for Protective Coatings (SSPC).

20. Underwriters Laboratories (UL).

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SYSTEM DESCRIPTION

A. The vertical turbine pumps will pump water from the clearwell to the City's water distribution system. The equipment to be furnished under this section shall include four vertical turbine pumps and 350 hp, 460-volt, 3-phase, 60 hz, premium service, 1800 RPM WP1 vertical electric motors; and one 150 hp, 480-volt, 3-phase, 60 hz, premium service, 900 RPM, vertical electric, solid shaft, non-reversing ratchet WP1 motor to replace the 4160-volt motor for the existing backwash pump, water pumps and motors,

and accessories, all as specified herein and as shown on the Drawings. Refer to the SCADA integrator's scope of work for system description and control loop descriptions and narratives. Contractor shall coordinate and be fully responsible for proper operation and compatibility between items in this scope of work and items in the SCADA integrator's scope of work.

1.05 QUALIFICATIONS

A. To assure unity of responsibility, the motors and supporting sole plates shall be furnished and coordinated by the Pump Manufacturer. The Contractor and manufacturer shall assume responsibility for the satisfactory installation and operation of the entire pumping system including pumps, motors, and sole plates as specified.

B. The equipment covered by this Section is intended to be standard pumping equipment of proven ability as manufactured by companies having extensive experience in the production of such equipment similar to the applications stated in Paragraphs 1.04, 2.02 and 2.03. Units specified herein shall be furnished by a single manufacturer. The equipment provided shall be designed, constructed and installed to operate satisfactorily when installed as shown on the Drawings.

C. Pumps shall be manufactured in accordance with the Hydraulic Institute Standards, except where otherwise specified.

D. The Manufacturer shall be fully responsible for the design, arrangement, and operation of all connected rotating components of the assembled pumping unit mounted on a fabricated steel baseplate to ensure that neither harmful nor damaging vibrations occur at any speed within the specified operating range.

E. The Manufacturer shall have an authorized warranty center within a 300-mile radius of the job site, fully staffed with factory trained mechanics, and equipped with a stock of all necessary spare parts for each model of pump furnished under this contract. The service facility shall be an established entity prior to delivery of equipment for this project.

F. All equipment furnished under this Specification shall be new and unused, shall be the standard product of manufacturers having a successful record of manufacturing and servicing similar equipment and systems to that specified herein for a minimum of five years.

G. The pumping equipment shall be furnished complete with accessories required and shall meet the detailed requirements of the Specifications.

H. Pump Manufacturer shall ensure all pumps operate within the acceptable vibration range set forth by the latest version of HI standards throughout the complete operating range of the unit. This shall be confirmed during the factory witness performance test of each unit for the following:

- X-Y-Z axis Pump Bearing Housing Vibration
- Shaft Vibration
- Pump Vibration during mechanical run test

All information shall be included in the factory witness performance test report provided by the manufacturer and included as an attachment to the equipment submittals.

1.06 SUBMITTALS

A. Submit, in accordance with Section 01300, copies of all materials required to establish compliance with the specifications. Submittals shall include the following:

1. Certified dimensional drawings showing all important details of pump construction and auxiliary apparatus, including pump curves showing both constant 1800 RPM at 60 hz operation, and projected operations at 55 hz, 50 hz, 45 hz, 40 hz, and manufacturer's minimum pump speed.

2. Certified foundation, pump support, and anchor bolt plans and details.

3. Literature and drawings describing the equipment in sufficient detail, including materials of construction, to indicate full conformance with the detail specifications.

4. Schematic electrical wiring diagram and other data as required for complete pump installation.

5. The total weight of the equipment including the weight of the single largest item.

6. A complete materials table for all equipment establishing compliance with these specifications.

7. A list of the manufacturer's recommended spare parts with the manufacturer's current price for each item. Include gaskets, packing, etc. on the list. List all bearings by the bearing manufacturer's numbers only.

8. All information required by Division 1.

9. A statement indicating bearing life.

10. Complete data on motors in accordance with this Section.

11. The pump manufacturer shall coordinate with the motor manufacturer and VFD manufacturer (VFD supplied by Contractor) and submit, as part of the shop drawings, a written statement signed by the pump manufacturer, motor manufacturer and VFD manufacturer. This written statement shall certify that the VFD manufacturer has received the required information from the pump and motor manufacturers; that all parties have reviewed the system and coordinated the equipment selection; and that the pumps, motors, drives and controls are designed to operate continuously at any and all points within the required range of operation, without overheating, without cavitation and without excessive vibration or strain. Include with this written statement all motor data and information that has been used for the coordination.

12. Noise data as specified in this Section.

13. Complete description of surface preparation and shop painting.

14. Critical speed analyses report including a statement of guarantee that the critical speed analyses as required in Paragraph 1.05 H of this Section have been completed and that the specified limitations will be met.

B. Design Data:

1. Data on the characteristics and performance of each pump. Data shall include guaranteed performance curves to ANSI/HI 14.6 acceptance grade 1B for all specified points, based on actual factory tests of similar units, which show that they meet the specified requirements for head, flow rate, efficiency, guaranteed maximum net positive suction head required (NPSH3), submergence and horsepower. Curves shall be submitted on 8- 1/2-inch by 11-inch sheets, at as large a scale as is practical. Curves shall be plotted from zero flow at shut off head to pump flow rate at minimum specified total head (TH). The POR and AOR (refer to ANSI/HI 9.6.3) shall be clearly shown on the curves. This information shall be prepared specifically for the pump proposed. Catalog sheets showing a family of curves will not be acceptable.

C. Test Reports:

1. Certified motor test data as described in this Section.

2. Tabulated data for the drive motors including rated horsepower, full load rpm, power factor and efficiency curves at 1/2, 3/4 and full load, service factor and kW input, including when the pump is at its design point. Submit a certified statement from the motor manufacturer that the motors are capable of continuous operation on the power supply from the variable frequency drives to be furnished without affecting their design life for bearings or windings.

3. Description of pump factory witness test procedures and equipment.

4. Factory and field performance test data as specified in PART 2 and PART 3.

5. A schedule of the date of factory witness testing and delivery of the equipment to the job site.

D. Instructions, Certifications, and Reports:

1. Manufacturer's Installation Instructions

2. Manufacturer's field report as specified in PART 3.

3. Submit warranty information to demonstrate conformance to Paragraph 1.10.

4. Identify the entity and experienced individual who will inspect the installation in accordance with Paragraph 1.07.

E. Project Record Documents.

F. In the event that it is not practical to conform to certain details of the specifications because of different manufacturing techniques, describe completely all nonconforming aspects.

1.07 MANUFACTURER SERVICES INCLUDING OPERATING INSTRUCTIONS

A. Operating and Maintenance Manual:

1. Operating and maintenance manual shall be furnished by the Manufacturer to the Engineer as in the form prescribed by the Engineer. The manuals shall be prepared specifically for this installation and shall include all required cuts, drawings, equipment lists, description, etc. that are required to instruct operating and maintenance personnel unfamiliar with such equipment. The maintenance instructions shall include trouble shooting data, full preventative maintenance schedules, and complete spare parts lists with ordering information.

B. Installation Inspection and Startup:

1. The Contractor shall include in his bid price the services of a pump manufacturer’s factory representative who has complete knowledge of proper operation and maintenance shall be provided to instruct representatives of the Owner and the Engineer on proper operation and maintenance. This work may be conducted in conjunction with the inspection of the installation and start-up. If there are difficulties in operation of the equipment because of the Manufacturer's design or fabrication, additional service shall be provided at no additional cost to the Owner. The listed service requirements are exclusive of travel time, and shall not limit or relieve the Contractor of the obligation to provide sufficient service necessary to place the equipment in satisfactory and functioning condition. Also refer to requirements in PART 3 of this Section.

2. Installation inspection: Complete review of installation is required. Provide written certification that the installation is complete and operable in all respects, and that no conditions exist which may affect the warranty. The Manufacturer shall supply the installation inspection services of an experienced manufacturer's factory representative to verify the proper pump installation. If the Contractor does not provide qualified installation staff on the job during the pump installation, the Engineer may direct the Contractor to provide the services of a manufacturer's factory representative to give the necessary instructions to ensure a proper installation. Qualified supervisory services, including Manufacturers' engineering representatives, shall be provided to ensure that the installation is done in a manner fully approved by the Manufacturer. The manufacturer's factory representative shall specifically supervise the installation and alignment of the pump with the driver, the grouting, and the alignment of the connecting piping and the installation of the field installed packing or mechanical seal. If there are difficulties in the start-up or

operation of the equipment due to the Manufacturer's design or fabrication, additional service shall be provided at no additional cost to the Owner. Services of the manufacturer's factory representative and training shall be provided when the first pump is started, with follow-up visits upon start-up of each subsequent pump.

a. Minimum time on-site shall be one 8-hour day per pump.

3. Start-Up: Provide written report, summarizing test procedures, tested and measured variables (flow rates, total heads, shaft-speed, vibration measurements, alignment check, etc.):

a. Minimum time on-site shall be one 8-hour day per pump.

C. Training

1. Field and classroom instruction on operation and maintenance of the equipment, including start-up, shut-down troubleshooting, lubrication, maintenance and safety.

2. The Manufacturer shall provide detailed manuals to supplement the training courses. The manuals shall include specific details of equipment supplied and operations specific to the project.

3. The Manufacturer shall make use of teaching aids, manuals, slide/video presentations, etc. After the training services, such materials shall be delivered to Owner.
   a. Minimum time on-site shall be one 8-hour day per pump.

D. The Contractor alone shall be responsible for requesting these services, and shall coordinate these requests with all other relevant trades, to ensure the effectiveness of the Manufacturers' service. In the event that the lack of coordination by the Contractor results in the need to recall the manufacturer's factory representative, the lost time shall not be counted against the above days.

1.08 TOOLS AND SPARE PARTS

A. Furnish all special tools and test equipment required for the proper servicing of all equipment as specified in Section 01600. All such tools and test equipment shall be furnished in a suitable steel tool chest complete with lock and duplicate keys.

B. All spare parts shall be properly protected for long periods of storage and packed in containers that are clearly identified with indelible markings as to contents.

C. Furnish the following spare parts for each size pump.

1. One complete mechanical seal.

D. Provide to the Owner a list of all spare and replacement parts with individual prices and location where they are available. Prices shall remain in effect for a period of not less than one year after start-up and final acceptance.

E. Special tools and spare parts shall be furnished in accordance with Section 01600.

1.09 PRODUCT HANDLING

A. Delivery, storage and handling of equipment shall be in accordance with Section 01600 and as specified herein.

B. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of fabrication, including storage in accordance with Manufacturer's requirements, until the unit and equipment are ready for operation.

C. All equipment and parts must be properly protected against any damage during shipment. Store the equipment in accordance with manufacturer's recommendations.

D. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the Engineer.

E. The finished surfaces of all exposed flanges shall be protected by wooden or equivalent blank flanges, strongly built and securely bolted thereto.

F. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

G. No shipment shall be made until approved by the Engineer in writing.

H. For protection of bearings during shipment and installation, the bearing shall be properly processed. Anti-friction bearings, if pre-lubricated, shall be protected in accordance with the bearing manufacturer's recommendations against formation of rust during a long period of storage while awaiting completion of installation and start-up of the machine in which they are used. Anti-friction bearings which are not pre-lubricated shall be properly treated in accordance with the bearing manufacturer's recommendation against formation of rust during a long period of storage while waiting completion of installation and start-up by the application of an appropriate rust preventative treatment.

1.10 WARRANTY

A. All equipment supplied under this Section of the Specifications shall be warranted for a period of one year from Substantial Completion by the Contractor and the Manufacturer. Warranty period shall commence on the date of Substantial Completion, as outlined in Division 1 and in Division 0.

B. The equipment shall be warranted to be free from defects in workmanship, design and materials. If any part of the equipment should fail during the warranty period, it shall be replaced in the machine(s) and the unit(s) restored to service at no expense to the Owner.

C. The Manufacturer's warranty period shall run concurrently with the Contractor's warranty period. No exception to this provision shall be allowed.

D. Refer to individual component sections for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL

A. The pumping units shall all be supplied by one manufacturer and shall be complete including pump, motor, and appurtenances such as, but not limited to, couplings, guards and gauges. The pump and motor shall conform to AWWA E-103, Horizontal and Vertical Line-Shaft Pumps Standard, where not in conflict with the requirements specified herein. Ample room shall be provided for inspection, repairs and adjustments.

B. The pump shall be capable of temporary operation at and near shut off head during one minute, maximum, opening and closing of the pump discharge control valve as the pump starts and stops.

C. The pump and motors shall be designed and built for 24-hour continuous service at any and all points within the required range of operation, without overheating, excessive vibration or strain.

D. Pump sole plate and baseplate shall be rigidly and accurately anchored into position, precisely leveled and aligned, so that the completed installation is free from stress or distortion. All necessary anchor bolts, plates, nuts and washers shall be furnished as specified herein and installed by the Contractor and conform to the recommendations and instructions of the manufacturer. Pumps and pump baseplates shall have adequate provision to collect drainage and convey it for appropriate disposal.

E. The pump baseplate and sole plate shall be bolted to the concrete foundation with Type 316 stainless steel J-type cast-in, or epoxy set anchor bolts and washers. Nuts on stainless steel anchor bolts shall be monel. Anchor bolt configuration and installation shall be in accordance with API RP 686 and ACI 318-08 where not in conflict with the specific requirements contained herein. An anti-seize compound shall be of molybdenum disulfide base such as Molycoat G or approved equal. The baseplate and associated accessories shall conform to the following:

1. The baseplate shall be proportioned to support each entire pump/motor assembly and the loads (including the results of the dynamic analysis) to which it may be subjected during operation. It shall be properly supported on sole plate and anchored and located as shown on the Drawings. Lifting lugs or eye bolts shall be provided by the Manufacturer. Special slings, strongbacks, or other devices necessary to handle the pump during loading, unloading, erection, installation, and subsequent disassembly and assembly shall be furnished by the Contractor.

2. Sole plate shall be provided under pump baseplate. The sole plate shall be installed, leveled and grouted in accordance with API RP 686, Chapter 5 – Mounting Plate Grouting. Jacking bolts and Five Star non-shrink epoxy grout as specified below shall be provided for leveling the baseplate assembly.

3. An anchor bolt layout shall be provided to aid in placement of anchor bolts. All leveling jacking bolts shall be backed off after grouting so that they do not support any of the load. The use of shims or leveling nuts on anchor bolts is specifically prohibited.

4. The grout for use in grouting under the sole plate supported by jack bolts (no shim stacks) shall be Five Star DP Epoxy Grout which is an expansive, non-shrink, low exothermic epoxy system, or approved equal, mixed and applied according to the manufacturer's directions to a thickness as noted in Paragraph 2.03.

5. The presence of a Manufacturer's representative during the pouring of the epoxy grout as well as the use of rigid non-absorbing formwork and a head box are mandatory. The surface of the formwork in contact with the epoxy grout shall be covered with a layer of paste wax to facilitate removal. Clearance between the concrete surface and the bottom surfaces of the sole plate shall be per manufacturer's recommendation.

6. The concrete surface to be in contact with the epoxy grout shall be chipped to present a slightly rough surface and remove the laitance. The surface shall then be cleaned of all dust, moisture and oil. A thin layer of leveling grout shall be placed under metal discs that the jack bolts shall bear on. A 1-inch minimum diameter by 1/4-inch-thick stainless-steel disk, with full radiused edges shall be placed under each jack bolt. All metal edges in contact with the epoxy grout shall be radiused to a minimum 1/2-inch radius in order to prevent stress risers in the epoxy grout.

7. The annular space between the anchor bolts and the anchor bolt sleeve shall be filled with expanding urethane foam. The threads of both the anchor bolts and jack bolts in contact with the grout shall be covered with paste wax and a layer of duct tape. After all alignment tolerances are met, the anchor bolts shall be tightened snug to prevent movement during the pour. The epoxy grout shall not be allowed to extend above the top edge of the sole plate. After the epoxy grout has fully cured, within 24 to 48 hours after pouring, the jack bolts shall be removed and the anchor bolts tightened to the torque levels as recommended by the Manufacturer.

8. The threaded jack bolt holes shall be coated with grease and the jack bolts cleaned of the paste wax and duct tape then reinserted and secured in position with a lock nut to within 1/4 inch of the bottom of the hole. After grouting, edges shall be chipped and patched to present a smooth finish.

F. Each major piece of equipment shall be furnished with a stainless-steel nameplate (with embossed data) securely mounted to the body of the equipment. At a minimum, the nameplate for the pumps shall include the manufacturer's name and model number, serial number, rated flow rate, head, and speed. At a minimum, nameplates for motors shall include the manufacturer's name and model number, serial number, horsepower, speed, input voltage, amps, number of cycles and power and service factors.

G. The pump and its driving equipment shall be designed and constructed to successfully withstand a maximum turbining speed of the unit resulting from backflow through the pump. Manufacturer shall determine maximum potential reverse rotational speed for

design. As additional protection, a non-reverse ratchet shall be installed in the electric motor to prevent reverse rotation.

H. The maximum sound level from one pump/motor measured 3 feet from the equipment and 5 feet above the floor shall not exceed 85 dBA.

I. The nameplate ratings of the motor shall not be exceeded, nor shall the design service factor be reduced when the pump is operating at any point on its performance curve within the specified operating range at maximum speed.

J. Mechanical equipment, including electric motors shall be supplied and installed in accordance with applicable OSHA regulations. The Contractor's attention is drawn to the requirement for guards on all rotation assemblies.

2.02 CONDITIONS OF OPERATION

A. The pump shall be Model 15EHL by Flowserve or approved equal. Layout is based upon the design model Flowserve 15EHL. Any modification cost from the original design shall be solely the Contractor's responsibility. The pump shall be identical in every respect with all parts interchangeable.

Approved Pump Manufacturers:

Flowserve Corporation
Fairbanks Morse
Peerless Pump

B. Each pump shall be designed for the conditions of service tabulated as follows and shall operate within the system head curve envelope. All pumps shall have a continuously rising head-flow rate performance curve for stable pump operation within the AOR.

C. The pumps shall operate throughout the entire operating range, within the vibration limitations specified in Paragraph 1.05 above.

TABLE 11214-1
HIGH SERVICE PUMPING UNIT DESIGN REQUIREMENTS

Item Description	Design Conditions
Service	Potable Water
Number of Pumps (operating/standby)	4 (3/1)
Maximum Motor Full Load Speed (FLS) (rpm)	1775
Maximum Allowable Motor Horsepower (non-overloading throughout operating range) (HP)	350
Motor Design Voltage/Phase/Frequency	460/3/60
Maximum Anticipated Pumped Fluid Temperature (degrees F.)	70
Minimum Pump Discharge Nozzle Size (inches)	10
Pump Shut-Off Head at Motor FLS Acceptable Range (minimum/maximum) (feet)	720
Flow Rate at Secondary Operation Point (gpm)	2,750
Minimum TH at Secondary Operation Point (feet)	400
Minimum Bowl Efficiency at Secondary Operation Point (%)	80
Intermediate (Design) Point Flow Rate (gpm)	2,200
Minimum TH at Intermediate (Design) Point (feet)	530
Minimum Bowl Efficiency at Intermediate (Design) Point (%)	83
Best Efficiency Point (BEP) Flow Rate Acceptable Range (gpm)	1,600 to 2,750
Minimum Bowl Efficiency at BEP (%)	84
BEP Location Relative to Intermediate Design Point	Right
High Operating Point TH (feet)	600
Minimum Flow Rate at High Operating Point (gpm)	1,600
Minimum Bowl Efficiency at High Operating Point (%)	78
Minimum Submergence Above Pump Suction Bell (inches)	32
Model Used for Design	Flowserve Model 15EHL

2.03 PUMP CONSTRUCTION

A. Pump shall be stamped NSF certified and conform to the materials tested and approved by NSF.

B. Pump bowls, including suction bell, shall be ASTM A48 Class 30 cast iron, flanged and bolted construction with bearings as specified below. All bowl hardware shall be Type 316 stainless steel with monel nuts. Bowls shall be equipped with Type 420 stainless steel wear rings. The suction case bearing shall be in accordance with specified requirements below and shall be provided with a separate external water flush system. Manufacturer shall design the system and provide the external piping necessary.

C. Impeller shall be cast nickel aluminum bronze, ASTM B148, Alloy UNS No. C95800 enclosed type; statically and dynamically balanced to ISO 1940-1 quality grade G 2.5 Impeller design shall include adequate material so as to provide for the future addition of wear ring to restore impeller efficiency for enclosed design.

D. Impeller shafts and couplings shall be Type 17-4 PH stainless steel. Collets and locknuts shall be Type 316 stainless steel.

E. Line-shafts and couplings shall be provided in accordance with AWWA E-103 and shall

be Type 316 stainless steel and shall be field replaceable. Maximum shaft lengths shall be 10-ft and shall be verified with vibration analysis in Paragraph 1.05 H above. Design of the column flange system shall provide for bearing retainers.

F. Open line-shaft and bowl bearings above impeller shall be removable self-flushing product lubricated combination bismuth tin bronze (ASTM B505 Alloy C89835) and cutlass rubber or synthetic materials as manufactured by Greene Tweed and Co. (model AR® HT) or Thordon (model SKL) mounted in bronze, fabricated steel, or stainless-steel bearing supports as specified above.

G. Discharge columns shall be carbon steel flanged and bolted construction in lengths not exceeding [10-ft]. All flange hardware shall be Type 316 stainless steel with monel nuts. The minimum wall thickness on all columns with nominal diameters above 8-in shall be 0.375-in. The minimum wall thickness on columns with nominal size of 8-in or 6-in shall be 0.3125-in and for 4-in shall be 0.25-in in accordance with AWWA E-103.

H. Pump Discharge Head and Motor Stand for Wet Well Mounted Pumps:

1. Manufacturer shall provide a sole plate for mounting the pump and motor on the concrete support. Sole plate for the motor stand shall incorporate jack bolts for leveling. The motor stand shall be fabricated of carbon steel design with an integral base plate. The bottom of the motor support baseplate shall be machined to mate with the sole plate. The supporting sole plate shall be a separate fabricated of the same material as motor support stand with tapped holes for bolting down motor stand baseplate complete with all bolts, nuts, washers, anchor bolts and jack bolts for leveling. The top of the sole plate shall be machined to mate with the discharge head baseplate. The dimensions of the sole plate shall be determined by the Manufacturer. Sole plate shall have a minimum thickness of 1.5-in.

2. Provide below base discharge design of fabricated carbon steel with 350 lb ASME B16.47 flanged ends.

3. Motor mounting flange for the vertical driving motor shall be of standard NEMA dimensions for commercially available motors. The top of the motor stand shall have a flat face flange for mounting driving motor.

4. The motor stand shall include a stuffing box and have large openings for pump adjustment and seal maintenance. Provide suitably sized drain connection and pre-lubricating water connection, if necessary, and tap for pressure gauge at discharge nozzle, complete with 1/4- in brass pipe nipple and stainless-steel ball valve. Stuffing box must be located and accessible above pump baseplate. A 3-in tap for an air release/vacuum relief valve shall be provided and provide a 2-inch air release/vacuum relief valve model 144DAT by Dezurik Apco.

I. Stuffing box/seal box sealed with single-piece mechanical seal: The motor stand shall be fitted with a mechanically sealed type stuffing box arranged for API Plan 13 for venting the stuffing box. Stuffing box shall be equipped complete with a A.W. Chesterton Type 155 cartridge mechanical seal or equal by John Crane. The mechanical seal shall be of a stationary cartridge design specific for high pressure, high torque applications and capable

of sealing 25" Hg vacuum to 600 psig. The seal shall have a multiport injection distribution ring for maximum cooling and flushing. The seal faces shall be sleeve mounted to insure the faces remain both concentric and perpendicular to the shaft and minimize oscillation and wiping limiting the opportunity for face contamination. The seal shall have cushioned drive lugs to eliminate the possibility of shearing and provide the faces with a soft start. The springs shall be isolated from the pumpage. All dynamic o-rings shall be on the O.D. and seal to a micro polished surface to eliminate hang up and hysteresis. The seal materials of construction shall be 316 stainless steel for all wetted parts and Hastelloy C finger springs. The Manufacturer shall be responsible for ensuring that shaft movement and seal chamber pressures at all specified operating conditions are fully compatible with the mechanical seal system provided. Any small diameter drain piping shall be secured to the pump column and be armored to prevent damage during installation and removal.

1. O-rings shall be of the ball and socket type. The gland shall be of a universal design with adjustable bolting tabs to fit varied bolt sizes and circles. The gland shall have a minimum of two tapped flush/by-pass ports that can be rotated 360 degrees to accommodate flush piping.

2. Seal faces shall be reaction bonded silicon carbide for both the rotating face and stationary face.

3. Shaft sleeve: The section of shaft that extends through or into the stuffing box shall be fitted with a replaceable 316 stainless steel sleeve. The sleeve shall be held to the shaft to prevent rotation and shall be sealed to prevent leakage between the shaft and the sleeve. Minimum shaft sleeve thickness shall be 1/4 inch.

J. Vortex suppressor: A pump suction bell mounted vortex suppressor, or other approved device shall be furnished and installed to prevent the possibility of vortex formation. The dimensions of the device shall be as recommended by the Manufacturer. Configuration of the device shall be equivalent to the configuration provided at the end of this Specification.

K. The construction of the pumps, position and number of column pipe flanges shall be such that the pumps can be readily installed and removed for repairs within the head room limitations of the building using normal methods of operation and handling without undue difficulties.

2.04 MOTOR TO PUMP COUPLING

A. Pump shafting shall be directly connected to its motor by means of flanged spacer coupling, suitably sized to transmit the required driving torque and be easily accessible for impeller adjustment, packing or mechanical seal replacement.

2.05 MOTORS

A. Each pump shall be driven by a 460 volt, 3-phase, 60 hz, 1.0 SF, 1775 RPM, premium service vertical solid shaft squirrel cage induction electric motor with a maximum horsepower and speed as specified under Paragraph 2.02 above and with TEFC

enclosure, and shall meet all the requirements of this Section and include a thrust bearing capable of handling both the mechanical and hydraulic thrust of the pump.

B. The pump motors shall be suitable for driving the pumps continuously over the entire pumping range. The pump motors shall be furnished by the Manufacturer. A non-reverse ratchet shall be installed in the motor to prevent reverse rotation.

C. Non-reverse ratchet:

1. The non-reverse ratchet shall provide immediate protection against reversing due to phase reversals or from backspin at shutdown.

2. The non-reverse ratchet shall be a shaft mounted mechanical device configured with an outer rotating component equipped with a series of holes bored at angles. The holes shall house hardened steel balls. The inner stationary component shall consist of a series of flutes to receive the balls, with one of which shall engage in the locked position the instant the motor stops running. The number of flutes shall differ from the number of balls to increase the number of possible locking positions.

3. In cases of conflict with the motor specification this Section shall control.

D. All lubrication fittings shall be brought to the outside of all equipment so that they are readily accessible from the outside without the necessity of removing covers, plates, housings, or guards, or without creating falling hazards. Fittings shall be buttonhead type. Lubrication fittings shall be mounted together wherever possible. Pressure grease-lubricated fittings shall be the "Zerk Hydraulic" type or the "Alemite" type. Housings of grease-lubricated bearings shall be automatically exhausted to the atmosphere to prevent excessive greasing.

E. Motors shall be mounted to the top of the pump discharge head motor stand with Heavy Hex Grade 8 bolts, nuts and lock washers torqued to the Manufacturer’s recommended value.

F. Manufacturer shall verify the compatibility of the new 150 HP 900 RPM backwash pump motor with the existing Fairbanks Morse Model 7000 AW backwash pump.

2.06 VARIABLE FREQUENCY DRIVES

A. The new VFDs shall be furnished by the Contractor and shall conform to Section 262923.23.

2.07 SHOP PAINTING

A. Each piece of equipment in the pumping system including pump, support system, motor and associated equipment shall be prepared, shop-primed and finished-coated in accordance with the Manufacturer's standard practice prior to shipment. Color shall be selected by the Engineer and an adequate supply of touch-up paint shall be supplied by the Manufacturer.

B. All interior and exterior wetted surfaces of pump columns and discharge heads and the exterior of the bowl assemblies shall be cleaned of all rust and mill scale, grease, dirt, other foreign matter and supplied with Manufacturer's standard coatings meeting the requirements in Section 09900, and be NSF approved coating for potable water systems.

C. All nameplates shall be properly protected during painting.

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation shall be in accordance with the approved construction schedule.

B. Installation shall be in strict accordance with the manufacturer's written instructions and recommendations in the locations shown on the Drawings. Installation shall include furnishing the required oil and grease in accordance with manufacturer's recommendations. Anchor bolts shall be furnished under this Section by the equipment manufacturer, in accordance with the manufacturer's recommendations. Anchor bolts and associated hardware shall be of stainless steel unless otherwise specified.

C. Local electrical shutoffs for power supplied to field equipment shall be provided.

D. Take all necessary measurements in the field to determine the exact dimensions for all work and the required sizes of all equipment under this Contract. All pertinent data and dimensions shall be verified.

E. Refer to Paragraph 2.01 for additional installation (sole plate temporary support, grouting, etc.) requirements. Connection of piping to pumps shall be done in the presence of the Engineer. All piping connections to the pump shall be done without bending and/or twisting the piping to mate with the pump flange connections.

3.02 FACTORY TESTING

A. The Engineer shall have the right to inspect any equipment to be furnished under this Section prior to their shipment from place of manufacture.

B. The Engineer shall be notified in writing no fewer than ten working days prior to the factory witness performance test, so that arrangements can be made for inspection by the Engineer.

C. Each pump shall be factory witness tested as described in ANSI/HI 14.6, American National Standard for Rotodynamic Pumps for Hydraulic Performance Acceptance Tests, as specified herein.

D. The Manufacturer shall perform hydrostatic test on the pressure-containing parts in accordance with ANSI/HI 14.6. Test shall be conducted on each pump prior to shipment.

E. Cast surfaces of all components shall be examined by visual inspection per MSS SP-55.

F. Factory witness pump tests shall be the basis of acceptance of the hydraulic performance of the pumps. The Manufacturer shall factory witness test all pumps prior to shipment in accordance with the Hydraulic Institute standards. Flow rate, total head, efficiency and input KW shall be tested and recorded for at least five points on the pump performance curve. Test shall be performed to demonstrate that the pumps meet ANSI/HI 14.6, acceptance grade 1B for all specified points. The five points shall include the points specified in Article 2.02. If any pump tested fails to meet any specification requirement it will be modified until it meets all specification requirements. If any pump tested fails to meet the flow rate, head or efficiency requirements for any of the conditions listed in Paragraph 2.02 of this specification and all reasonable attempts to correct the inefficiency are unsuccessful, the pump(s) shall be replaced with a unit(s) that meets the specified requirements.

G. Certified pump performance curves shall be submitted, including total head, flow rate, bowl efficiency and total brake horsepower for each pump supplied. Test data shall be submitted for approval by the Engineer prior to shipment.

H. If the Manufacturer does not have historical records for NPSH3 at the specified design pump speed, one pump shall be tested to demonstrate NPSH3 versus flow rate.

I. All meters, gauges, and other test instruments shall be calibrated within the manufacturer's established time period prior to the scheduled test and certified calibration data shall be provided. If the Manufacturer has no ISO standard calibration period, Hydraulic Institute Standards shall govern.

J. The pumps shall be tested at 100 percent of the design speed at the design point. Reduced speed curves will be determined on the test stand by reducing the motor frequency from 100 percent (60 hz) in increments of 5 hz to 40 hz.

K. Each pump shall be tested through the specified range of flow, and head/flow rate/ efficiency curves plotted at maximum output speed. During each test, the pump shall be run at each head condition for sufficient time to accurately determine flow rate, head, power input, and efficiency. In addition, during the tests, the overall efficiency shall be determined at each test point. The pump under test shall be modified until the specified conditions are met or replaced with a pump that will meet the specified conditions.

L. All pumps shall be witness tested by the Manufacturer in the presence of up to two persons designated by the Engineer and the Owner (one person each). All witness travel and out-of- pocket expenses shall be included in the Contractor’s bid.

1. Expenses include airfare, automobile expenses, lodging, meals, parking, tolls, taxi or car rental costs.

2. Air travel for the Engineer and the Owner shall be from Nashville International Airport (BNA) to the airport closest to the Manufacturer's test facility.

3. If additional testing days are required, either because of Manufacturer's scheduling requirements or because a pump has to be retested, the Manufacturer, through the Contractor, shall reimburse the Engineer for all reasonable expenses which the Engineer will incur in order to witness the international/ additional testing over that

specified herein. The sum shall be deducted from payments due the Contractor by the Owner.

M. Certified pump motor tests, including physical testing to determine actual motor speed critical frequency of each motor, as specified in this Section shall be submitted for approval by the Engineer prior to factory witness testing.

3.03 FIELD TESTS

A. Pre-Operational Checkouts: After the equipment in this Section has been completely installed, under the direction of the manufacturer's factory representative, conduct in the presence of the Engineer such tests as are necessary to ensure that all equipment conforms to this Section.

1. Supply all electric power and water necessary.

2. Following successful completion of Pre-Operational Checkouts, submit copies of the manufacturer's field service technician's report.

B. Functional Testing

1. Field tests shall not be conducted until such time that the pumping system, including controls, is complete and ready for testing.

2. Motor tests:
   a. Prior to any pump mechanical test, the Contractor shall megger each motor winding before energizing the motor, and, if insulation resistance is found to be low, shall notify the Engineer and shall not energize the motor.
   b. Prior to any pump mechanical test, the Contractor shall check all motors for correct clearances and alignment and for correct lubrication in accordance with the motor manufacturer's instructions. The Contractor shall check direction of rotation of all motors prior to any pump mechanical test and reverse connections, if necessary.

C. Complete System Commissioning

1. System startup will occur when the facility is capable of pumping City-produced drinking water into the distribution system. This startup will occur and be completed prior to the removal from service of the existing pumps. **The new pumps will not be operated when the existing pumps are pumping.**
2. Contractor shall submit a startup schedule to Engineer for Engineer and Owner review prior to filling of new clearwell structure. This schedule will detail disinfection, motor rotation testing, SCADA completion and automatic operation online, generator testing and operation. This schedule will detail individual pump testing and multiple pump testing as outlined in Paragraph 3 below.
3. In the presence of the Engineer, necessary tests shall be performed to indicate that the pumps, and motors generally conform to the operating conditions specified. The factory testing specified above will be the basis of performance acceptance. A 7-day operating period of the pumps will be required before acceptance. If a pump performance does not generally agree with the factory test results, corrective

measures shall be taken or the pump shall be removed and replaced with a pump that satisfies the conditions specified. Provide, calibrate and install all temporary gauges and meters, make necessary tapped holes in the pipes, and install all temporary piping and wiring required for the field acceptance tests. Written test procedures shall be submitted to the Engineer for approval no fewer than 30 days prior to testing.

D. If the performance of any part of the system does not meet the requirements specified, corrective measures shall be taken, and equipment shall be removed and replaced with equipment that satisfies the conditions specified. All expenses associated with field testing, including any corrective action, shall be borne by the Contractor.

END OF SECTION 11214

APPENDIX A

SCADA ASSISTANCE SCOPE OF WORK

WATER TREATMENT PLANT HIGH SERVICE PUMP UPGRADES

The following "SCADA Assistance" document describes the scope of work that will be completed by the existing SCADA Integrator for the Springfield Water System, MR Systems of Norcross, Georgia, as detailed in this Appendix A. Work performed by the SCADA Integrator will be paid to the Contractor from the SCADA Allowance shown in the Bid Form, where the Contractor will in turn pay the SCADA Integrator the complete amount (minus retainage) on each pay request within 30 days of receipt of payment from the Owner. SCADA Integrator's invoice shall be included with any payment requests from the Allowance. Payments from the allowance shall be paid at cost of the invoice. No Contractor mark-up will be allowed. Contractor's cost for overhead and management of the SCADA Integrator shall be paid under the Base Bid for the project. If the full amount of the Allowance is not utilized, the Contractor or SCADA Integrator shall not receive the remaining, unused balance. If the full amount of the Allowance is exceeded, additional costs may be addressed by change order as recommended by the Engineer and approved by the Owner. The Allowance will cover the first-time material and labor costs. Any additional rework or associated costs incurred due to fault of the Contractor or SCADA Integrator will be paid for at the responsible party's sole expense and are not part of this Allowance.

MR Systems' Contact is Mr. David Foster, P.E., COO, 678-325-2828 (office), 1185 Beaver Ruin Road, Suite A, Norcross, Georgia 30093, dfoster@mrsystems.com.

Any items not included in this description of Work, but required for project completion, will be coordinated and/or provided by and are the sole responsibility of the Contractor. All components of this project shall be completed and in full working order, including the tanks back in service prior to the date of substantial completion as established in Section 05500 (Notice to Proceed). Contractor shall coordinate as necessary with the SCADA Integrator for a complete-in-place, fully integrated system for the project site. The Contractor shall be solely responsible for any materials, labor, equipment, etc. not included as part of SCADA Integrator's scope of work but required for the completion of the project.

The SCADA Integrator shall have appropriate staff available to make the swap from pump station control locations at both areas within the Water Treatment Plant. The Contractor shall give the SCADA Integrator an initial 10 working days' notice for a tentative date and time to be available to make the swap with a minimum of 48-hours' notice to confirm the date and time. A minimum of 72 hours' notice shall be provided to the Owner/Water Treatment Plant prior to taking the existing system out of service.

The SCADA Integrator shall provide one (1) electronic copy and three (3) color hard copies of all "as-built"/record drawings.

Customer: City of Springfield, TN
Project: WTP HS Pump Upgrades
MR Quote #: Q23-10178, Rev. 5

August 17, 2023

Quote Expiration
October 16, 2023

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price

Springfield WTP High Service Pumps Upgrade Project

MR Systems, LLC. is pleased to offer our professional services for the instrumentation and controls for the Water Treatment Plant High Service Pump Upgrades project for the City of Springfield, TN.

Scope of Work:

Provide professional services for the design, manufacturing, programming, installation and testing of the control system as described in this scope of work.

Meetings:

Operational Design
Control Narrative and HMI Graphics Design
Control Narrative and HMI Graphics Submittals Review

Submittals:*

Instrumentation
Control Panel
Fiber Optic Cable
Control Narrative
HMI Graphics
Factory Acceptance Test
Site Acceptance Testing
Operation & Maintenance Manual
* some of these submittals may be combined

Start-up Services:

Termination and testing of fiber optic cable
Start-up and calibration of instrumentation
Termination of control wires in the High Service Pump Station PLC Panel (PLC-HSPS)
Modifications to existing High Service Pump station PLC Panel (RTU-3)

Testing:

Factory Acceptance Testing
Site Acceptance Testing

Training:

Maintenance Training (up to 8 hours)
Operations Training (up to 16 hours)

Final Project Deliverables:

Operation & Maintenance Manual
As-Installed Drawings

Equipment:

Qty	Tag/Loop	Description	Price
1	PLC-HSPS	**High Service Pump Station PLC Panel** Enclosure: NEMA 12, Painted Carbon Steel, Freestanding Expected Enclosure Size: 72" H x 36" W x 24" D PLC Manufacturer & Model: Allen-Bradley CompactLogix 5069 Series Available I/O: 64 DI, 16 DO, 16 AI, 8 AO Wired I/O: 64 DI, 12 DO, 16 AI, 8 AO Operator Interface Terminal: (New industrial computer, Screen relocated from RTU-3) Communications Type: Fiber Optics Fiber Optics Termination Panels: Included Wireless Access Point: Included Primary Power: 120VAC Power	

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price
		Backup Power: DC UPS AC Power Protection: Included Digital I/O Surge Protection: Interposing Relays Included Analog I/O Surge Protection: MR Systems' Kamikaze II Included Utility Light(s): LED Fixture Included AC Utility Power Outlet: GFI Outlet Included Panel Front Devices: Local/Remote Switch Process Indicator (Wetwell Level) Four (4) Kirk Key Locks & Keys CAT6 Ethernet External Connections Pump No. 1 VFD Pump No. 2 VFD Pump No. 3 VFD Pump No. 4 VFD Power Meter	
1	**RTU-3**	**Existing High Service Pump Station PLC Panel Modifications** Rename panel to Backwash Pump PLC Panel (PLC-BWP) Remove panel front computer display and replace with blank plate (move to PLC-HSPS) Remove industrial computer (return to owner) Un-terminate all wires associated with old HS Pumps and wirenut Terminate all wires and CAT6 associated with new Backwash Pump Install fiber patch panel, terminate, test and land new fiber cable Reprogram existing AB ML1400 for proper backwash pump functionality	
1	**FE/FIT-HSPS-1**	**Magnetic Flowmeter** Service: High Service Discharge Flow Manufacturer/Make: Rosemount 8750W Size: 18" Integral Mount 2 Year Extended Warranty (For a total of 3 years warranty coverage) Accessories:	
1		120VAC & Analog Surge Arrestor	
2		Nametag, Stainless Steel	
1	**PIT-HSPS-1**	**Pressure Transmitter** Service: High Service Discharge Pressure Manufacturer/Make: Rosemount 3051 Direct Mount Diaphragm Seal Accessories:	
1		Analog Surge Arrestor	
1		Nametag, Stainless Steel	
1	**PI-HSPS-1**	**Pressure Gauge** Service: High Service Discharge Pressure Manufacturer/Make: Ashcroft 1379 Direct Mount Diaphragm Seal Accessories:	
1		Nametag, Stainless Steel	
1	**FE/FIT-HSPS-2**	**Magnetic Flowmeter** Service: Plant Water Flow Manufacturer/Make: Rosemount 8750W	

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price
		Size: 4"	
		Integral Mount	
		2 Year Extended Warranty (For a total of 3 years warranty coverage)	
		Accessories:	
1		120VAC & Analog Surge Arrestor	
2		Nametag, Stainless Steel	
1	**PIT-HSPS-2**	**Pressure Transmitter**	
		Service: Plant Water Pressure	
		Manufacturer/Make: Rosemount 3051	
		Direct Mount Diaphragm Seal	
		Accessories:	
1		Analog Surge Arrestor	
1		Nametag, Stainless Steel	
1	**PI-HSPS-2**	**Pressure Gauge**	
		Service: Plant Water Pressure	
		Manufacturer/Make: Ashcroft 1379	
		Direct Mount Diaphragm Seal	
		Accessories:	
1		Nametag, Stainless Steel	
1	**XS-HSPS-1**	**Door Switch**	
		Service: HSPS Door #1 Switch	
		Manufacturer/Make: Schlage	
1	**XS-HSPS-2**	**Door Switch**	
		Service: HSPS Door #2 Switch	
		Manufacturer/Make: Schlage	
1	**XS-HSPS-3**	**Door Switch**	
		Service: HSPS Door #3 Switch	
		Manufacturer/Make: Schlage	
1	**XS-HSPS-4**	**Door Switch**	
		Service: HSPS Door #4 Switch	
		Manufacturer/Make: Schlage	
1	**XS-HSPS-5**	**Door Switch**	
		Service: HSPS Door #5 Switch	
		Manufacturer/Make: Schlage	
1	**XS-HSPS-6**	**Door Switch**	
		Service: HSPS Door #6 Switch	
		Manufacturer/Make: Schlage	
1	**LT-HSPS-1**	**Radar Level Transmitter**	
		Service: HSPS Wetwell Level	
		Manufacturer/Make: VEGA VEGAPLUS C21	
		Cable, 5 meter	
		Accessories:	
1		Mount	
1		Junction Box	
1		Nametag, Stainless Steel	
1	**LSH-HSPS-1**	**Mechanical Tilt Float**	
		Service: HSPS Wetwell High Level	
		Manufacturer/Make: Warrick - Series M	
		Cable, 40 feet	

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price
		Accessories:	
1		Mount	
1		Junction Box	
1		Nametag, Stainless Steel	
1	**LSL-HSPS-1**	**Mechanical Tilt Float**	
		Service: HSPS Wetwell Low Level	
		Manufacturer/Make: Warrick - Series M	
		Cable, 40 feet	
		Accessories:	
1		Mount	
1		Junction Box	
1		Nametag, Stainless Steel	
1		**Fiber Optic Cable**	
		Service: RTU-3 to PLC-HSPS	
		Manufacturer/Make: Corning 50u, OM3, 12-strand	
		Accessories:	
		Connectors	
		Jumpers	
		MR Systems to provide, terminate and test the fiber cable. Installation by others.	
1		**SCADA Hardware & Software Upgrade**	
		Replace the Terminal Server hardware & Operating System (Control Room)	
		Replace the Workstation hardware & Operating System (Bryan's Office)	
		Replace panel industiral computer hardware & Operating System (RWI, MCP & HSPS)	
		Add NAS Network Storage Device for backups	
		Upgrade the Aveva Wonderware InTouch software to the latest version (Subscription)	
		Migrate over the existing Wonderware InTouch application.	
1		**Spare Parts**	
		A-B CompactLogix 5069 CPU (Qty. 1)	
		A-B CompactLogix 5069 Digital Input Card (Qty. 1)	
		A-B CompactLogix 5069 Digital Output Card (Qty. 1)	
		A-B CompactLogix 5069 Analog Input Card (Qty. 1)	
		A-B CompactLogix 5069 Analog Output Card (Qty. 1)	
		Fuses (Qty. 1 Lot)	
		Relays (Qty. 5)	
		Panel Analog Surge Arrestor (Qty. 2)	
		Field Analog Surge Arrestor (Qty. 1)	
		Field 120VAC & Analog Surge Arrestor (Qty. 1)	
		Project Costs Subtotal:	$371,922
		Extended Warranty Services:	
		This pricing includes the costs for a 3-year subscription of Aveva Wonderware Intouch. This provides access to the latest software versions, bug fixes and remote support from Aveva.	$42,000
		This pricing includes 2 visits per year for 3 years after final acceptance by MR Systems to update the computer operating systems, programs and Aveva Wonderware Intouch software.	$18,507

Customer: City of Springfield, TN
Project: WTP HS Pump Upgrades
MR Quote #: Q23-10178, Rev. 5

August 17, 2023

Quote Expiration
October 16, 2023

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price
		Project Labor	
One Lot		**Project Engineering, Electrical Design, Mechanical Design, Drafting & Administrative Labor** (including Travel & Living expenses) to perform final system design and to prepare Submittals and Record Drawings as required by the Contract Documents.	
One Lot		**HMI Software Applications Development & Graphics Design Labor** (including Travel & Living expenses) as required by the Contract Documents.	
One Lot		**PLC Control Strategy Design & Programming Labor** (including Travel & Living expenses) to be performed as required by the Contract Documents.	
One Lot		**Field Service** (including Travel & Living expenses) to provide supervision, calibrations, startup, training, etc. as required by the Contract Documents.	
One Lot		**Electrical Terminations** (including Travel & Living expenses) for terminations and testing of fiber optic cable as required by the Contract Documents.	
1 Year		**Onsite Comprehensive Warranty** (including Travel & Living expenses)	
One Lot		**Freight**	
		Subtotal of Labor and Materials:	**$432,429**
		State Sales Tax is INCLUDED. Assumed sales tax rate is: 9.75%	**$31,531**
		Total Project Cost:	**$463,960**

General Notes:

A *** Sales Representation ***
Mr. Mike Bartlett of Eco-Tech, Inc. in Canton, GA, is our local Sales Representatives and will contact you prior to the bid with pricing. Mike may be reached at 678-880-1205 (Office) or 615-351-5643 (Cell).

B *** Technical Questions ***
For technical or scope of supply questions contact David Foster, P.E., of MR Systems. David may be reached at 678-325-2828 (Office) or 770-519-1293 (Cell).

C *** Installation of Conduit and Wire ***
This quotation **DOES NOT INCLUDE** the supply or physical installation of conduit or wire unless specifically noted above.

D *** Equipment Installation ***
This quotation **DOES NOT INCLUDE** physical installation of field instruments, pipe, tubing, fittings, isolation valves, instrument stands, instrument mounts, control panels, antennas, masts, wooden poles, or other devices or other equipment unless specifically noted above.

E *** Wiring Terminations ***
This quotation **INCLUDES** the termination of field wiring to field instruments and PLC panels supplied under this scope of supply. Terminations of wiring to equipment supplied by Others are excluded unless specifically noted above.

F *** Fiber Optics Cable ***

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price
		This quotation **INCLUDES** the supply of Fiber Optic Cable as specifically identified above. The Contractor shall be responsible for conduit and installation of the Fiber Optic Cable supplied by MR Systems.	
	G	*** Fiber Optic Cable Termination *** This quotation **INCLUDES** the terminations and testing of the fiber optics cable.	
	H	*** Coaxial Cable Installation *** This quotation **DOES NOT INCLUDE** the physical installation of coaxial cable or other related components.	
	I	*** Installation of Communications Towers or Poles *** This quotation **DOES NOT INCLUDE** the supply or physical installation of Communication Towers or Poles.	
	J	*** Contractor License Information *** MR Systems' Tennessee Electrical Contractors License Number is 78626 (Unlimited).	
	K	*** This Line Is Intentionally Left Blank ***	
	L	*** Terms and Conditions *** MR Systems General Terms & Conditions of Sale apply to any order resulting from this quotation. Please refer to the link provided below for a copy of our General Terms and Conditions of Sale. https://www.mrsystems.com/sellersterms/	

Revision Notes:

Rev. 0	Scope Review - 2023-02-17 - DBF
Rev. 1	Initial Release - 2023-03-10 - DBF
Rev. 2	Update final scope and costs for bid - 2023-07-27 - DBF
Rev. 3	Incorporate changes identified in 7/27/23 Email - 2023-07-30 - DBF
Rev. 4	Scope alignment & clarifications - 2023-08-15 - DBF
Rev. 5	Added TN State Sales & Use Tax - 2023-08-17 - DBF

Customer: City of Springfield, TN
Project: East Hillcrest PS Improvements
MR Quote #: Q21-9423, Rev. 7

August 17, 2023

Quote Expiration
October 16, 2023

Advanced Systems. Proven Solutions.
MR SYSTEMS
An INFRAMARK Company

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price

MR Systems, LLC. is pleased to offer our Professional Engineering Services (Instrumentation and Control Subcontractor) for the Springfield, TN - East Hillcrest Pump Station Improvements Project.

Scope of Work:
- Integration of one (1) new S431 Pump No. 3 VFD (FS, PLC, Graphics & HMI)
- Integration of three (3) new S431 Pump Check Valve Controllers (FS, PLC & HMI)
- Integration for Multiple S431 Pumps Operation (FS & PLC)
- Replacement of two (2) Hach Flow Meters (FS, PLC & HMI)

Anticipated I/O Additions in RTU-6 East Hillcrest (Utilize Spares)

DI - S431 Pump No. 3: Running
DI - S431 Pump No. 3: Fail
DI - S431 Pump No. 3: Remote
AI - S431 Pump No. 3: Speed Feedback
AO - S431 Pump No. 3: Speed Setpoint

DI - S431 Pump No. 1 - Check Valve Controller Fail
DI - S431 Pump No. 2 - Check Valve Controller Fail
DI - S431 Pump No. 3 - Check Valve Controller Fail
DO - S431 Pump No. 2 - Check Valve Open/Pump Start
DO - S431 Pump No. 3 - Check Valve Open/Pump Start

Anticipated I/O Repurposed in RTU-6 East Hillcrest

DO - S431 Pump No. 1 - Check Valve Open/Pump Start

Two (2) New Dwyer Insertion Magnetic Flowmeters

2	Dwyer IEF-GN-CND-NIST Series IEF Insertion Electromagnetic Flow Transmitter
2	Dwyer A-IEF-FDSP-RM Remote Display for Series IEF Flowmeter
2	Dwyer Plenum rated cable 100' (30 m)
2	2” to 1” reducing bushing
1	Dwyer UTG Ultrasonic Thickness Gage

Three (3) Ashcroft Pressure Gauge & Diaphragm Seals

	Service: Suction Pressure
	Ashcroft 1379
	Ashcroft 511
3	Nametag, Stainless Steel

Three (3) Ashcroft Pressure Gauge & Diaphragm Seals

	Service: Discharge Pressure
	Ashcroft 1379
	Ashcroft 511
3	Nametag, Stainless Steel

Customer: City of Springfield, TN
Project: East Hillcrest PS Improvements
MR Quote #: Q21-9423, Rev. 7

August 17, 2023

Quote Expiration
October 16, 2023

MR SYSTEMS Advanced Systems. Proven Solutions.
An INFRAMARK Company

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price

Notes:

- This scope of work reflects our understanding of the scope of work described by Griggs & Maloney. The identified I/O above is our estimate of the new I/O based on this understanding.
- All new I/O will be terminated to existing spares in RTU-6. No additional PLC hardware is being provided under this scope of work.
- Additional control wires will need to be run between RTU-6 and the respective VFDs and Valve Controllers. Conduit, wire and installation are By Others.
- MR Systems anticipates that each pump/valve combination will need to be done on separate trips so as to not adversely affect pump station operation. Further, we anticipate that the new pump/valve (#3) will be completed first. Then pump/valve #1 and #2 will done one at a time after that.
- No changes in I/O, functionality or programming are included for the 17th Avenue pumps.
- New Dwyer flow meter equipment identified above provided and started up by MR Systems. Installation and mounting of equipment and cabling are By Others.

Project Labor

One Lot	**Project Engineering, Electrical Design, Drafting & Administrative Labor** as required to perform above referenced scope of work.	
One Lot	**HMI Software Applications Development & Graphics Design Labor** (including Travel & Living expenses) as required to perform above referenced scope of work.	
One Lot	**PLC Control Strategy Design & Programming Labor** (including Travel & Living expenses) as required to perform above referenced scope of work.	
One Lot	**Field Service** (including Travel & Living expenses) as required to perform above referenced scope of work.	
N/A	**Electrical Installation and Terminations** (including Travel & Living expenses) as required to perform above referenced scope of work.	
1 Year	**Onsite Comprehensive Warranty** (including Travel & Living expenses)	
One Lot	**Freight**	

Subtotal of Labor and Materials:	**$68,252**
State Sales Tax is INCLUDED. Assumed sales tax rate is: 9.75%	**$4,278**
Total Project Cost:	**$72,530**

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price

General Notes:

A *** Sales Representation ***
Mr. Mike Bartlett of Eco-Tech, Inc. in Canton, GA, is our local Sales Representatives and will contact you prior to the bid with pricing. Mike may be reached at 678-880-1205 (Office) or 615-351-5643 (Cell).

B *** Technical Questions ***
For technical or scope of supply questions contact David Foster, P.E., of MR Systems. David may be reached at 678-325-2828 (Office) or 770-519-1293 (Cell).

C *** Installation of Conduit and Wire ***
This quotation **DOES NOT INCLUDE** the supply or physical installation of conduit or wire unless specifically noted above.

D *** Equipment Installation ***
This quotation **DOES NOT INCLUDE** physical installation of field instruments, pipe, tubing, fittings, isolation valves, instrument stands, instrument mounts, control panels, antennas, masts, wooden poles, or other devices or other equipment unless specifically noted above.

E *** Wiring Terminations ***
This quotation **INCLUDES** the termination of field wiring to field instruments, control panels, RTU panels, and/or other devices supplied under this scope of supply. Terminations of wiring to equipment supplied by Others are excluded unless specifically noted above.

F *** Fiber Optics Cable ***
This quotation **DOES NOT INCLUDE** the supply or physical installation of Fiber Optic Cable.

G *** Fiber Optic Cable Termination ***
This quotation **DOES NOT INCLUDE** termination or testing of fiber optics cable.

H *** Coaxial Cable Installation ***
This quotation **DOES NOT INCLUDE** the physical installation of coaxial cable or other related components.

I *** Installation of Communications Towers or Poles ***
This quotation **DOES NOT INCLUDE** the supply or physical installation of Communication Towers or Poles.

J *** Contractor License Information ***
MR Systems' Tennessee Electrical Contractors License Number is 78626 (Unlimited).

K *** This Line Is Intentionally Left Blank ***

L *** Terms and Conditions ***
MR Systems General Terms & Conditions of Sale apply to any order resulting from this quotation. Please refer to the link provided below for a copy of our General Terms and Conditions of Sale.

https://www.mrsystems.com/sellersterms/

Customer: City of Springfield, TN
Project: East Hillcrest PS Improvements
MR Quote #: Q21-9423, Rev. 7

Advanced Systems. Proven Solutions.

An INFRAMARK Company

August 17, 2023

Quote Expiration
October 16, 2023

Bill of Materials and Labor

Qty	Tag/Loop	Description	Price

Revision Notes:

Rev. 0	First Issue - 2021-11-12 - WPK
Rev. 1	Revised per Roger's clarifcations (replacement of 2 flowmeters, valve controllers & electrical work) and site visit - 2021-12-09 - DBF
Rev. 3	Reviewed scope and updated with current material prices. - 2022-10-25 - DBF
Rev. 4	Updated for inclusion in WTP project, cost updates and changes in startup approach - 2023-07-27 - DBF
Rev. 5	Incorporate changes identified in 7/27/23 Email - 2023-07-28 - DBF
Rev. 6	Scope alignment - 2023-08-15 - DBF
Rev. 7	Added TN State Sales & Use Tax - 2023-08-17 - DBF

Customer Price Sheet Total Only

Customer		Quote Number / ID	1437480
Tag Number	New Pump - East Hillcrest	Model / Stages	8AE15G / 1
Customer ref. / PO		Flow, rated	2,907 USgpm
		Differential head / pressure, rated	156.9 ft
		Speed, rated	1765 rpm

Total

Grand Total		Lead Time Total	15 wks

Pump

Qty	Description
1	*8AE15G*
	Scope of Supply
	Scope
	Alert:: Suction Pressure was not added on Inputs Page!
	Pump Type
	Pump Type: New Pump
	Scope of Supply: Complete Unit (Pump, Motor, Base, Cplg and Grd)
	General Pump Construction
	Materials
	Pump Material: Bronze Fitted Horiz Mount
	Pump Rotation: Clockwise (Right Hand)
	Casing: CI Casing Assembly 125lb/125lb ANSI Flanges
	Gaskets: Hardware & Split Flange Gasket for Casing
	Impeller Configuration: Standard
	Impeller Material: Brass Impeller with Bronze Rings
	Casing Ring Material: Bronze Casing Rings
	Shaft Configuration: Single Row Outboard Bearing
	Shaft Material: CW (RH) Shaft - Steel, Single Row Outboard Bearing
	Shaft Sleeve Material: 304 SS Shaft Sleeves (set)
	Bearing Lubrication: Standard Grease Lubricated Ball Bearings
	Bearing Protection: Single Row Outboard/Inboard Brgs with Std Lip Seals
	Coating: Standard Blue Enamel
	Seal & Packing Construction
	Seal Options
	Seal Type: Mechanical
	Seal Material: Crane Type 21 Mech Seal 225° F Max BF501O101 Ceramic Seat (Set of 2)
	Seal Piping: No Mechanical Seal Flush Piping
	Mounting Parts
	Base & Coupling Options
	Base: Fabricated Steel Non-Drip Rim Base
	Coupling Type & Size: KTR, ROTEX Flexible Coupling: 65
	Coupling Guard: ANSI B15.1 Coupling Guard, Steel
	Motor Driver
	Motor Type
	Site Voltage: 460 volt, 3 phase
	Testing & Certification
	Product Certifications
	CE Mark: None

Motor

Qty	Description
1	**Motor Driver** **Motor Type** Motor Enclosure: TEFC Motor Efficiency: NEMA Premium Motor Phase: Three Phase Selected Motor: 150Hp 1800R 445TS 460V 3Ph 60Hz FullVoltStart PremEff 1.15SF, Horiz Ft Mtd Mtr TEFC 841 Plus F1 - US Catalog No: 8D150P2CS

Testing

Qty	Description
1	Test Options: US H I Non-Witnessed Performance Test - Hyd Ins 14.6 Unilateral Grade 1U Optional Testing: Test Curve For Approval - submitted for customer approval (stop/hold of production) Hydrostatic Test: Non-Witnessed Hydrostatic Test

Accessories

Qty	Description
1	Drinking Water Certification: NSF 61 International Classification Nameplate

Commercial

Qty	Description
1	Shipping Container: Standard Skid (pump and driver) Incoterms 2020: EXW Named Place Named Place: Seller's Facility

Life Is On Schneider Electric

BSE BORDER STATES
Supply Chain Solutions™

Prepared By:
Preston Hertel
Border States Electric
656 Wedgewood Ave
Nashville,TN 37203
phertel@borderstates.com
D:812-459-5392

Proposal Name: City of Springfield Pump Drive

Quote Name: City of Springfield Pump Drive

Proposal Number: P-220427-3010463

Quote Number: Q-3288182

Quote Effective Date: 04/27/2022

Through Addenda Number: 0

Sales Representative: Gretchen Thomas

Conditions of Sale

Except as otherwise provided below, this Quotation is subject to Coordinated Project Terms. See https://www.schneider-electric.us/en/download/document/0100PL0043

Notwithstanding any provision to the contrary in the referenced Coordinated Project Terms or any other documentation provided in connection with this proposal, this quote is valid for 30 days. Quoted lead times are approximate and subject to change.

Schneider Electric reserves the right to amend, withdraw or otherwise alter this submission without penalty or charge as a result of any event beyond its control arising from or due to the current Covid-19 epidemic or events subsequent to this epidemic / pandemic including changes in laws, regulations, by laws or direction from a competent authority.

Clarifications and Exceptions

- Spare parts (fuses, pilot lights, overloads, etc) are not included unless shown with equipment on bill of material.
- Low voltage dry type transformers are quoted with standard Schneider Electric impedance ratings unless specifically indicated otherwise and do not include lugs and external vibration pads.
- Special services such as factory witness tests, field tests, programming, software installations, short circuit or coordination studies are not included unless shown as a separate line item.

Seq #	Qty	Product Description
1	1	**Designation :** **Product Details:** 1 - Model 6 LVMCC-Model 6 MCC - Industrial Package --- Engineered To Order (ETO) --- . POWER SYSTEM DATA: System Voltage: 480Y/277V 3PH 4W 60Hz Max Available Fault Current (RMS): 65kA Control Power: 120Vac . BUS SYSTEM DATA: Power Bus: 600A Tin Plated Copper Vertical Bus: 300A Tin Plated Copper Neutral Bus: No Neutral Bus Provided (Neutral connection at Main) Horizontal Ground Bus: 300A Tin Plated Copper Vertical Ground Bus: Tin Plated Copper . ENCLOSURE DATA: Enclosure Type: 20" Deep General Purpose Type 1 Exterior Color: ANSI 49 Interior Color: White . STRUCTURE FEATURES: Equipment Mounting Height: 72" Rodent Barriers . COMMON DEVICE FEATURES: Wiring Type: Class 2 Type B Wiring Manual Vertical Bus Shutters Drawing Format: PDF - Single Multi Page File Unit Nameplate Gray Surface / White Letters . PRODUCT ACCESSORIES: See Common Device Features . SPECIAL PRICING AND SECTION COUNT DATA: 2 - Total Section(s) in Lineup 2 - Section(s) with no Vertical Bus DIMENSIONS AND WEIGHT --- Dimensions: 55.00"W X 20"D X 94.5"H Approximate Weight: 1460.00 lbs / 662.26 kgs INCOMING --- Transition to Existing Model 6 Connection on Left of New MCC Existing Factory Order #: 37642992-002 ADJUSTABLE SPEED DRIVES --- 1 - Please contact plant for delivery schedule. Published delivery schedule may not apply. Altivar 630 Process AC Drive 150 HP w/Circuit Breaker Rated for Normal Duty (Overcurrent 110% (60 sec)) CAT# ATV630C11 Barriered NEMA Bypass Contactors with Melting Alloy Overload System Impedance (5%) Includes Class 2 Interwiring 500VA Control Power Transformer #16 AWG MTW Control Wire I/O Extension Card with Discrete 6 In/2

Out, Analog 2 In
ASD 22mm XB5 Pilot Devices
Bypass 22mm XB5 Pilot Devices
Stop/Start Push Buttons with Manual Speed Potentiometer
ASD/Off/Bypass Selector Switch
ASD On LED Pilot Light: Red Push-To-Test
Bypass On LED Pilot Light: Yelow
Push-to-Test
Device Height - 72 in

MISCELLANEOUS DEVICES
---
1 - 150 HP Barriered NEMA Bypass for Drive
Device Height - 72 in
Estimated days to ship, excluding transit: 90 working days after customer release to manufacturer. See Conditions of Sale.

www.dezurik.com

DeZURIK Quotation

DeZURIK

To:
USA
Invoice Terms: Net 30
Days Valid: 30
Shipping Point: Factory
Delivery Notes:

Date of Quote: 02-15-2022
Quote Number: 154709-04
Project Name: Springfield, TN Control Valves
I.D. (Rep. Use):
Line of Business: 4952 - Municipal Sewage Treatment
Make Order To: DeZURIK, Inc.
C/O Eco-Tech, Inc.
Mike Bartlett Outside Sales
156 Hickory Springs Industrial Drive
Canton, GA 30115
USA

Currency and Values expressed in USD ($)

ANY PURCHASE ORDER ISSUED AS A RESULT OF THIS QUOTATION IS SUBJECT TO ALL OF THE MANUFACTURER'S CONDITIONS SET FORTH IN THIS DOCUMENT HEREOF, REASONABLE CONTRACT LANGUAGE NEGOTIATIONS AND FINAL ACCEPTANCE BY DEZURIK AT SARTELL, MN USA.
UNLESS OTHERWISE NOTED, QUOTATIONS ARE VALID FOR 30 DAYS. UNTIL ACCEPTANCE OF ORDER, QUOTED PRICES AND DELIVERY ARE SUBJECT TO CHANGE. UNLESS OTHERWISE NOTED, PRICES ARE FIRM FOR SHIPMENT OF GOODS WITHIN 12 MONTHS FROM THE RELEVANT QUOTATION DATE. OUR PRICES ARE BASED ON CURRENT PRICES FOR MATERIAL. IF A SIGNIFICANT MATERIAL PRICE INCREASE OCCURS BETWEEN ORDER ACCEPTANCE AND SHIPMENT DATE, GOODS SCHEDULED TO SHIP BEYOND 12 MONTHS OF THE QUOTATION DATE ARE SUBJECT TO A PRICE ADJUSTMENT BY THE AMOUNT NECESSARY TO COVER SUCH AN INCREASE.

Line #	Cust. Line # Tag #	Qty	Order Code	Unit Price	Total Price
1		3	CPC,12,6000MF,F1,DI,DI-S5-S2-UHMW,TS*T1BMB **CPC:** Style - Pump Control Check Valve **12:** Size - 12 Inch (300mm) **6000MF:** Body Style - Multi-Function Valve with (1) Mechanical Limit Switch DPDT AB H802T-DTP **F1:** End Connection - Flanged; ASME 125/150 **DI:** Body Material - Ductile Iron **DI:** Disc - Ductile Iron **S5:** Shaft - 17-4PH Stainless Steel **S2:** Body Seat Material - 316 Stainless Steel **UHMW:** Disc Seat Material - Polyethylene **TS:** - Operating Time in Seconds; (**Must be specified as 2nd line information on the order**) **Coating or Paint:** S40SD0 - 12 mils minimum (non-stainless steel parts) of Blue DeZURIK Epoxy (NSF Std. 61) on Interior and Standard (SP10) surface prep AND Blue DeZURIK Epoxy (NSF Std. 61), and on Exterior with Standard (SP10) surface prep **T1BMB:** Actuator Type - Torque Unit with Oil Controlled Bottom Mounted Buffer		
2		3	ACC*ECB-CEM*y06111 **ACC:** Style - ACCESSORIES **ECB-CEM:** Acc Cde - Pump and Control Valve Interface for Motor Operated Pump Control Valves **Modification:** y06111 - CLEAN WATER PRESSURE SWITCH ASCO PB11B, INTRINSICALLY SAFE, FIXED DEADBAND.		
Total					

www.dezurik.com

DeZURIK Quotation

Eco-Tech Inc

To:
USA
Invoice Terms: Net 30 Days
Days Valid: 60
Shipping Point: Sartell MN
Delivery Notes: Valves are in stock full Freight allowed

Date of Quote: 08-29-2023
Quote Number: 329851
Project Name: Springfield TN
I.D. (Rep. Use):
Line of Business: 4941 - Municipal Water Treatment
Make Order To: Eco-Tech Inc
Frank Caggiano
156 Hickory Springs Industrial Dr
Canton, GA 30115
USA
Phone 678-880-1243
Fax 770-345-1309
Email fcaggiano@eco-tech.net

Currency and Values expressed in USD ($)

Line #	Cust. Line # Tag #	Qty	Order Code	Unit Price	Total Price
1		4	BAW,16,F1,CI,NBRN-NBR,150B,DI-S2*GS-6B-HD16 **BAW:** Style - DeZURIK AWWA C504 3-72"; C516 78" and larger Rubber Seated Butterfly Valve **16:** Size - 16 Inch (400mm) **F1:** End Connection - Flanged, Drilled to ASME B16.1 Class 125/150 **CI:** Body Material - Cast Iron, ASTM A126 Class B **NBRN:** Packing - NBR (Acrylonitrile-Butadiene), Self-Adjusting Multiple V-Ring; -20 to 180°F (-29 to 82°C) **NBR:** Seat Material - NBR (Acrylonitrile-Butadiene); -20 to 180°F (-29 to 82°C) **150B:** Service Class - AWWA Class 150B **DI:** Disc - Ductile Iron, ASTM A536 Grade 65-45-12 (3" - 24" (80-600mm) Class 150B/250B, 28" - 72" (700-1800mm) Class 25A, 75B & 150B & 28" - 48" (800-1200mm) Class 250B) and Grade 80-55-06 (54" - 72" (1400-1800mm) Class 250B), Type 316 Stainless Steel Seating Edge (3" - 20" (80-500mm) =ASTM A276, 24" and larger (600mm & larger) - ASTM A240) **S2:** Shaft - 316 Stainless Steel, ASTM A276 **Coating or Paint:** S30SC0 - 8 mils minimum (non-stainless steel parts) of Blue DeZURIK Epoxy (NSF Std. 61) on Interior and Standard (SP10) surface prep AND Blue DeZURIK Epoxy (NSF Std. 61), and on Exterior with Standard (SP10) surface prep **GS-6B-HD16:** Actuator Type - G-Series Worm Gear with Handwheel Operator		
Total					

EXISTING PAVEMENT THIS AREA TO HAVE HEAVY USE DURING CONSTRUCTION AND UPON COMPLETION OF BUILDING WILL BE REPAVED, MAINTAIN EXISTING GRADE, SEE DETAIL SHT. CD-3

REFERENCE POINT #2
40P NAIL SET
N=839010.6040
E=1677788.2940
ELEV.=554.20

REFERENCE POINT #3
40P NAIL SET
N=839032.2910
E=1678093.4280
ELEV.=560.84

REFERENCE POINT #4
40P NAIL SET
N=839005.2770
E=1677925.7250
ELEV.=558.44

RIP RAP
SHUT OFF VALVE
GRATE
CONC.
20" DRAIN
LAGOON
CONCRETE ACCESS VAULT (TOC.=559.78)
LIGHT POST
INSTALL NEW 6"ø PVC WATER LINE W/ FITTINGS AS REQUIRED
CONNECT TO EXISTING WATERLINE WITH ROMAC 501 EBBA IRON COUPLING OR EQUAL
GRAVEL
PAVED
SEE DETAIL ON SHT. CD-3
ONE STORY BRICK
FFE=561.69'
INSTALL NEW CONCRETE DRAINAGE TROUGH, SEE DETAIL SHT. CD-3
FFE=561.84'
PIPE FOUND
SEE NOTE 1
PROVIDE 13'-4" LONG BY 10' WIDE CONCRETE REINFORCED RAMP (#4 REBAR 12" O.C. EACH WAY) TO TRANSITION TO RAMP FROM PROPOSED GRADING TO FFE FOR EACH ROLL UP DOOR.
24"ø DIP
PROVIDE 4'x4' CONCRETE LEVEL LANDING AT ENTRY DOORS. SLOPE ±2% SO THAT MAX RISER HEIGHT DOES NOT EXCEED 7.75
PROVIDE 13'-4" LONG BY 10' WIDE CONCRETE REINFORCED RAMP (#4 REBAR 12" O.C. EACH WAY) TO TRANSITION TO RAMP FROM PROPOSED GRADING TO FFE FOR EACH ROLL UP DOOR.
FFE 560.33
NEW CLEARWELL, SEE STRUCTURAL
CONNECT TO EXISTING WATERLINE WITH ROMAC 501 EBBA IRON COUPLING OR EQUAL
TO HIGH SERVICE PUMPS ROOM, SEE DETAIL SHT. M3
NEW 2' WIDE LOW FLOW CONCRETE SWALE, SEE DETAIL SHT. CD-3
NEW 8' LONG STRAIGHT TYPE CONCRETE HEADWALL, SEE DETAIL SHT. CD-2
NEW CLEARWELL OVERFLOW INLET EL. 558.33
I.E. 550.1
EXISTING CONCRETE FLUME
I.E. 551.0
I.E. 551.0
NEW 4' LONG STRAIGHT TYPE CONCRETE HEADWALL, SEE DETAIL SHT. CD-2
CONNECT TO EXISTING 2" WATERLINE (TO RAW WATER PUMP STATION) WITH FITTING AS REQUIRED
ELECTRIC TO GATE
EXISTING PAVEMENT THIS AREA TO HAVE HEAVY USE DURING CONSTRUCTION AND TO BE REPAVED
BELL SOUTH MANHOLE
NEW STORM DRAIN (TOC=568.89)
I.E. 556.47
INSTALL NEW 4" FLOW METER AND VAULT, SEE DETAILS SHT. CD-5
CONNECT 2" PVC TO NEW 6" DIP WITH 2" SADDLE TAP (FORD FS65 OR APPROVED EQUAL)
CUT INTO EXISTING 6" PVC (CONFIRM SIZE AND MATERIAL), INSTALL 1-6" TEE, DIP, MJ, AND 1-6" GATE VALVE & BOX
ANTENNA CONCRETE PAD
GENERATOR PAD (TOC=565.12)
CONCRETE HEADWALL
TRANSFORMER PAD (TOC=560.67)
POWER POLE AND COMMUNICATION BOX
(EXISTING CLEARWELL UNDER ASPHALT)
CONNECT TO EXISTING CLEARWELL AS PER DETAIL SHT. M2
I.E. 539.33
ASPHALT
EXISTING 16"ø CLEARWELL OVERFLOW @ EL. 554.58
EXISTING 16"ø CLEARWELL OVERFLOW INLET EL. 558.33
20" BACKWASH LINE
POWER POLE AND 4" CLEANOUT
TRANSFORMER PAD (TOC=561.51)
EXISTING PUMP STATION ONE STORY BRICK (FFE=562.68)
I.E. 553.1
PIPE FOUND
CONC.
VALVE BOX (TOC=562.69)
EXPOSED PIPE
TRANSFORMER PAD (TOC=562.64)
6"C/O, 6" DRAIN
6"C/O I.E. 558.0
EXISTING 6" DRAIN TO REMAIN
PAVED
VALVE BOX (TOC=559.41)
INSTALL NEW 6"ø PVC DRAIN PIPE W/CLEANOUTS FROM EXISTING DRAIN TO EXISTING DRAIN BOX
INSTALL NEW 6"ø FLOW METER AND VAULT, SEE DETAILS SHT. CD-4
HIGH VOLTAGE METAL BUILDING (TOC=563.43)
EXISTING 24" 45° ELBOW TO BE REMOVED AND NEW 24"ø DIP TO BE CONNECTED TO EXISTING VALVE
INSTALL NEW 24"ø DIP W/MJ FITTINGS FROM NEW HIGH SERVICE PUMPS TO EXISTING 24" VALVE
CONNECT TO EXISTING 6" 90° BEND, INSTALL 1-6" GATE VALVE & BOX AND 1-6" 90° BEND, MJ
SEE NOTE 2
INSTALL 6" 90° BEND, DIP, MJ
6"ø DIP
10"ø DIP
NEW 2"ø PVC
NEW STORM DRAIN (TOC=558.89)
GENERATOR
PAVED

LEGEND	
	FIRE HYDRANT
WV	WATER VALVE
	WATER METER
G	GAS METER
	POWER POLE
	ANCHOR
S	SANITARY SEWER MANHOLE
	TEMPORARY BENCHMARK
—WL—	WATER LINE
—SD—	STORM DRAIN
—OE—	OVERHEAD ELECTRIC
—GL—	GAS LINE
—G—	GUARDRAIL

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

NOTES:

1. INSTALL ESPC MEASURES PRIOR TO BREAKING GROUND.
2. CONTRACTOR SHALL CALL 811 AND COORDINATE WITH OWNER TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO EXCAVATION ACTIVITIES.
3. CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL OF ALL EXCAVATED MATERIALS FROM THE WORK. DISPOSAL OF THE MATERIAL SHALL BE IN CONFORMANCE WITH ALL APPLICABLE RULES AND REGULATIONS.
4. CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS WITH SEED AND STRAW. VEGETATIVE COVER SHALL EXCEED 80% FOR ANY 3' BY 3' AREA.

PROJECT NO. 1141-16
DATE: AUGUST 2022
DRAWN BY: DSM
CHECKED BY: AGL
APPROVED BY: RWM
SCALE: AS NOTED
SHEET NO. C2

ADDENDUM 4
SITE GRADING PLAN

WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	6/07/22	AGL	DEC SUBMITTAL (APPROVED 12/6/22)
2	8/07/23	AGL	RELEASED FOR BIDS
3	8/30/23	KGE	ADDENDUM 4

GRIGGS & MALONEY
INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 * FAX (615) 895-0632

FILE NAME: L:\ENGINEERING\1141 CITY OF SPRINGFIELD\1141-16 WTP HIGH SERVICE PUMP UPGRADES\ADDENDUM 4\1141-16 ADD 4 SHT C2 SITE GRADING PLAN.DWG

CLEARWELL CLEANING AND DISINFECTION NOTES:

1. CONTRACTOR SHALL SUBMIT A WRITTEN PLAN PRIOR TO CONDUCTING THE WORK. PLAN SHALL INCLUDE SAFETY PROCEDURES, SCHEDULES FOR THE PERFORMANCE OF THE INSPECTION, CLEANING AND DISINFECTION, CLEANING METHODOLOGY AND CLEANING COMPOUNDS, DISPOSAL OF WASTE MATERIALS, AND DISINFECTION PROCEDURES. (4)

2. TANK INSPECTION SHALL OCCUR WHILE TANK IS FULL AND IN SERVICE, AND SHALL BE COMPLETED WITHOUT DISRUPTION TO THE TREATMENT OR DISTRIBUTION SYSTEM. ALL EQUIPMENT TO BE DISINFECTED PER LATEST AWWA–652. CONTRACTOR SHALL PROVIDE A HIGH QUALITY DIGITAL VIDEO ALONG WITH A WRITTEN REPORT WITH A SCHEMATIC SHOWING EACH PROBLEM AREA. REPORT WILL PROVIDE DETAILED INFORMATION TO SUPPORT RECOMMENDATIONS FOR ANY REPAIRS TO THE CLEARWELL. TANK VIDEO INSPECTION SHALL BE COMPLETED WITHIN 60 DAYS OF NOTICE TO PROCEED.

3. INSPECTION ITEMS
THE FOLLOWING ITEMS SHALL BE INSPECTED:

   a) CONDITION OF CONCRETE OF THE INTERIOR INCLUDING APPROXIMATE PERCENT OF CRACKING, CORROSION, TYPE OF FAILURE, AND LOCATIONS OF CONCENTRATED SPALLING.
   b) CORROSION OF ANY EXPOSED REINFORCING MATERIALS.
   c) OSHA SAFETY COMPLIANCE OF TANK LADDERS AND HATCHES.
   d) SANITARY CONDITIONS OF TANK HATCHES, VENTS AND OTHER PENETRATIONS AND INTERIOR PLUMBING.
   e) MEASUREMENT OF BOTTOM SEDIMENT DEPTHS IN AT LEAST FOUR STRATEGIC (4) LOCATIONS.
   f) COLLECT A SAMPLE OF THE BOTTOM SEDIMENT FOR ANALYSIS FOR DISPOSAL, IF REQUIRED
   g) CONDITION OF FOUNDATION AND ANCHORS, VISUAL INSPECTION OF OBVIOUS DEFECTS.
   h) WATER LEVEL SENSORS AND ASSOCIATED WIRING.
   i) ALL OTHER STRUCTURAL MEMBERS NOT MENTIONED ABOVE.

4. CLEARWELL CLEANING (TANK IS EMPTY) (4)

   a) CONTRACTOR SHALL CLEAN UNDERWATER SURFACES TO REMOVE BIOGROWTHS, SEDIMENTS, SILT, SAND, SLUDGE BUILDUP, ETC.
   b) CONTRACTOR SHALL THOROUGHLY REMOVE ALL ACCUMULATED BOTTOM SEDIMENT AND DEBRIS FROM CLEARWELL.
   c) ALL ACCUMULATED BOTTOM SEDIMENT AND DEBRIS SHALL BE REMOVED IN A MANNER THAT DOES NOT COMPROMISE THE TANK INTEGRITY.
   d) CLEANING OF THE TANK FLOOR WILL BE PERFORMED BY POWERWASHING, SCRUBBING BRUSH, AND/OR WET/DRY VACUUMING.
   e) DURING CLEANING OF THE SEDIMENTS ANY CRACKS OR PROBLEMS DETECTED ON THE TANK FLOOR WILL BE RECORDED ON VIDEO OR DIGITALLY AND REPORTED TO THE ENGINEER.
   f) AFTER CLEANING OF THE SEDIMENTS THE CONTRACTOR WILL RECORD AND PROVIDE TO THE ENGINEER, A SERVICE DIGTAL VIDEO SHOWING THE CURRENT CONDITION OF THE BOTTOM OF THE TANK AND SURROUNDING SURFACES.

5. CLEANING COMPOUNDS

   a) ALL CLEANING COMPOUNDS MUST BE ENVIRONMENTAL PROTECTION AGENCY (EPA), FOOD AND DRUG ADMINISTRATION (FDA), NATIONAL SANITATION FOUNDATION (NSF) APPROVED.
   b) CONTRACTOR WILL SUBMIT A LIST OF THE CLEANING COMPOUNDS, ALONG WITH MSDS SHEETS, TO THE ENGINEER FOR REVIEW/APPROVAL PRIOR TO CLEANING THE TANK(S).

6. DISPOSAL OF WASTE MATERIALS

   a) CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL WASTE AND DEBRIS MATERIAL COLLECTED.
   b) SEDIMENT AND WATER REMOVED SHALL BE PUMPED OUT OF THE STRUCTURE.
   c) CONTRACTOR WILL VERIFY ANY PURPOSED DISCHARGE METHODS AND POINT ACCEPTABLE TO LOCAL JURISDICTION AND/OR UTILITIES AND PROVIDE ALL TREATMENT/NEUTRALIZATION REQUIRED.
   d) DISPOSAL OF TREATED WASTEWATER WILL BE IN ACCORDANCE WITH ALL STATE, LOCAL, AND FEDERAL REGULATIONS.
   e) CONTRACTOR MUST MEET ALL EPA AND OSHA GUIDELINES IN THE PROPER HANDLING AND DISPOSAL OF WASTE.
   f) ALL DEBRIS REMOVED FROM THE TANK(S) SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REQUIREMENTS, INCLUDING ANY DECHLORINATION REQUIREMENTS.
   g) REMOVED WATER, DEBRIS (OR OTHER WASTE MATERIALS) AND ANY NECESSARY PERMITTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING ANY CONTAINERIZATION OF WATER AND WATER MATERIALS.
   h) FINAL DISPOSAL RECORDS MUST BE FURNISHED TO THE ENGINEER WITHIN 30 DAYS OF THE WORK.

7. CLEANING SERVICE REPORT
CONTRACTOR WILL SUBMIT A DETAILED "SERVICE REPORT" AT THE CONCLUSION OF CLEANING TO THE ENGINEER. THIS REPORT SHALL INDICATE, BUT NOT BE LIMITED TO, THE FOLLOWING:

   a) JOB SITE LOCATION AND ADDRESS
   b) DATE AND TIME OF CLEANING
   c) TYPE OF TANK
   d) NAME AND CERTIFICATE NUMBER OF THE TECHNICIAN(S)
   e) MEASUREMENTS AND RECORDING OF BOTTOM SEDIMENT DEPTH
   f) A HIGH RESOLUTION VIDEO/DIGITAL RECORDING PROVIDING A DETAILED REVIEW OF STRUCTURAL CONCRETE, STEEL, LANDINGS, ETC. OF THE INTERIOR OF THE STRUCTURE
   g) DIGITAL PHOTOS OF LADDERS, PIPING (ABOVE GROUND), HATCHES, VENTS AND ALL OTHER STRUCTURAL/ MECHANICAL COMPONENTS
   h) IDENTIFY ANY MECHANICAL, ACCESSIBILITY, AND SAFETY CONCERNS
   i) IDENTIFY ANY TANK DEFECTS AND RECOMMENDATIONS FOR REPAIR
   j) IDENTIFY IN DETAIL WHICH COMPONENT(S) IS IN NEED OF REPAIR/REPLACEMENT
   k) IDENTIFY ALL REPAIRS NEEDED TO ENSURE THE TANK IS IN PROPER WORKING ORDER ACCORDING TO AWWA STANDARDS.
   l) AFFIDAVIT OF COMPLIANCE

8. REPAIRS:

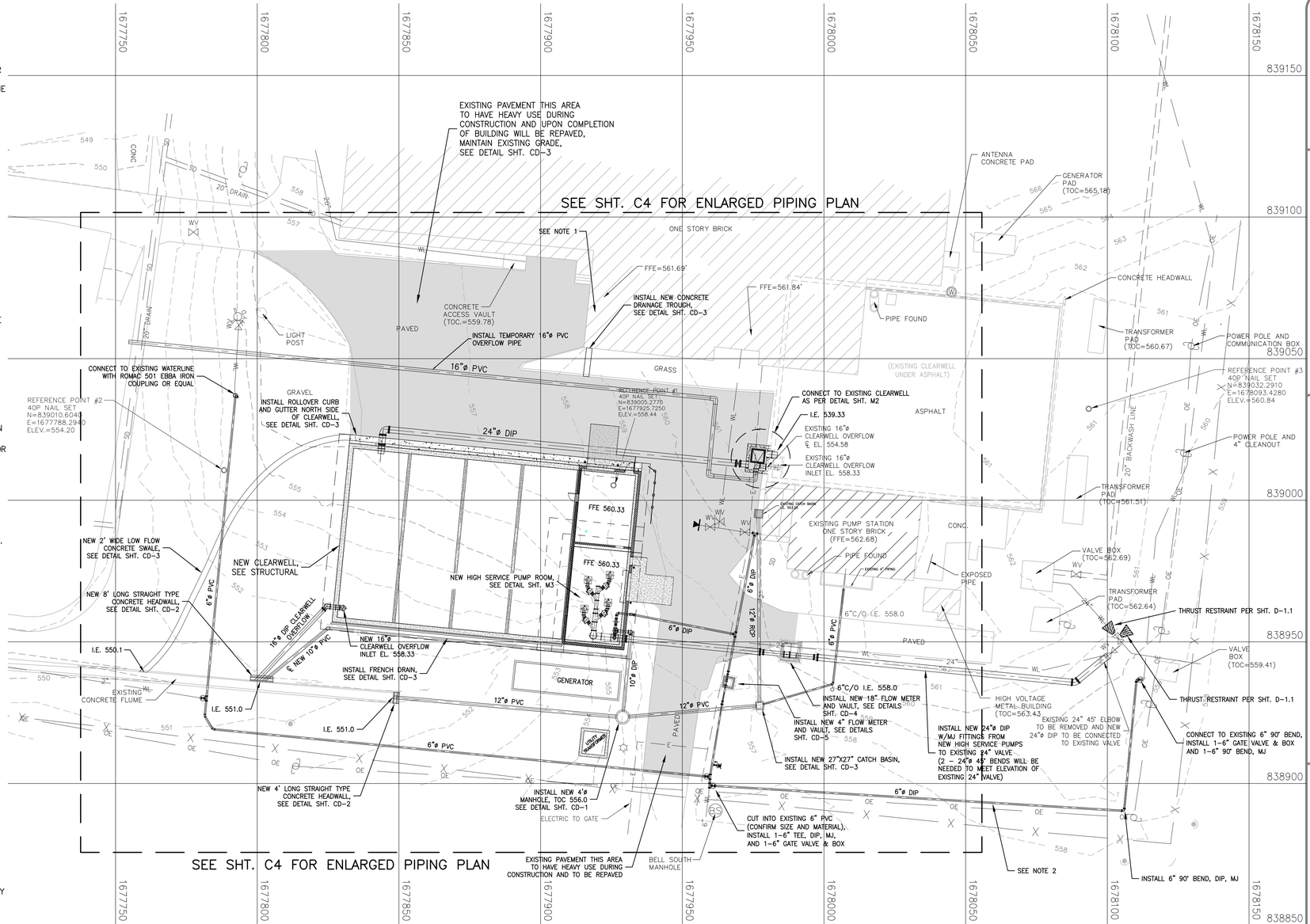
   a) CONTRACTOR SHALL PROVIDE, IF REQUESTED, A DETAILED COST ESTIMATE FOR ANY REPAIR/UPGRADES OF STRUCTURAL AND SURFACE COATING DAMAGES FOUND IN THE INSPECTION/CLEANING PROCESS.

   b) MINOR REPAIRS SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER AND INCLUDE BUT ARE NOT LIMITED TO REPAIRING SCREEN OPENINGS, AND ADJUSTING SENSORS AND FLOATS, AND OTHER ACTIVITIES WHICH CAN BE EASILY ACCOMPLISHED DURING STANDARD SERVICE.

9. DISINFECT THE CLEARWELL PER LATEST AWWA–652 SECTION 4. POST DISINFECTION/CHLORINATION PROCEDURES ARE COMPLETE, CONTRACTOR SHALL SAMPLE AND TEST FOR CHLOROFORM BACTERIA AND CHLORINE RESIDUAL IN ACCORDANCE WITH LATEST AWWA–652 SECTION 5.1. CONTRACTOR SHALL PROVIDE TO THE OWNER AN AFFIDAVIT OF COMPLIANCE THAT STATES CONFORMANCE TO THE LATEST AWWA–652 REQUIREMENTS FOR INSPECTION, CLEANING, AND DISINFECTION SERVICES.

10. TANK CLEANING AND CONCRETE WALL CORING AS DETAILED ON SHEET M2 SHALL BE COMPLETED WITHIN 14 DAYS, PER THE SEQUENCE AND SCHEDULED PERIODS AS OUTLINED IN ADDENDUM 4. (4)

	LEGEND
	FIRE HYDRANT
WV	WATER VALVE
	WATER METER
	GAS METER
	POWER POLE
	ANCHOR
S	SANITARY SEWER MANHOLE
	TEMPORARY BENCHMARK
—WL—	WATER LINE
—SD—	STORM DRAIN
—OE—	OVERHEAD ELECTRIC
—GL—	GAS LINE
——o——	GUARDRAIL



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE OPERATIONS STAFF AT THE WATER TREATMENT PLANT (WTP) TO MAINTAIN UNINTERRUPTED DELIVERY OF THE WATER TREATMENT CHEMICALS. INCLUDING PROVIDING TEMPORARY METAL TRENCH PLATES ACROSS PIPE TRENCHES.
2. CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF 6–INCH WATER MAIN OUTSIDE OF THE NEW CLEARWELL TO REDUCE IMPACTS TO THE CUSTOMERS. CONTRACTOR SHALL RELOCATE THIS LINE PRIOR TO THE INSTALLATION OF NEW 24–INCH DIP DISCHARGE LINE.
3. AFTER THE EXISTING TANK IS CLEANED AND DISINFECTED (SEE CLEARWELL CLEANING AND DISINFECTION NOTES) THE CONTRACTOR SHALL CONNECT THE TWO TANKS THROUGH THE NEW BOX PUTTING THE SYSTEM IN SERVICE (SEE SHT. M2).
4. AFTER THE NEW SYSTEM IS IN SERVICE, THE CONTRACTOR SHALL COMPLETE THE DEMOLITION WORK IN THE EXISTING PUMP STATION. (4)
5. CONSTRUCTION OF THE PORTION OF THE 6–INCH WATER LINE REPLACING THE 24–INCH FEED TO THE WTP WILL BE COORDINATED WITH THE WTP TO MINIMIZE INTERRUPTIONS AT THE WTP.
6. THE TREATMENT PLANT SHALL REMAIN IN OPERATION FOR THE ENTIRETY OF CONSTRUCTION EXCEPT AS NOTED IN NOTE 3.

PROJECT NO. 11141–16
DATE: AUGUST 2022
DRAWN BY: DSM
CHECKED BY: ASL
APPROVED BY: RWM
SCALE: AS NOTED
SHEET NO. C3

ADDENDUM 4
SITE PIPING PLAN

WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

DATE	BY	NO.	DESCRIPTION
8/26/22	ASL	0	TDEC SUBMITTAL/REVISED 12/6/22
9/01/22	ASL	1	RELEASED FOR BIDS
8/30/23	ASL	3	ADDENDUM 4

GRIGGS & MALONEY
INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133–2968
(615) 895–8221 * FAX (615) 895–0632

FILE NAME: L:\ENGINEERING\11141 CITY OF SPRINGFIELD\11141–16 WTP HIGH SERVICE PUMP UPGRADES\ADDENDUM 4\11141–16 ADD 4 SHT C3 SITE PIPING PLAN.DWG

INSTALL BUG SCREEN OVER END OF PIPE, ℄ EL. 549.5

EXISTING PAVEMENT THIS AREA TO HAVE HEAVY USE DURING CONSTRUCTION AND UPON COMPLETION OF BUILDING WILL BE REPAVED, MAINTAIN EXISTING GRADE, SEE DETAIL SHT. CD-3

INSTALL TEMPORARY 16"ø PVC OVERFLOW PIPE

INSTALL NEW CONCRETE DRAINAGE TROUGH, SEE DETAIL SHT. CD-3

CONNECT TO EXISTING WATERLINE WITH ROMAC 501 OR EBBA IRON COUPLING OR APPROVED EQUAL

INSTALL ROLLOVER CURB AND GUTTER NORTH SIDE OF CLEARWELL, SEE DETAIL SHT. CD-3

INSTALL BOLLARD EACH SIDE OF ROLL-UP DOOR AND MAN DOOR, SEE DETAIL SHT. CD3

CONNECT TO EXISTING CLEARWELL AS PER DETAIL SHT. M2

PROVIDE 10' LONG BY 10' WIDE CONCRETE REINFORCED RAMP WITH 1:1 SIDE SLOPE TRANSITIONS (W4.5'x4.5 WELDED WIRE STEEL MESH) TO TRANSITION TO RAMP FROM PROPOSED GRADING TO FFE. FOR EACH ROLL UP DOOR.

PROVIDE 5'x8'x8" CONCRETE LEVEL LANDING AT ENTRY DOOR. SLOPE ±2% SO THAT MAX RISER HEIGHT DOES NOT EXCEED 7.75

INSTALL ±20 L.F. NEW GUARDRAIL, SEE DETAIL SHT. CD-3

NEW 2' WIDE LOW FLOW CONCRETE SWALE, SEE DETAIL SHT. CD-3

NEW CLEARWELL, SEE STRUCTURAL

NEW HIGH SERVICE PUMP ROOM, SEE DETAIL SHT. M3

NEW 16"ø CLEARWELL OVERFLOW INLET EL. 558.33

NEW 8' LONG STRAIGHT TYPE CONCRETE HEADWALL, SEE DETAIL SHT. CD-2

INSTALL 10"ø PVC DRAIN PIPE FOR DOWNSPOUT DRAINAGE, SEE SHT. M5

GENERATOR
TOP OF GENERATOR PAD 556.5
SEE STRUCTURAL SHT. S-101 FOR GENERATOR SLAB DETAILS

INSTALL NEW 6" X 2" DIP TEE, 2" DIP GATE VALVE & BOX, AND CONNECT TO EXISTING 2" PVC WATERLINE

NEW 4' LONG STRAIGHT TYPE CONCRETE HEADWALL, SEE DETAIL SHT. CD-2

INSTALL NEW 6"ø PVC WATER LINE W/ FITTINGS AS REQUIRED

UTILITY TRANSFORMER TO BE SIZED BY SPRINGFIELD ELECTRIC

INSTALL NEW 4'ø MANHOLE, TOC 556.0 SEE DETAIL SHT. CD-1

EXISTING PAVEMENT THIS AREA TO HAVE HEAVY USE DURING CONSTRUCTION AND UPON COMPLETION OF BUILDING WILL BE REPAVED, MAINTAIN EXISTING GRADE, SEE DETAIL SHT. CD-3

CUT & CAP EXISTING WATERLINE

INSTALL BOLLARD EACH SIDE OF ROLL-UP DOOR, SEE DETAIL SHT. CD3

LOCATE & CONNECT TO EXISTING RCP AND INSTALL NEW 12" RCP TO NEW CATCH BASIN

INSTALL NEW 18" FLOW METER AND VAULT, T.O.C. 560.0, SEE DETAILS SHT. CD-4

INSTALL NEW 4" FLOW METER AND VAULT, T.O.C. 558.0, SEE DETAILS SHT. CD-5

INSTALL NEW 27"X27" CATCH BASIN T.O.C 556.75, SEE DETAIL SHT. CD-3

INSTALL NEW 24"ø DIP W/MJ FITTINGS FROM NEW HIGH SERVICE PUMPS TO EXISTING 24" VALVE (2 – 24"ø 45° BENDS WILL BE NEEDED TO MEET ELEVATION OF EXISTING 24" VALVE)

INSTALL NEW 45° PVC ELBOW

INSTALL 6" FIRE HYDRANT ASSEMBLY

INSTALL NEW 6" X 6" DIP TEE, 6" DIP GATE VALVE & BOX, AND CONNECT TO NEW 6" PVC WATERLINE

CUT INTO EXISTING 6" PVC (CONTRACTOR SHALL CONFIRM SIZE AND MATERIAL), INSTALL 1-6" TEE, DIP, MJ, AND 1-6" GATE VALVE & BOX

INSTALL 1 – 6" X 4 REDUCER

INSTALL 6" TEE, DIP

CUT IN WITH 6" DIP TEE

EXISTING 16"ø CLEARWELL OVERFLOW ℄ EL. 554.58

EXISTING 16"ø CLEARWELL OVERFLOW INLET EL. 558.33

EXISTING CATCH BASIN I.E. 553.25

REFERENCE POINT #2
40P NAIL SET
N=839010.6040
E=1677788.2940
ELEV.=554.20

REFERENCE POINT #1
NAIL SET
N=839005.2770
E=1677925.7250
ELEV.=558.44

1677832.52
839020.19

1677935.54
839010.16

1677826.39
838957.15

1677929.40
838947.13

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

PROJECT NO. 11141-16
DATE: AUGUST 2022
DRAWN BY: DSM
CHECKED BY: AGL
APPROVED BY: RWM
SCALE: AS NOTED
SHEET NO. C4

ADDENDUM 4
ENLARGED PIPING PLAN

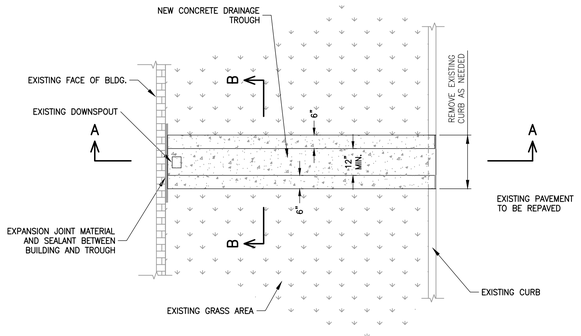
WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

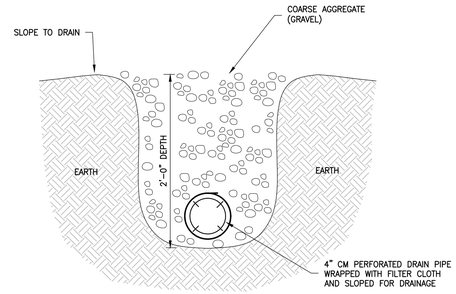
DATE	BY	NO.	DESCRIPTION
2/10/23	AGL	1	SUBMITTED/REVISED 12/6/22
7/07/23	AGL	2	RELEASE FOR BIDS
7/20/23	KVE	3	ADDENDUM 4

GRIGGS & MALONEY
INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 * FAX (615) 895-0632

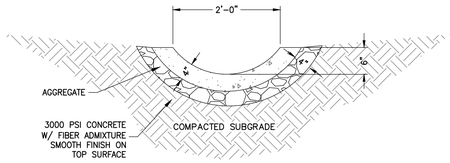
FILE NAME: L:\ENGINEERING\11141 CITY OF SPRINGFIELD\11141-16 WTP HIGH SERVICE PUMP UPGRADES\ADDENDUM 4\11141-16 ADD 4 SHT C4 ENLARGED PIPING PLAN.DWG



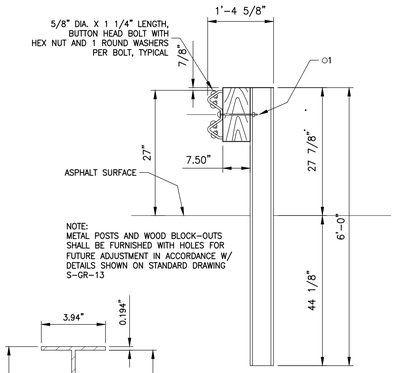
PLAN VIEW



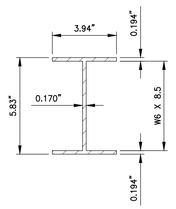
FRENCH DRAIN DETAIL
N.T.S.



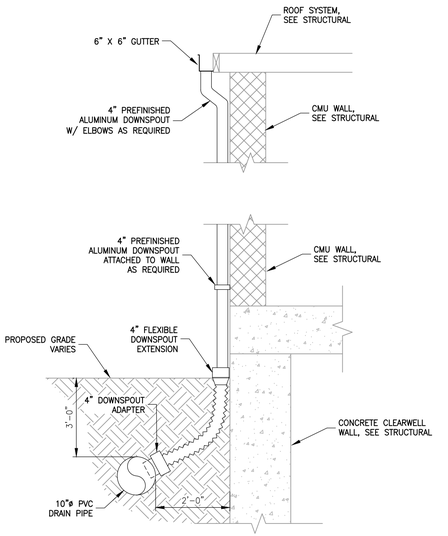
LOW FLOW CONCRETE SWALE
N.T.S.



SIDE VIEW
SINGLE GUARDRAIL
N.T.S.

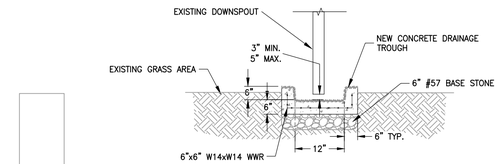


WELDED STEEL SHAPE
N.T.S.

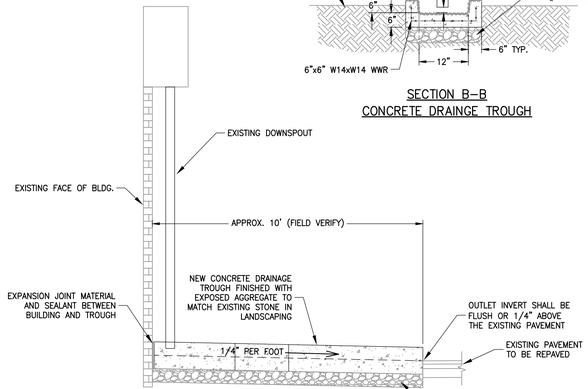


(5 – DOWNSPOUTS AND CONNECTIONS REQUIRED, SEE SHT. M5)

DOWNSPOUT CONNECTION TO 10" DRAIN PIPE
N.T.S.

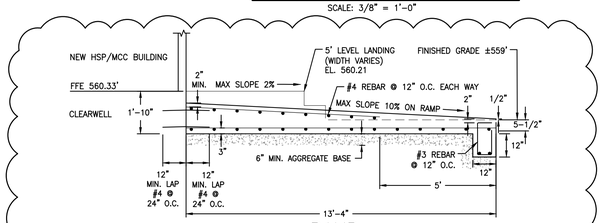


SECTION B-B
CONCRETE DRAINGE TROUGH



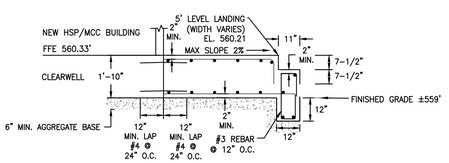
SECTION A-A

NEW CONCRETE DRAINAGE TROUGH
SCALE: 3/8" = 1'-0"



RAMP
N.T.S.

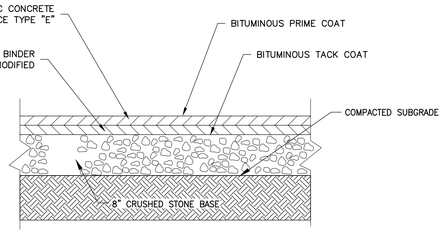
NOTE: 2-INCH MINIMUM COVER OVER REINFORCING STEEL



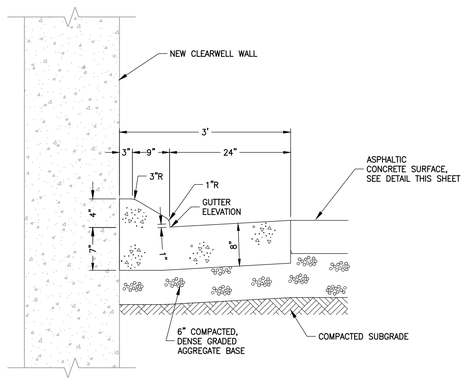
LANDING/STAIR
N.T.S.

NOTE: 2-INCH MINIMUM COVER OVER REINFORCING STEEL

4



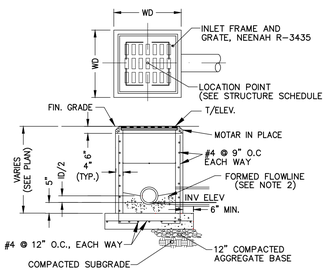
NEW PAVEMENT SECTION
N.T.S.



NOTES:

1. CONTRACTION JOINTS: 1/4" WIDE, FULL DEPTH, AT MAXIMUM OF 50' LONGITUDINAL INTERVALS, AT ALL ABUTTING STRUCTURES, DRIVEWAYS AND TANGENT POINTS OF RADIUS RETURNS.
2. TOOLED CURB CONTROL JOINTS 1/4" WIDE, 1" DEEP, 5' O.C.
3. ALL CONCRETE TO COMPLY WITH ACI 318 WITH MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 22 DAY TEST.
4. CONCRETE TO BE AIR-ENTRAINED WITH AN AIR CONTENT OF 4-6%.
5. JOINTS TO BE FILLED WITH BITUMINOUS EXPANSION MATERIAL.

ROLLOVER CURB AND GUTTER DETAIL
ALONG NORTH WALL OF NEW CLEARWELL
N.T.S.

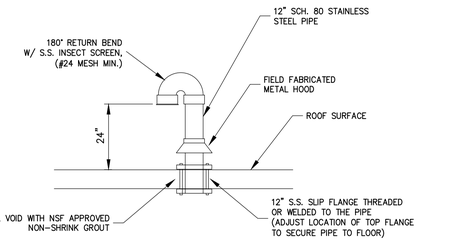


SIZE	WD	IW
27"x 27"	34"	25"
24"x 24"	30 1/2"	21 1/2"
18"x 18"	24 1/2"	15 1/2"

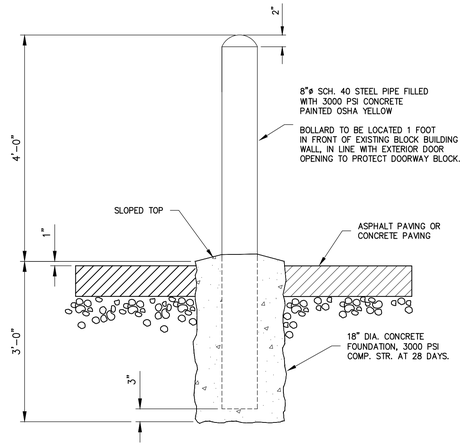
NOTES:

1. SEE PLAN FOR LOCATION, ELEVATION AND PIPE INFORMATION.
2. FLOWLINE OF MANHOLE MAY BE FORMED IN CONCRETE; BUILT UP WITH MORTAR; OR BY LAYING A PIPE THROUGH MANHOLE, THE TOP BEING BROKEN OUT LATER.
3. GROUT ANNULAR SPACE BETWEEN WALL AND PIPE WITH NON-SHRINK MORTAR TO INSURE WATERTIGHT SEAL.
4. ALL CONCRETE TO COMPLY WITH ACI 318 WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI. 28 DAY TEST.
5. CATCH BASIN TO BE CONSTRUCTED OF SUFFICIENT SIZE TO ACCOMMODATE INLET AND OUTLET PIPES.
6. STEPS TO BE NEENAH R-1982-W PROVIDED WITHIN 12" OF TOP, 16" O.C.
7. ADJUSTING RINGS OR BRICK ARE REQUIRED TO ADJUST TOP ELEVATION PRIOR TO FINAL PAVING.
8. CONTRACTOR SHALL INSTALL SILTSACK BY TERRAFIX GEOSYNTHETICS OR APPROVED EQUAL AT EACH DROP INLET CATCH BASIN. CONTRACTOR MUST MAINTAIN/REPLACE AS NECESSARY DURING CONSTRUCTION ACTIVITIES AND PREVENT FLOODING/POOLING OF WATER ASSOCIATED FROM BLINDING OF GRATES/SILTSACK.

CATCH BASIN DETAIL
N.T.S.



CLEARWELL ROOF VENT DETAIL
N.T.S.



BOLLARD DETAIL
N.T.S.

PROJECT NO. 1141-16
DRAWN BY: DSM
CHECKED BY: AGL
APPROVED BY: RWM
DATE: AUGUST 2022
SCALE: AS NOTED
SHEET NO. CD-3

ADDENDUM 4
SITE DETAILS

WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

NO.	DESCRIPTION	DATE	BY
1	DEC. SUBMITTAL AS APPROVED	12/6/22	
2	RELEASED FOR BIDS		
3	ADDENDUM 4		

GRIGGS & MALONEY
INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 * FAX (615) 895-0632

FILE NAME: L:\ENGINEERING\1141 CITY OF SPRINGFIELD\1141-16 WTP HIGH SERVICE PUMP UPGRADES\ADDENDUM 4\1141-16 ADD 4 SHT CD-3 SITE DETAILS.DWG

RIP RAP
SHUT OFF VALVE
GRATE
GRATE
CONC.
20' DRAIN
EXISTING PAVEMENT THIS AREA TO HAVE HEAVY USE DURING CONSTRUCTION AND UPON COMPLETION OF BUILDING WILL BE REPAVED, SEE DETAIL SHT. CD-3
ONE STORY BRICK
FFE=561.69'
FFE=561.84'
ANTENNA CONCRETE PAD
GENERATOR PAD (TOC=565.18)
CONCRETE HEADWALL
PIPE FOUND
CONCRETE ACCESS VAULT (TOC.=559.78)
LIGHT POST
TRANSFORMER PAD (TOC=560.67)
POWER POLE AND COMMUNICATION BOX
PAVED
GRAVEL
REFERENCE POINT #2
40P NAIL SET
N=839010.6040
E=1677788.2940
ELEV.=554.20
REFERENCE POINT #1
40P NAIL SET
N=839005.2770
E=1677925.7250
ELEV.=568.44
REFERENCE POINT #3
40P NAIL SET
N=839032.2910
E=1678093.4280
ELEV.=560.84
IE=553.85
EXISTING WATER LINE
18" CLEARWELL OVERFLOW
ASPHALT
CUT & CAP EXISTING 24"ø DIP TO BE REMOVED THIS AREA 4
REMOVE EXISTING HIGH SERVICE PUMPS; SEE SHEET D1.1
POWER POLE AND 4" CLEANOUT
20' BACKWASH LINE
TRANSFORMER PAD (TOC=561.51)
ONE STORY BRICK (FFE=562.68)
CUT & CAP EXISTING WATERLINE
CONC.
EXPOSED
REMOVE VENTURI METER & INSTALL SPOOL PIECE; SEE SHEET D1.1
VALVE BOX (TOC=562.69)
6" DRAIN
18" METAL PIPE
STORM DRAIN (TOC=535.41)
IE=552.38
PIPE FOUND
STORM DRAIN (TOC=558.89)
INSTALL NEW THRUST BLOCKING, SEE SHEET D1.1
EXISTING UTILITIES AND DRAINAGE STRUCTURES THIS AREA TO BE REMOVED, RELOCATED OR ABANDONED
INLET NOT LOCATED
CUT & CAP EXISTING 24"ø DIP 4
PAVED
12"PP
IE=556.47
VALVE BOX (TOC=559.41)
HIGH VOLTAGE METAL BUILDING (TOC=563.43 4
TRANSFORMER PAD (TOC=562.64) 4
EXISTING 24"ø DIP TO BE REMOVED
CUT & CAP AND REMOVE EXISTING 4" WATER LINE
EXISTING CONCRETE FLUME
EXISTING STORM DRAIN TO BE REMOVED AND NEW ONE INSTALLED
ELECTRIC TO GATE
BELL SOUTH MANHOLE
EXISTING PAVEMENT THIS AREA TO HAVE HEAVY USE DURING CONSTRUCTION AND TO BE REPAVED

4 CAPACTOR AND TRANSFORMER ARE NOT INCLUDED IN EQUIPMENT REMOVAL

	LEGEND
	FIRE HYDRANT
WV	WATER VALVE
	WATER METER
G	GAS METER
	POWER POLE
	ANCHOR
S	SANITARY SEWER MANHOLE
	TEMPORARY BENCHMARK
—WL—	WATER LINE
—SD—	STORM DRAIN
—OE—	OVERHEAD ELECTRIC
—GL—	GAS LINE
—G—	GUARDRAIL

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PROJECT NO. 1141-16
DATE: AUGUST 2022
DRAWN BY: DSM
CHECKED BY: AGL
APPROVED BY: RWM
SCALE: AS NOTED
SHEET NO. D1.0

ADDENDUM 4
SITE DEMOLITION PLAN

WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

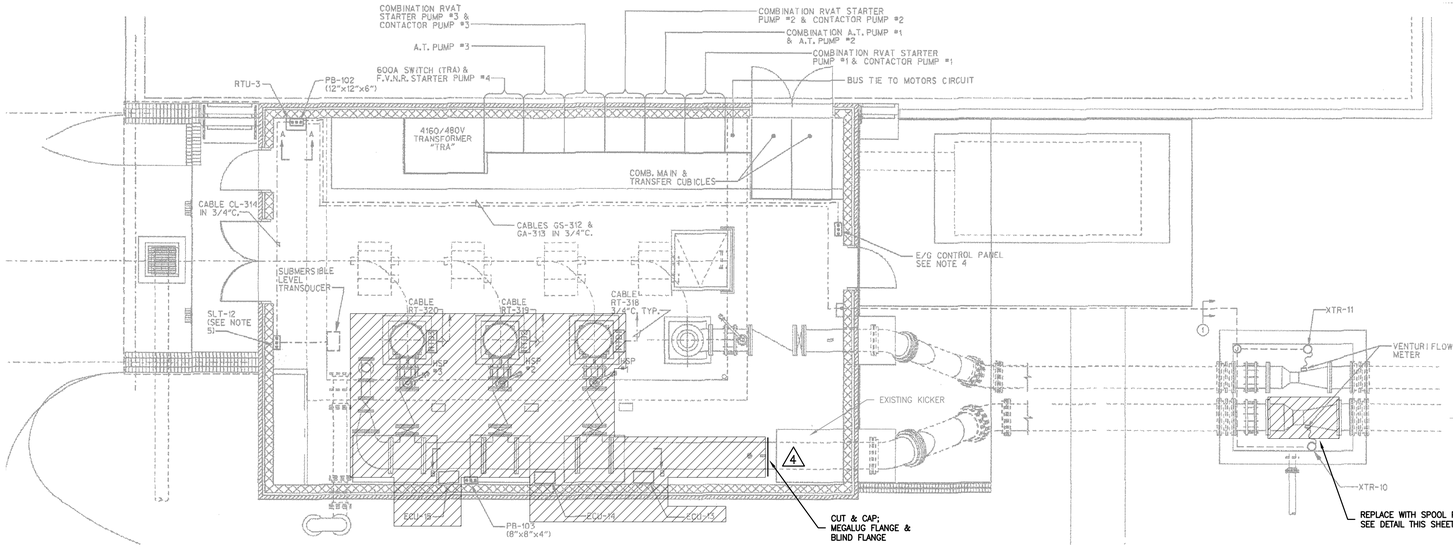
DATE	BY	NO.	DESCRIPTION
8/10/22	AGL	1	REVISED PER CITY COMMENTS
9/07/22	AGL	2	SUBMITTAL
10/25/22	KGE	3	RELEASED FOR BIDS
		4	ADDENDUM 4

ANDREW GORDON LOVELL
REGISTERED ENGINEER
STATE OF TENNESSEE
12/6/22

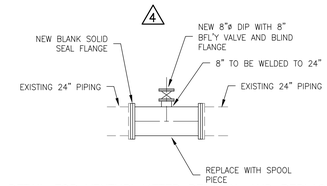
GRIGGS & MALONEY
INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 * FAX (615) 895-0632

FILE NAME: L:\ENGINEERING\1141 CITY OF SPRINGFIELD\1141-16 WTP HIGH SERVICE PUMP UPGRADE\ADDENDUM 4\1141-16 ADD 4 SHT D1.0 SITE DEMOLITION PLAN.DWG

NOTE:
EXISTING HEADWORKS FROM PLANS BY:
GRESHAM, SMITH AND PARTNERS
SPRINGFIELD WATER TREATMENT PLANT IMPROVEMENTS
DATED 1999

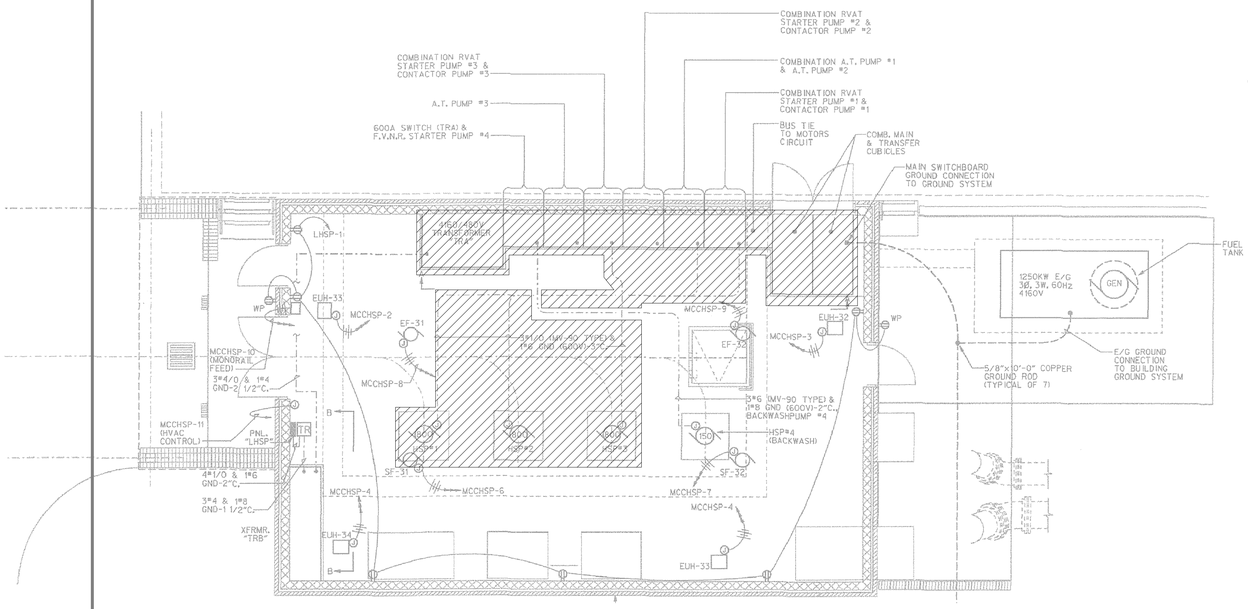


PIPING AND PUMP DEMO – PLAN VIEW
SCALE: 3/16" = 1'-0"

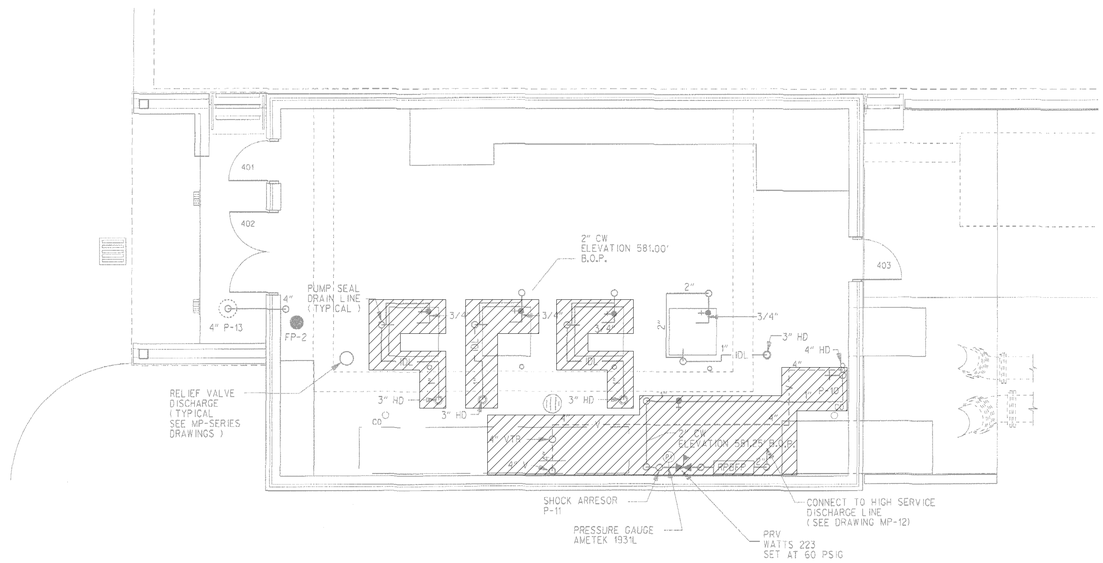


DETAIL FOR VENTURI METER REMOVAL AND REPLACEMENT
SCALE: 3/16" = 1'-0"

NOTE: CONTRACTOR SOURCE FOR REFILL WATER FOR REFILLING CLEARWELL UPON COMPLETION OF CLEANING AND DISINFECTION. CONTRACTOR TO SUPPLY APPROPRIATE PRESSURE REDUCING AND FLOW CONTROL EQUIPMENT. 24"ø SOURCE PIPE OPERATING AT 120-160 PSI.



ELECTRICAL DEMO – PLAN VIEW
SCALE: 3/16" = 1'-0"



SMALL DRAIN PIPING DEMO – PLAN VIEW
SCALE: 3/16" = 1'-0"

PROJECT NO. 1141-16
DATE: AUGUST 2022
DRAWN BY: DSM
CHECKED BY: RMM
APPROVED BY: RMM
SCALE: AS NOTED
SHEET NO. D1.1

ADDENDUM 4
DEMOLITION PLAN
HIGH SERVICE PUMP BUILDING

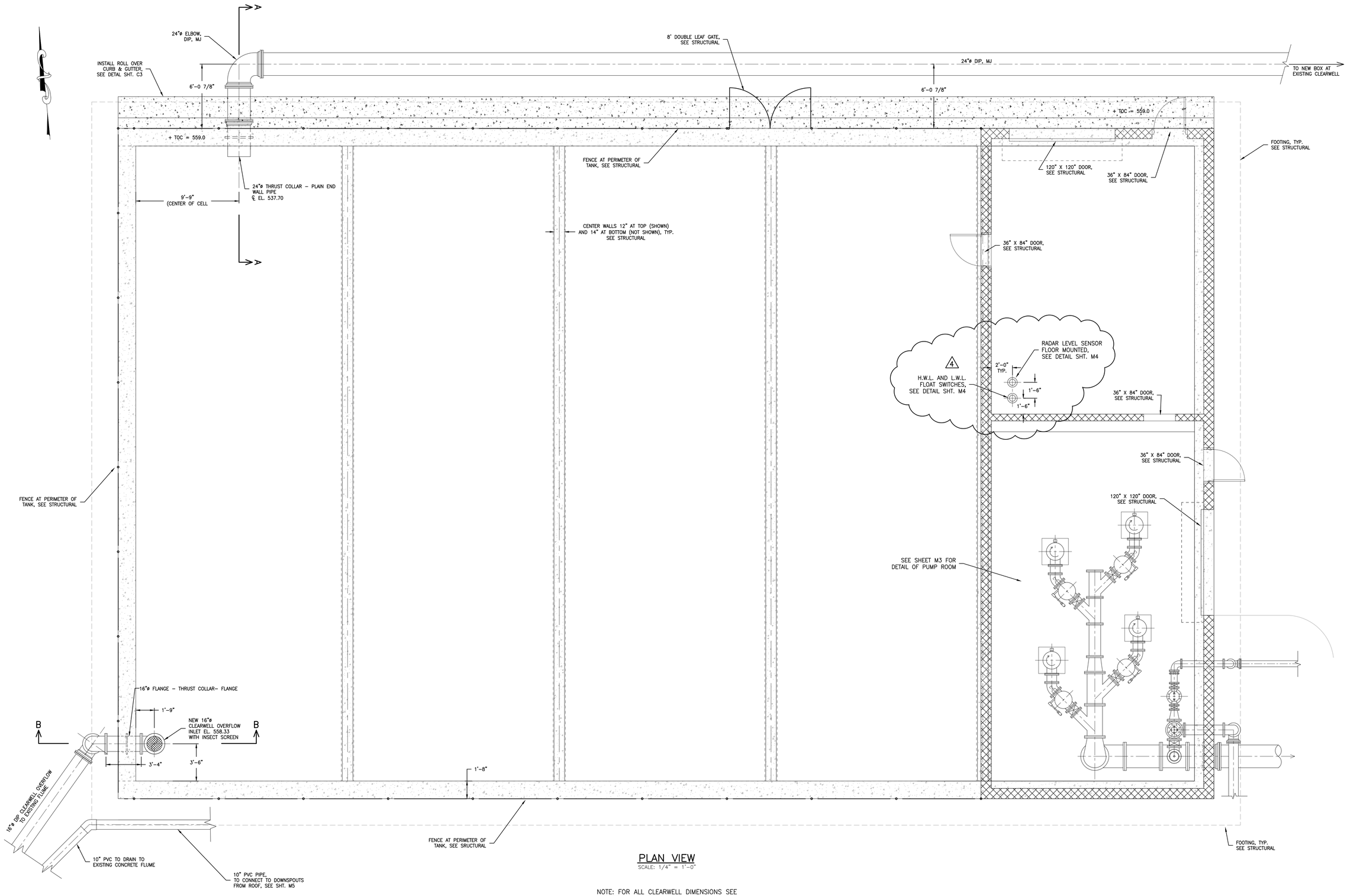
WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS & SUBMITTALS

DATE	BY	NO.	DESCRIPTION
8/31/2022	DSC	1	ADDENDUM 4

GRIGGS & MALONEY INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 * FAX (615) 895-0632

FILE NAME: L:\Engineering\1141\1141-16\Addendum 4\1141-16 SH D1.1 Demo High Service Pump Building.dwg



PLAN VIEW
SCALE: 1/4" = 1'-0"

NOTE: FOR ALL CLEARWELL DIMENSIONS SEE STRUCTURAL SHEETS.
THIS SHEET IS FOR PIPING AND EQUIPMENT ONLY.

PROJECT NO. 1141-16
DATE: AUGUST 2022
DRAWN BY: DSM
CHECKED BY: AGL
APPROVED BY: RWM
SCALE: 1/4"=1'-0"
SHEET NO. M1

ADDENDUM 4
NEW CLEARWELL
PLAN VIEW

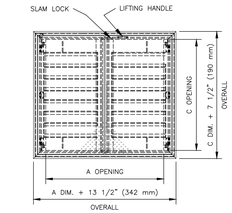
WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

DATE	BY	NO.	DESCRIPTION
8/31/22	AGL	1	DEC. SUBMITTAL APPROVED 12/6/22)
8/31/22	AGL	2	RELEASE FOR BIDS
9/30/22	KGS	3	ADDENDUM 4

GRIGGS & MALONEY
INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 * FAX (615) 895-0632

STANDARD SIZES				
QTY.	MODEL NO.	A DIM. INCHES (mm)	C DIM. INCHES (mm)	UNIT WT. LBS. (kg.)
	HDW4242	42 (1067)	42 (1067)	223 (101)
	HDW4842	48 (1219)	42 (1067)	238 (108)
	HDW4848	48 (1219)	48 (1219)	263 (119)
	HDW5442	54 (1372)	42 (1067)	252 (114)
	HDW5448	54 (1372)	48 (1219)	284 (129)
	HDW6048	60 (1524)	48 (1219)	300 (136)
	HDW6060	60 (1524)	60 (1524)	373 (169)
	HDW7248	72 (1829)	48 (1219)	341 (155)
	HDW7260	72 (1829)	60 (1524)	413 (187)
	HDW7272	72 (1829)	72 (1829)	504 (229)



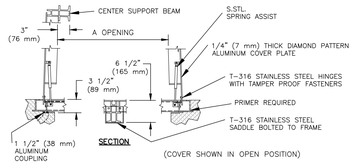
NOTES:

1) SUITABLE FOR USE IN OFF STREET LOCATION WHERE NOT SUBJECTED TO HIGH DENSITY TRAFFIC.

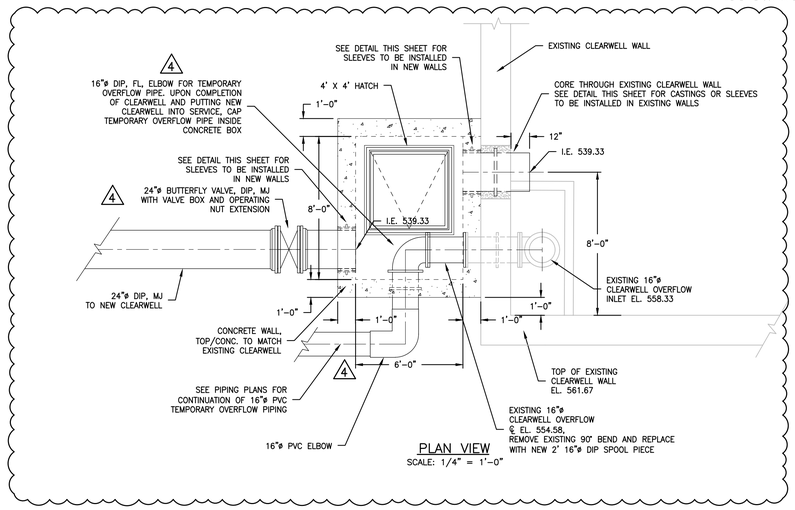
2) PROVIDE A FULL BED OF CLASS "A" CONCRETE UNDER FRAME AND SUPPORT ANGLES.

STANDARD FEATURES:

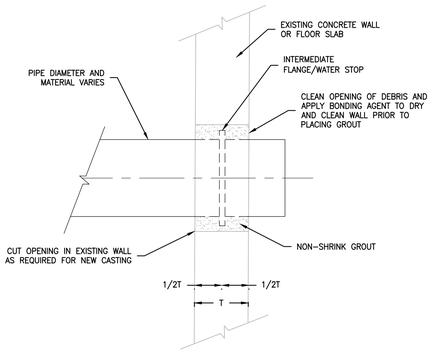
- H20 LOAD RATING (SEE NOTES)
- EXTRUDED ALUMINUM CHANNEL FRAME
- DOUBLE LEAF CONSTRUCTION
- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- T-316 STAINLESS STEEL SLAM LOCK WITH REMOVABLE KEY
- STAINLESS STEEL COMPRESSION SPRING ASSIST
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE



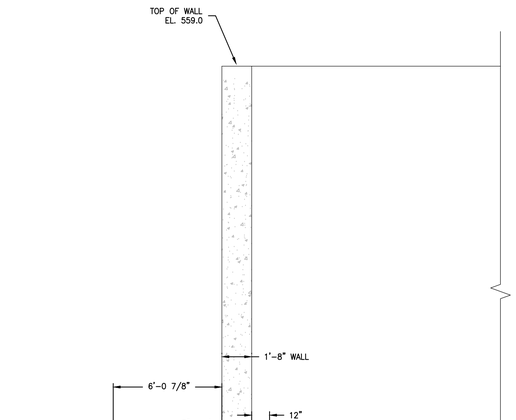
ACCESS DOOR DETAIL
SCALE: NONE



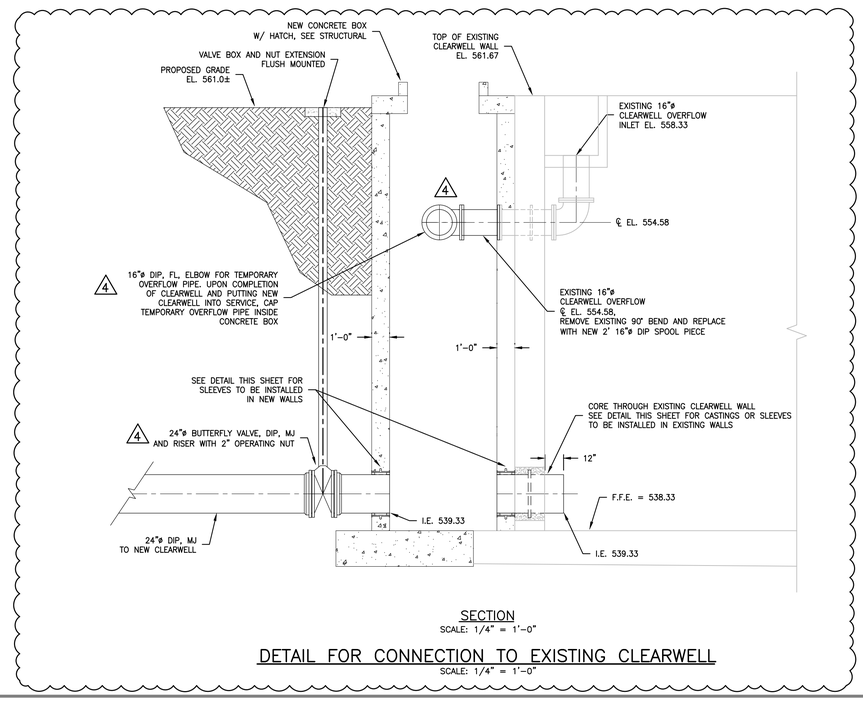
PLAN VIEW
SCALE: 1/4" = 1'-0"



DETAIL FOR CASTINGS OR SLEEVES TO BE INSTALLED IN EXISTING WALLS
SCALE: NONE

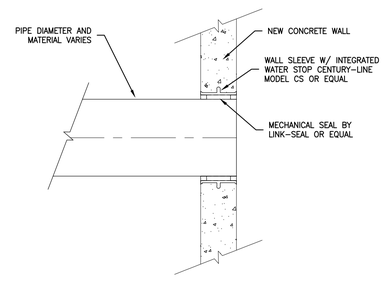


SECTION A–A
SCALE: 1/4" = 1'-0"

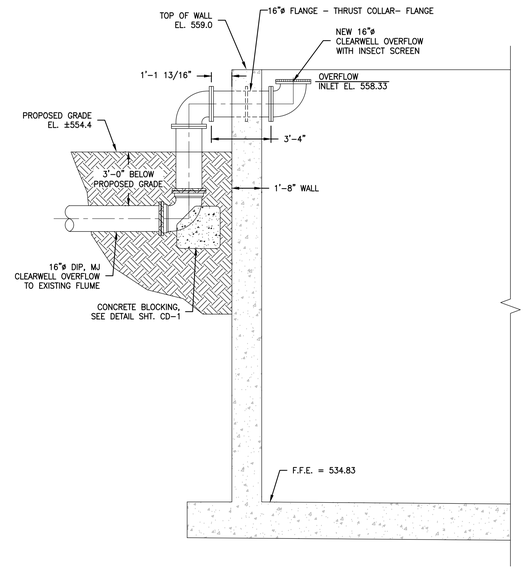


SECTION
SCALE: 1/4" = 1'-0"

DETAIL FOR CONNECTION TO EXISTING CLEARWELL
SCALE: 1/4" = 1'-0"



DETAIL FOR SLEEVES TO BE INSTALLED IN NEW WALLS AND FLOORS
SCALE: NONE



NOTE: FOR ALL CLEARWELL DIMENSIONS SEE STRUCTURAL SHEETS.
THIS SHEET IS FOR PIPING AND EQUIPMENT ONLY.

SECTION B–B
SCALE: 1/4" = 1'-0"

PROJECT NO. 1141-16
DATE: AUGUST 2022
SCALE: 1/4"=1-0"
DRAWN BY: DSM
CHECKED BY: AGL
APPROVED BY: RWM
SHEET NO. M2

ADDENDUM 4
NEW CLEARWELL SECTIONS A & B
AND DETAIL FOR CONNECTING
TO EXISTING CLEARWELL

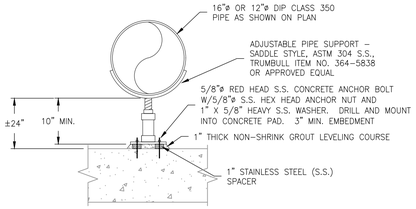
WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

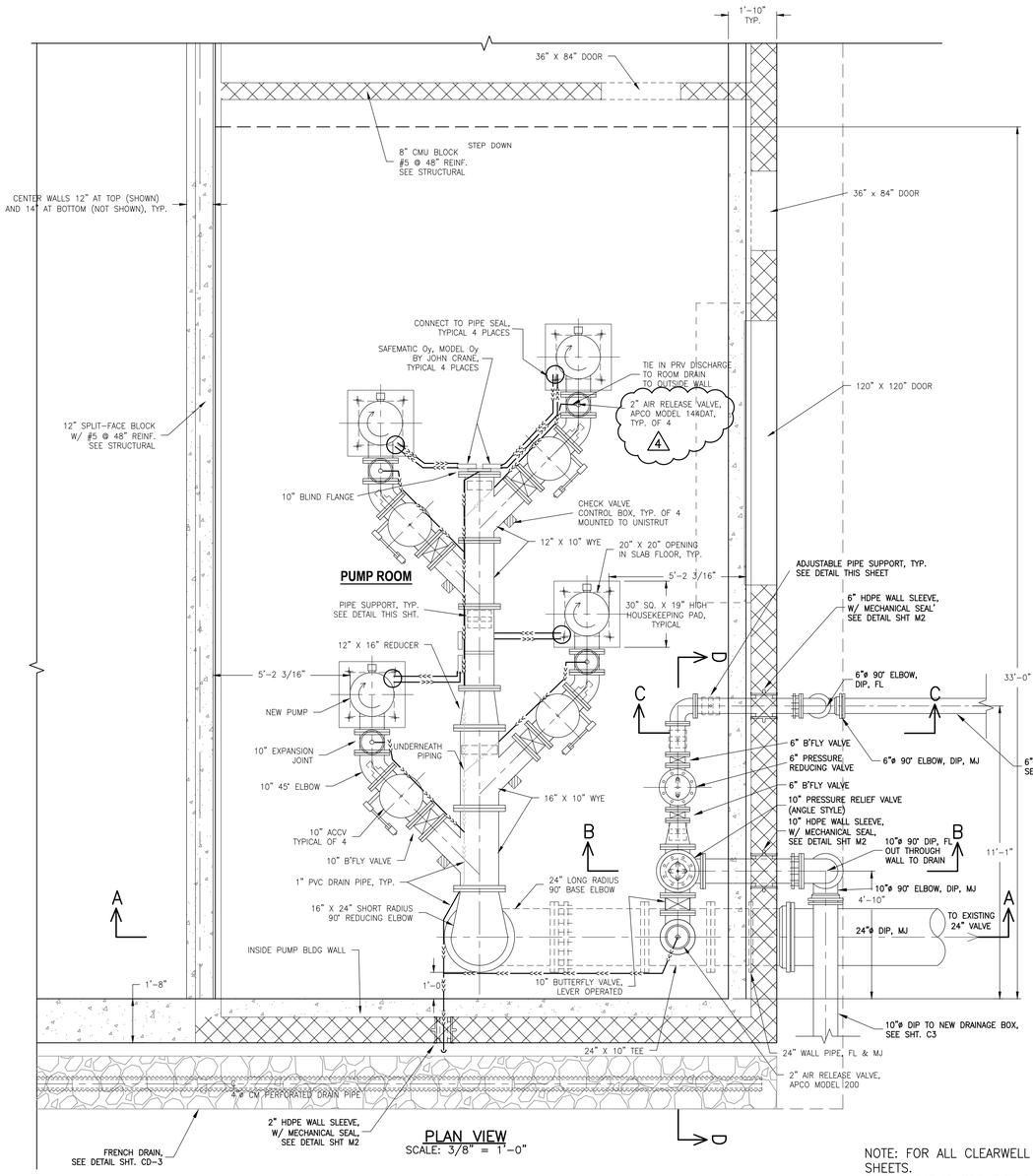
DATE	BY	NO.	DESCRIPTION
8/01/23	AGL	1	DEC. SUBMITTAL REVISED 12/6/23
8/01/24	AGL	2	RELEASE FOR BIDS
8/30/24	KGE	3	ADDENDUM 4

GRIGGS & MALONEY
INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 * FAX (615) 895-0632

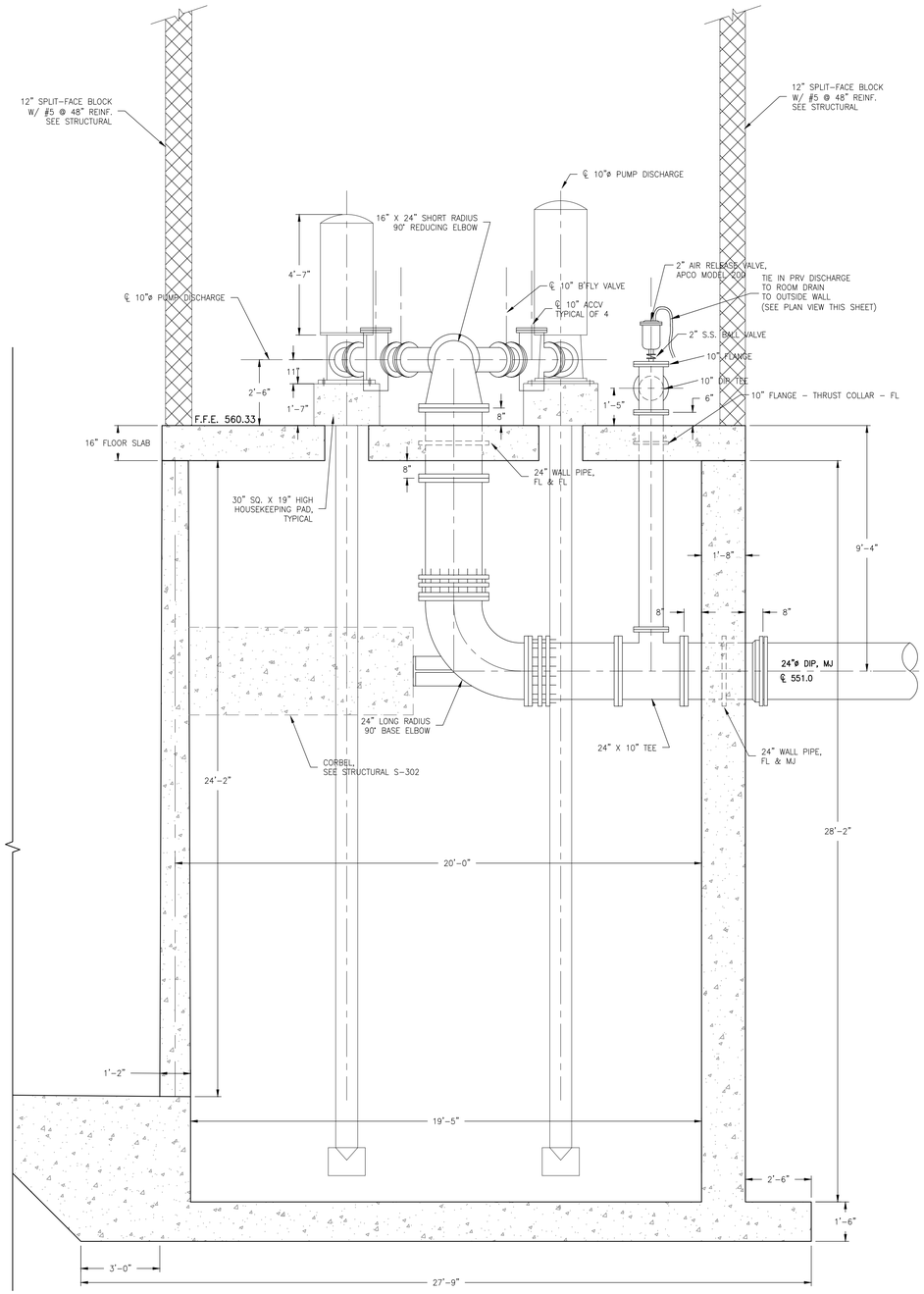
FILE NAME: L:\ENGINEERING\1141 CITY OF SPRINGFIELD\1141-16 WTP HIGH SERVICE PUMP UPGRADE\ADDENDA\ADDENDUM 4\1141-16 ADD 4 SHT M1 AND M2 CLEARWELL PLAN AND SECTIONS.DWG



PIPE SUPPORT DETAIL
SCALE: NONE



PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION A-A
SCALE: 3/8" = 1'-0"

NOTE: FOR ALL CLEARWELL DIMENSIONS SEE STRUCTURAL SHEETS.
THIS SHEET IS FOR PIPING AND EQUIPMENT ONLY.

PROJECT NO. 1141-16
DATE: AUGUST 2022
DRAWN BY: DSM
CHECKED BY: AGL
APPROVED BY: RWM
SCALE: AS NOTED
SHEET NO. M3

ADDENDUM 4
NEW PUMP AREA
PLAN & SECTION A-A

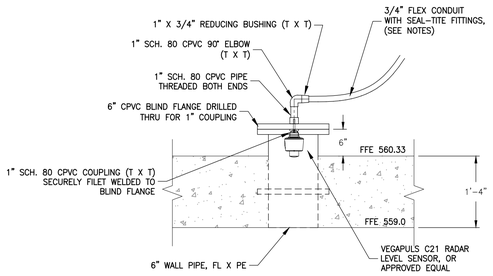
WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

DATE	BY	NO.	DESCRIPTION
8/17/23	ASL	1	TDEC SUBMITTAL APPROVED 12/6/22
8/17/23	ASL	2	RELEASED FOR BIDS
8/30/23	WSE	3	ADDENDUM 4

GRIGGS & MALONEY INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 • FAX (615) 895-0632

FILE NAME: L:\ENGINEERING\1141 CITY OF SPRINGFIELD\1141-16 WTP HIGH SERVICE PUMP UPGRADES\ADDENDUM\ADDENDUM 4\1141-16 ADD 4 SHT M3 AND M4 CLEARWELL PUMP AREA PLAN AND SECTIONS.DWG

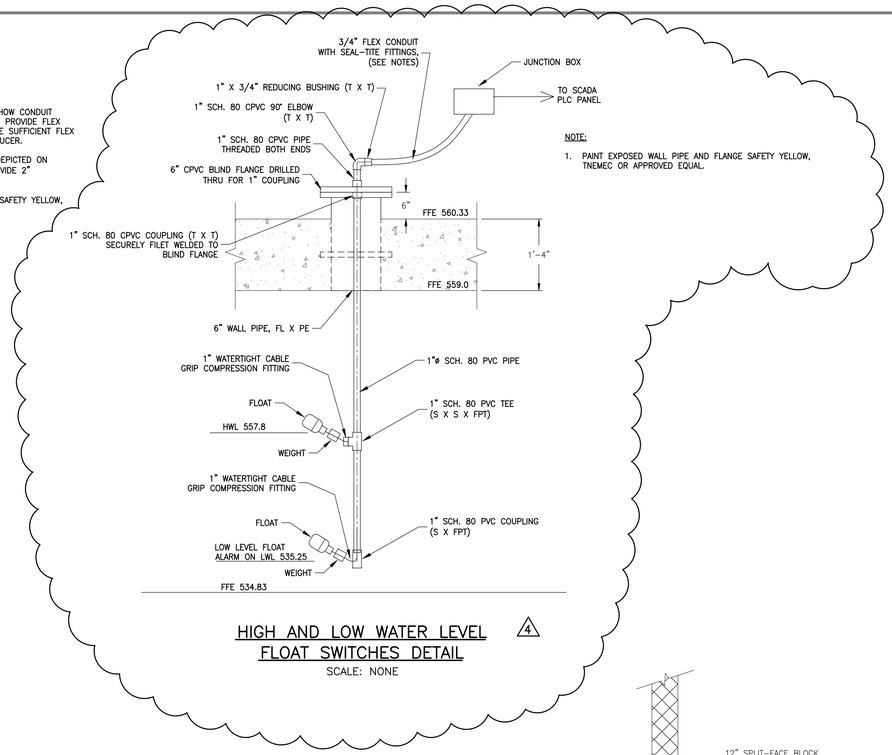


RADAR LEVEL SENSOR FLOOR MOUNTING DETAIL

SCALE: NONE

NOTES:

1. WHERE ELECTRICAL DRAWINGS DO NOT SHOW CONDUIT BETWEEN TRANSDUCER AND TRANSMITTER, PROVIDE FLEX CONDUIT AS DESCRIBED BELOW. PROVIDE SUFFICIENT FLEX CONDUIT TO ALLOW REMOVAL OR TRANSDUCER.
2. WHERE TRANSMITTER MOUNTING IS NOT DEPICTED ON ELECTRICAL OR PROCESS DRAWINGS, PROVIDE 2" INSTRUMENT STAND (SEE DETAIL 7001).
3. PAINT EXPOSED WALL PIPE AND FLANGE SAFETY YELLOW, TNEMEC OR APPROVED EQUAL.



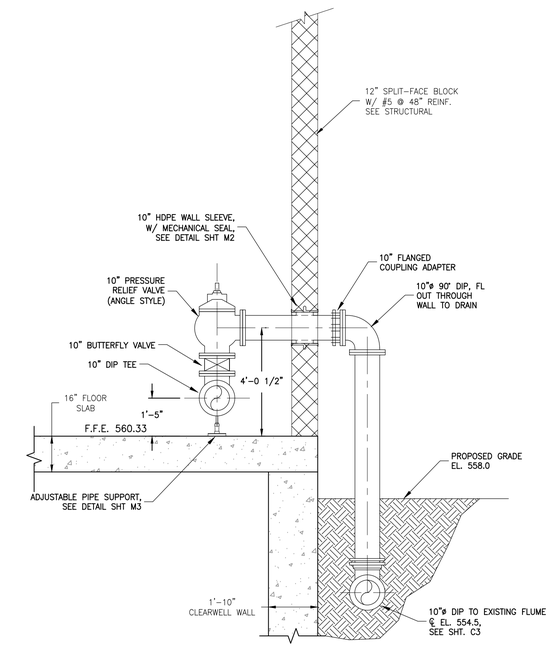
NOTE:

1. PAINT EXPOSED WALL PIPE AND FLANGE SAFETY YELLOW, TNEMEC OR APPROVED EQUAL.

HIGH AND LOW WATER LEVEL FLOAT SWITCHES DETAIL

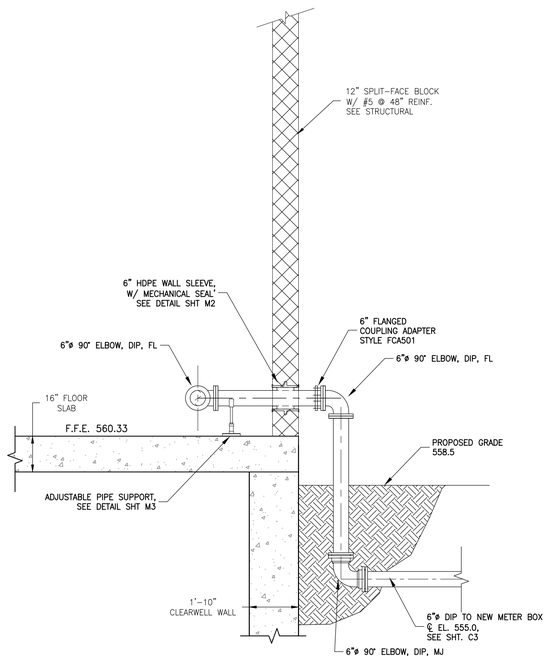
4

SCALE: NONE



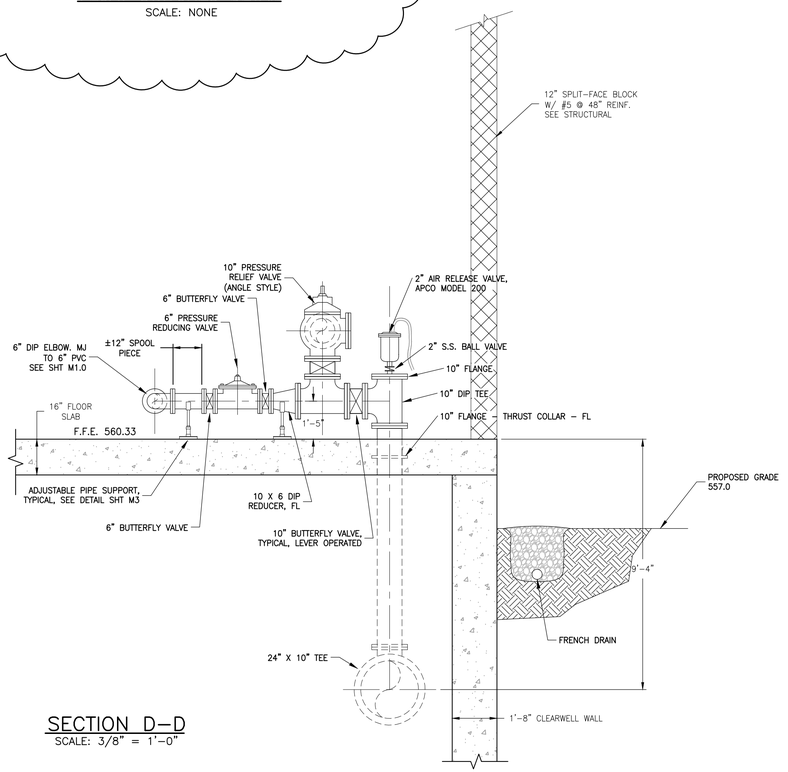
SECTION B–B

SCALE: 3/8"=1'-0"



SECTION C–C

SCALE: 3/8"=1'-0"



SECTION D–D

SCALE: 3/8" = 1'-0"

NOTE: FOR ALL CLEARWELL DIMENSIONS SEE STRUCTURAL SHEETS.
THIS SHEET IS FOR PIPING AND EQUIPMENT ONLY.

PROJECT NO. 1141-16
DATE: AUGUST 2022
SCALE: AS NOTED
DRAWN BY: DSM
CHECKED BY: AGL
APPROVED BY: RWM
SHEET NO. M4

ADDENDUM 4
NEW PUMP AREA
SECTIONS B–B, C–C & D–D

WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	REC. SUBMITTAL REVIEWED	12/6/22	
2	RELEASED FOR BIDS	1/10/23	AGL
3	ADDENDUM 4	3/7/23	AGL
		3/20/23	MSE

GRIGGS & MALONEY INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 • FAX (615) 895-0632

FILE NAME: L:\ENGINEERING\1141 CITY OF SPRINGFIELD\1141-16 WTP HIGH SERVICE PUMP UPGRADES\ADDENDA\ADDENDUM 4\1141-16 ADD 4 SHT M3 AND M4 CLEARWELL PUMP AREA PLAN AND SECTIONS.DWG

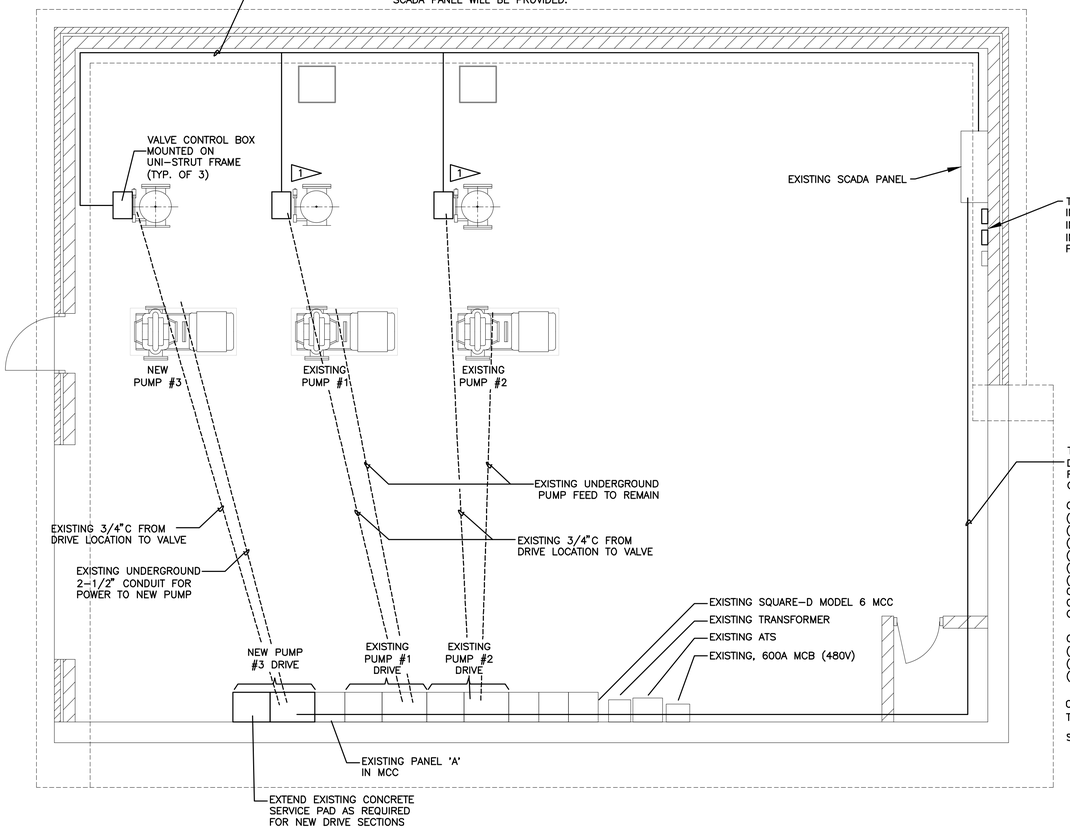
Oliver • Little • Gipson
OLG Engineering, Inc.
301 Industrial Blvd.
Tullahoma, TN 37388
Office: 931.454.9940
2605 Elm Hill Pk/St C
Nashville, TN 37214
Office: 615.678.6022
olgengineering.com

TWO 2"C FROM SCADA PANEL TO VALVE CONTROL BOXES (2" DROP FROM EACH CONDUIT TO EACH VALVE CONTROL BOX). ROUTE ~8' AFF. THE FOLLOWING WIRING SHALL BE INSTALLED IN THESE CONDUITS:

CONDUIT 1:
10 (2)#18 TWISTED, SHIELDED PAIR CABLE – VALVE CONTROL BOX 1 TO SCADA
10 (2)#18 TWISTED, SHIELDED PAIR CABLE – VALVE CONTROL BOX 2 TO SCADA
10 (2)#18 TWISTED, SHIELDED PAIR CABLE – VALVE CONTROL BOX 3 TO SCADA
20 #18AWG – VALVE CONTROL BOX 1 TO SCADA
20 #18AWG – VALVE CONTROL BOX 2 TO SCADA
20 #18AWG – VALVE CONTROL BOX 3 TO SCADA
1 CAT–6 – VALVE CONTROL BOX 1 TO SCADA
1 CAT–6 – VALVE CONTROL BOX 2 TO SCADA
1 CAT–6 – VALVE CONTROL BOX 3 TO SCADA

CONDUIT 2:
(10)#18AWG AND (1)#12G – VALVE CONTROL BOX 1 TO SCADA
(10)#18AWG AND (1)#12G – VALVE CONTROL BOX 2 TO SCADA
(10)#18AWG AND (1)#12G – VALVE CONTROL BOX 3 TO SCADA

CONTRACTOR TO LABEL WIRE/CABLE AT BOTH ENDS TO PROVIDE UNIQUE IDENTIFIER FOR EACH. CONTRACTOR TO TERMINATE WIRING AT BOTH ENDS. INFORMATION ON TERMINATION LOCATIONS WITHIN THE DRIVES AND SCADA PANEL WILL BE PROVIDED.



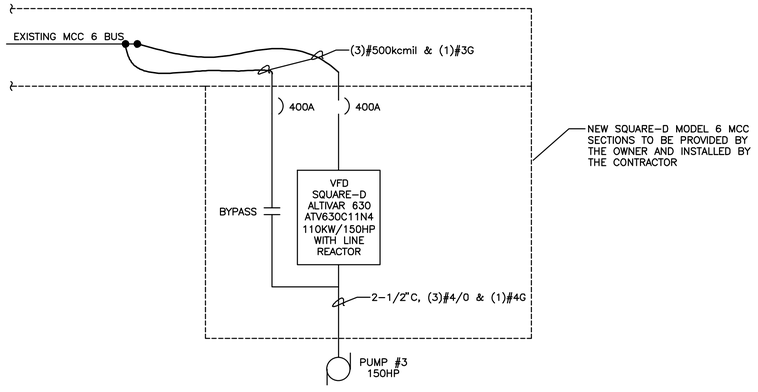
POWER PLAN
SCALE: 1/4" = 1'–0"

PROJECT NOTES:

1. EXISTING VALVE CONTROL BOXES AT THESE TWO PUMPS HAVE EXISTING CONDUIT AND WIRING RAN TO THE SCADA PANEL. THIS WIRING SHALL BE REMOVED AND THE EXISTING CONDUIT SEALED.

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70, NATIONAL ELECTRICAL CODE. ALL ITEMS ARE ON AN EQUAL BASIS.
2. ALL SINGLE PHASE BRANCH CIRCUITS ARE 3/4" CONDUIT OR EMT WITH (3)#12 BLACK/WHITE/GREEN, THHN, 90°C WIRING UNLESS NOTED OTHERWISE. ALL OTHER CONDUIT AND WIRING SHALL BE AS INDICATED ON THE PLANS. ACTUAL ROUTING AND HOMERUN GROUPINGS ARE TO BE DETERMINED IN THE FIELD.
3. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC EXCEPT FOR DETAILS AND ELEVATIONS. DO NOT SCALE FROM DIAGRAMMATIC DRAWINGS. EXACT LOCATIONS OF DEVICES AND PANELS ARE TO BE DETERMINED AND ROUGHED–IN DURING CONSTRUCTION TO AVOID INTERFERENCE, TO MEET USER REQUIREMENTS, TO PROVIDE ADEQUATE MOUNTING, AND TO MEET NEC LINEAR ACCESS AND CLEARANCE REQUIREMENTS.
4. VERIFY EXACT LOCATION OF ALL MOTORS AND EQUIPMENT BEFORE ROUGHING IN.
5. FINAL CONNECTIONS TO ALL MOTORS AND OTHER EQUIPMENT WHICH VIBRATES, SHALL BE MADE WITH FLEXIBLE SEALTITE AND APPROPRIATE WIRING.
6. ALL FIXTURES, DEVICES, CONDUIT, AND EQUIPMENT SHALL BE SECURED WITH APPROVED HANGERS AND ANCHORS AND IN ACCORDANCE WITH APPROVED STANDARDS OF INSTALLATION.



PARTIAL ONE–LINE DIAGRAM
SCALE: NONE

PROJECT NO. 11141–12
DRAWN BY: TAS
CHECKED BY: ADG
APPROVED BY: ADG
DATE: FEBRUARY 2022
SCALE: AS NOTED
SHEET NO. 4 OF 4

POWER PLAN

2021 EAST HILLCREST WATER PUMP STATION UPGRADE
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS

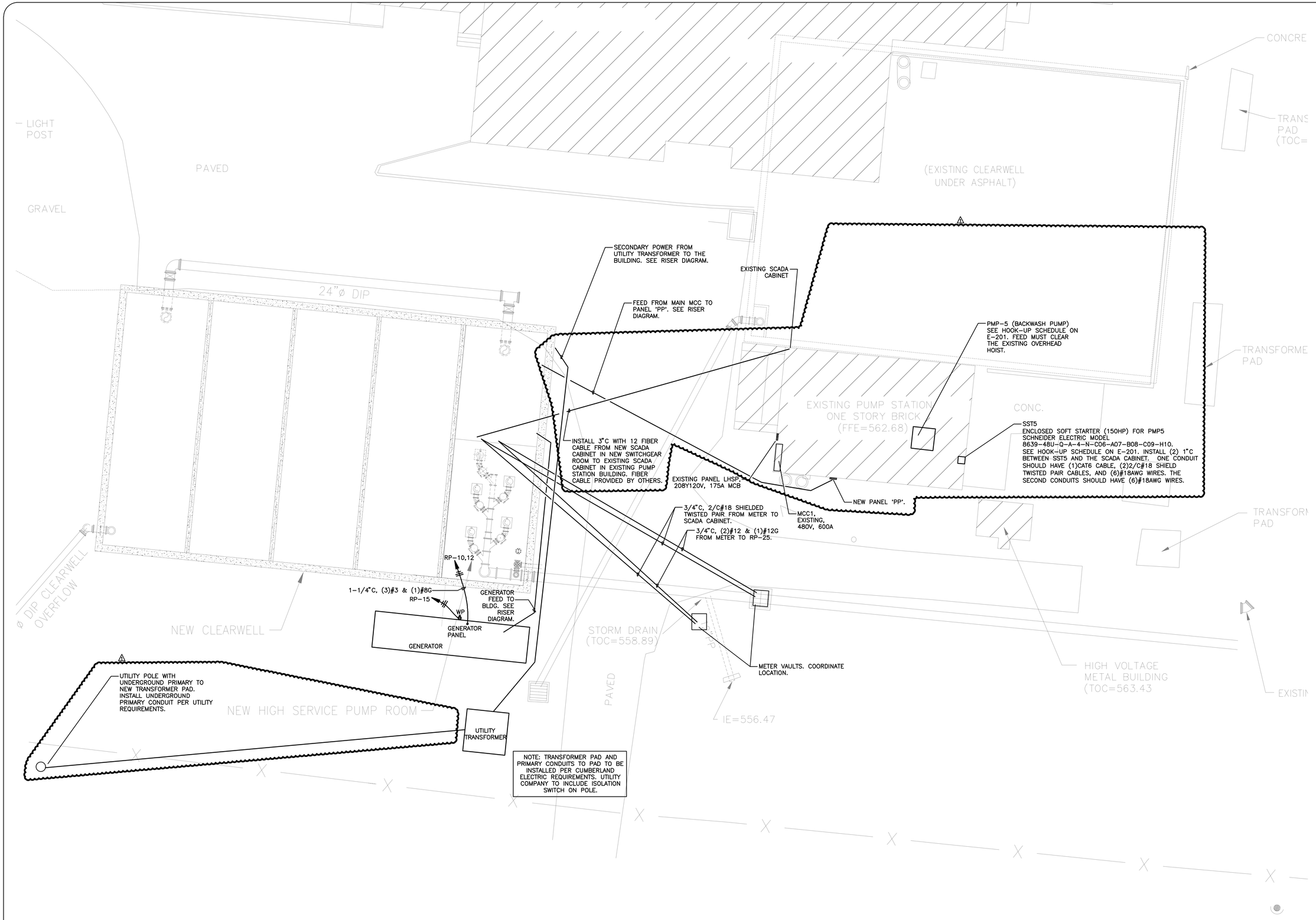
DATE	BY	NO.	DESCRIPTION

ANTHONY DALE GIPSON
REGISTERED ENGINEER
No. 104455
STATE OF TENNESSEE
3/14/22

GRIGGS & MALONEY INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133–2968
(615) 895–8221 • FAX (615) 895–0632

FILE NAME: L:\Engineering\11141\11-12\Drawings\41 Pump System Upgrades.dwg

OLG #31621



1 SITE ELECTRICAL PLAN
SCALE: 1" = 10'-0"

PROJECT NO: 1141-16
DATE: 08/1/22
SCALE: AS NOTED
DRAWN BY: ADG
CHECKED BY: ADG
APPROVED BY: ADG
SHEET NO: E-101

ELECTRICAL SITE PLAN

WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISION			
NO.	DESCRIPTION	DATE	BY
1	MISC. CHANGES	2/22/23	ADG

ANTHONY DALE DIXON
REGISTERED ENGINEER
COMMISSION NO. 104325
STATE OF TENNESSEE

GRIGGS & MALONEY INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-5221 • FAX (615) 895-0532

PANEL NUMBER: MCC MAIN				PHASE "A":	550.73
PANEL LOCATION:				PHASE "B":	543.77
MAIN BKR: 2000A	MAIN BUS: 2000A	VOLTAGE: 480Y277V		PHASE "C":	543.64
REMARKS: SQUARE-D, 65K AIC				TOTAL LOAD:	1638.14

DIRECTORY	BKR. AMPS	WATTS (KW)	PHASE	PHASE "A"	PHASE "B"	PHASE "C"
VFD1 / PMP1 WITH BREAKER LOCKING MECHANISM	800	344.00	3	114.67	114.67	114.67
VFD2 / PMP2 WITH BREAKER LOCKING MECHANISM	800	344.00	3	114.67	114.67	114.67
VFD3 / PMP3 WITH BREAKER LOCKING MECHANISM	800	344.00	3	114.67	114.67	114.67
VFD4 / PMP4 WITH BREAKER LOCKING MECHANISM	800	344.00	3	114.67	114.67	114.67
TRANSFORMER T1	70	26.12	3	8.39	8.93	8.80
HEATER	40	7.50	1	7.50	0.00	0.00
OVERHEAD DOORS	20	1.80	3	0.60	0.60	0.60
SURGE PROTECTIVE DEVICE (SPD)	20	0.30	3	0.10	0.10	0.10
PANEL PP	1 600	226.38	3	75.46	75.46	75.46
SPACE			3			
SPACE			3			
SPACE			3			

PANEL NUMBER: PP				PHASE "A":	75.46
PANEL LOCATION:				PHASE "B":	75.46
MAIN BKR: 600A	MAIN BUS: 600A	VOLTAGE: 480Y277V		PHASE "C":	75.46
REMARKS: SQUARE-D, 42K AIC, NEMA 3R 1				TOTAL LOAD:	226.38

DIRECTORY	BKR. AMPS	WATTS (KW)	PHASE	PHASE "A"	PHASE "B"	PHASE "C"
1 SST5 PMP5 WITH BREAKER LOCKING MECHANISM	350	149.48	3	49.86	49.86	49.86
MCC1	200	76.80	3	25.60	25.60	25.60
SPACE			3			
SPACE			3			

PANEL SCHEDULE

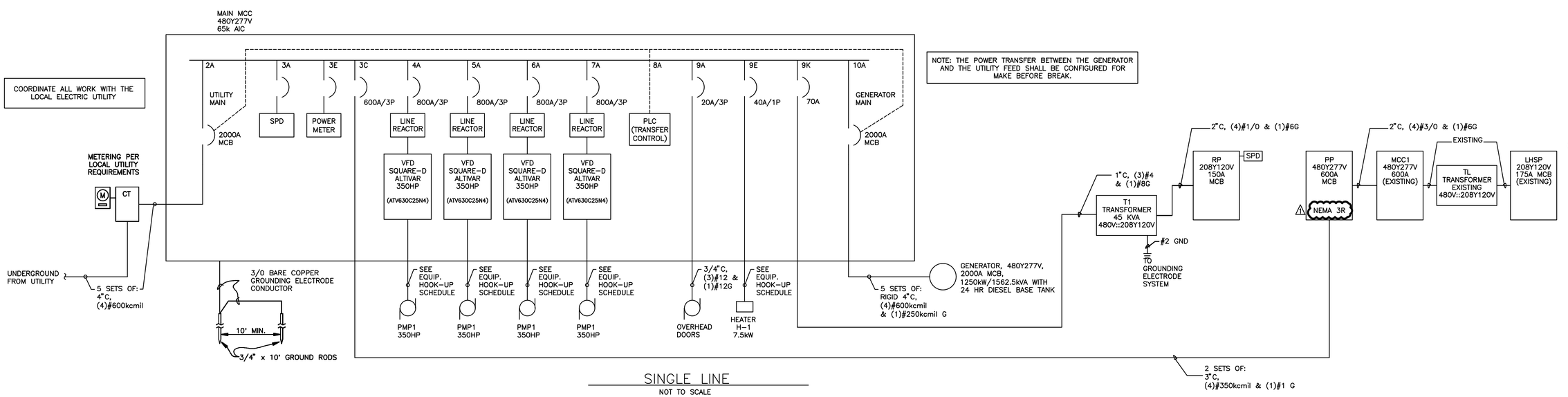
PANEL NUMBER: RP
LOCATION:

DIRECTORY	CKT. NO.	AMPS/ POLES	kW	"A" PHASE	"B" PHASE	"C" PHASE	kW	AMPS/ POLES	CKT. NO.	DIRECTORY
F-1 / L-1	1	20/1	1.18	•			2.00	40/2	2	HP-1 / AC-1 *
SPARE	3	20/1	0.00		•		2.00		4	
R - EXTERIOR	5	20/1	0.54			•	2.00	40/2	6	HP-2 / AC-2 *
R - CONVENIENCE	7	20/1	0.72	•			2.00		8	
R - CONVENIENCE	9	20/1	0.36		•		4.80	100/2	10	GENERATOR PANEL
R - CONVENIENCE	11	20/1	0.36			•	4.80		12	
SCADA CAB.	13	20/1	1.00	•			0.00	20/1	14	SPARE
R - GEN ENCLOSURE	15	20/1	0.18		•		0.54	20/1	16	R - CONVENIENCE
CHECKVALVE VLV-1	17	20/1	0.50			•	0.00	20/1	18	SPARE
CHECKVALVE VLV-2	19	20/1	0.50	•			0.39	20/1	20	L - EXTERIOR
CHECKVALVE VLV-3	21	20/1	0.50		•		0.45	20/1	22	L - INTERIOR
CHECKVALVE VLV-4	23	20/1	0.50			•	0.00	20/1	24	SPARE
FLOWMETERS	25	20/1	0.50	•			0.00	20/1	26	SPARE
SPARE	27	20/1	0.00		•		0.00	20/1	28	SPARE
SPARE	29	20/1	0.00			•	0.00	20/1	30	SPARE
SPARE	31	20/1	0.00	•			0.00	20/1	32	SPARE
SPARE	33	20/1	0.00		•		0.00	20/1	34	SPARE
SPARE	35	20/1	0.00			•	0.00	20/1	36	SPARE
SURGE PROTECTIVE DEVICE (SPD)	37	20/3	0.10	•			0.00	20/1	38	SPARE
	39		0.10		•		0.00	20/1	40	SPARE
	41		0.10			•	0.00	20/1	42	SPARE

MAIN BREAKER:	150A	NOTES: SQUARE-D	kW PHASE "A"	8.39
MAIN BUS:	150A		kW PHASE "B"	8.93
VOLTAGE:	208Y120V		kW PHASE "C"	8.80
AIC:	22,000		TOTAL kW	26.12
FRAME:				
TRIP:				
MOUNTING:		* PROVIDE LOCKING MECHANISM ON BREAKER		

POWER & WIRING INFORMATION FOR EQUIPMENT					
DEVICE#	DISCONNECT SIZE	CONDUIT	WIRE SIZE	PANEL	FEEDER BREAKER(S)
1 SST5	BREAKER WITH LOCKING MECHANISM	3-1/2"	(3)#500kcmil & (1)#3 GND.	PP	1
PMP 1	BREAKER WITH LOCKING MECHANISM	(2) 3-1/2"	2 SETS: (3)#500kcmil & (1)#1/0 GND.	MAIN MCC	VFD1
PMP 2	BREAKER WITH LOCKING MECHANISM	(2) 3-1/2"	2 SETS: (3)#500kcmil & (1)#1/0 GND.	MAIN MCC	VFD2
PMP 3	BREAKER WITH LOCKING MECHANISM	(2) 3-1/2"	2 SETS: (3)#500kcmil & (1)#1/0 GND.	MAIN MCC	VFD3
PMP 4	BREAKER WITH LOCKING MECHANISM	(2) 3-1/2"	2 SETS: (3)#500kcmil & (1)#1/0 GND.	MAIN MCC	VFD4
PMP 5	BREAKER WITH LOCKING MECHANISM	3-1/2"	(3)#500kcmil & (1)#3 GND.	SST5 1	
* F-1	COMBINATION STARTER / DISCONNECT WITH H.O.A., NEMA 4X S.S.	3/4"	(2)#12 & (1)#12 GND.	RP	1
* L-1	RATED SWITCH	3/4"	(2)#12 & (1)#12 GND.	RP	1
AC-1	240V, 30A, NON-FUSIBLE, NEMA 4X S.S.	3/4"	(5)#12 & (1)#12 GND.	HP1	
AC-2	240V, 30A, NON-FUSIBLE, NEMA 4X S.S.	3/4"	(5)#12 & (1)#12 GND.	HP2	
H-1	CIRCUIT BREAKER	3/4"	(2)#8 & (1)#10 GND.	MP	6
HP-1	240V, 60A, NON-FUSIBLE, NEMA 4X S.S.	3/4"	(2)#8 & (1)#10 GND.	RP	2,4
HP-2	240V, 60A, NON-FUSIBLE, NEMA 4X S.S.	3/4"	(2)#8 & (1)#10 GND.	RP	6,8
SF-1	RATED SWITCH	1/2"	(2)#12 & (1)#12 GND.	CONNECT	TO LIGHTS
VLV-1	BREAKER WITH LOCKING MECHANISM	3/4"	(2)#12 & (1)#12 GND.	RP	17
VLV-2	BREAKER WITH LOCKING MECHANISM	3/4"	(2)#12 & (1)#12 GND.	RP	19
VLV-3	BREAKER WITH LOCKING MECHANISM	3/4"	(2)#12 & (1)#12 GND.	RP	21
VLV-4	BREAKER WITH LOCKING MECHANISM	3/4"	(2)#12 & (1)#12 GND.	RP	23

*L-1 TO BE INTERLOCKED WITH F-1
FAN TO HAVE A HAND/OFF/AUTO (H.O.A.) SWITCH FOR CONTROL.
THE AUTO CONTROL SHALL BE CONNECTED TO A WALL MOUNTED THERMOSTAT FOR AUTOMATIC OPERATION.



SINGLE LINE
NOT TO SCALE

PROJECT NO: 1141-16
DATE: 08/1/22
SCALE: AS NOTED
DRAWN BY: ADG
CHECKED BY: ADG
APPROVED BY: ADG
SHEET NO: E-201

SCHEDULES AND DETAILS

WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISION			
NO.	DESCRIPTION	DATE	BY
1	MISC. CHANGES	8/22/23	ADG

ANTHONY DALE GIPSON
REGISTERED ENGINEER
104925
STATE OF TENNESSEE

GRIGGS & MALONEY INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-2221 * FAX (615) 895-0632

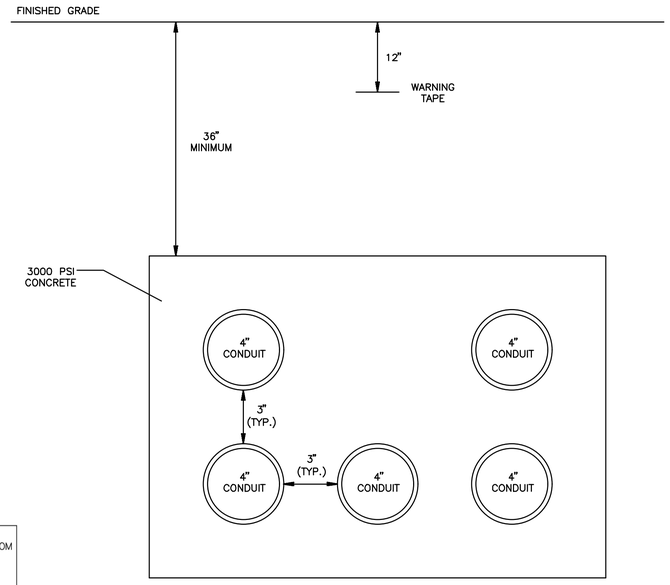
CEMC Ditch Guidelines

Primary Ditch

- Ditch to be 48" deep
- 3" schedule 40 pipe and sweeps. Sweeps to be 36" long
- 18" vertical separation on water, 12" on other utilities
- 12" vertical separation on phone and cable in same ditch
- Warning tape to be in top 12" of ditch
- Backfill must be free of large rocks
- Only 2 sweeps per run of conduit
- Secondary conduits to be at least 30" deep

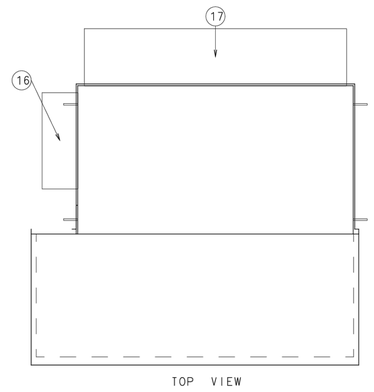
Transformer and Secondary Vaults

- To be installed on a gravel base and level
- Both vaults shall be set 6" above curb grade only if dirt grade will remain at curb grade. If dirt grade will be higher, vaults shall be set 6" above dirt grade.
- All conduits shall be grouped together on property line
- Vault opening to be set directly over conduits
- Conduits to be cut off 4" above gravel line in base of vault and capped
- Phone and cable conduits to be stubbed 3' outside or behind CEMC vaults.

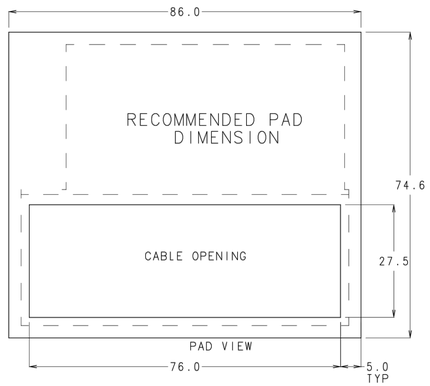


DUCT BANK DETAIL FOR SECONDARY FEED AND GENERATOR FEED

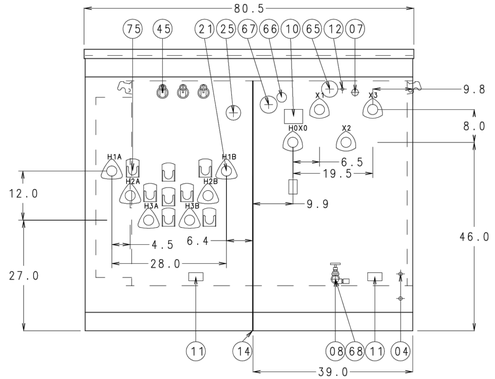
CEMC TRANSFORMER AND PAD DIMENSTIONS



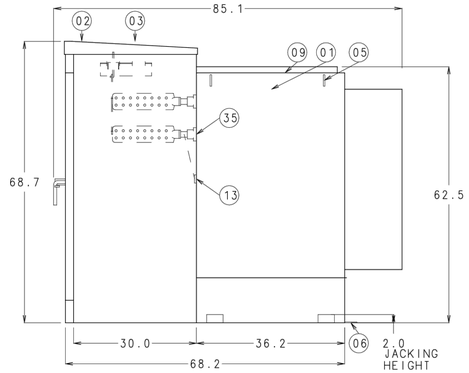
TOP VIEW



PAD VIEW



FRONT VIEW
SHOWN WITHOUT DOORS



31.0 OPEN DOOR SWING

RIGHT VIEW

DOWNLOAD INSTRUCTION BOOKS AT WWW.ABBDTD.COM
DESCARGAR LIBRO DE INSTRUCCIONES EN WWW.ABBDTD.COM

THIS OUTLINE IS FOR ERECTION OR MOUNTING PURPOSES. IT IS NOT TO SCALE AND SHOULD NOT BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

01 TANK
02 CABINET BOLTED-ON, REMOVABLE SILLS, OPEN BOTTOM 1.25 INCH FLANGE, HINGED LIFT-OFF DOOR, PROVISION FOR PADLOCK, STOP IN OPEN POSITION.
03 WEATHER COVER, REMOVABLE OR HINGED
04 PROVISIONS FOR TANK TO CABINET GROUND
05 LIFTING HOOKS, 4 TOTAL
06 SHIPPING BRACKETS
07 1 INCH FILL PLUG
08 1 INCH DRAIN PLUG
09 HANDHOLE, 9.5 INCH X 17.5 INCH, BOLTED-ON COVER
10 NAMEPLATE MOUNTED ON TANK WALL
11 GROUND PAD .50-13-TAP, HV AND LV COMPARTMENT
12 PRESSURE RELIEF DEVICE
13 LV NEUTRAL GROUND PAD .50-13-TAP WITH GROUND STRAP
14 HV/LV BARRIER (STEEL)
16 LEFT SIDE COOLER
17 REAR COOLER
21 HIGH VOLTAGE BUSHING
25 TAP CHANGER
35 LOW VOLTAGE BUSHING, ANSI SPADES, WITH 16 HOLES.
45 DRAWOUT FUSEHOLDERS
65 PRESSURE VACUUM GAUGE
66 OIL LEVEL GAUGE
67 THERMOMETER
68 DRAIN VALVE WITH SAMPLER
75 PARKING STAND

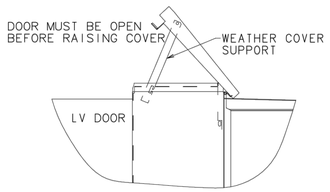


ABB INC.					REV NO 01
TITLE OL3PPADMNT	DEF XXX	FIN XX	U/M XX	NOTE XX	
DES 3PH OUTLINE				USER HEMKEI	
DIMENSIONS IN INCHES-SCALE.085	CADAM 2299909N1NBNNA5ME01,1				
DFTM HEMEYER, K 120204	APPD XXXXX		MMDDYY		
D SPEC XXXXXX	APPD			J801A5ME	
ENG. REF XXXXXX	LAYOUT MODEL ID ,				
ENGINEERING DEPT.	JEFFERSON CITY, MO.			USA	

REV DATA

PROJECT NO: 1141-16
DATE: 08/1/22
SCALE: AS NOTED
DRAWN BY: ADG
CHECKED BY: ADG
APPROVED BY: ADG
SHEET NO: E-302

DETAILS

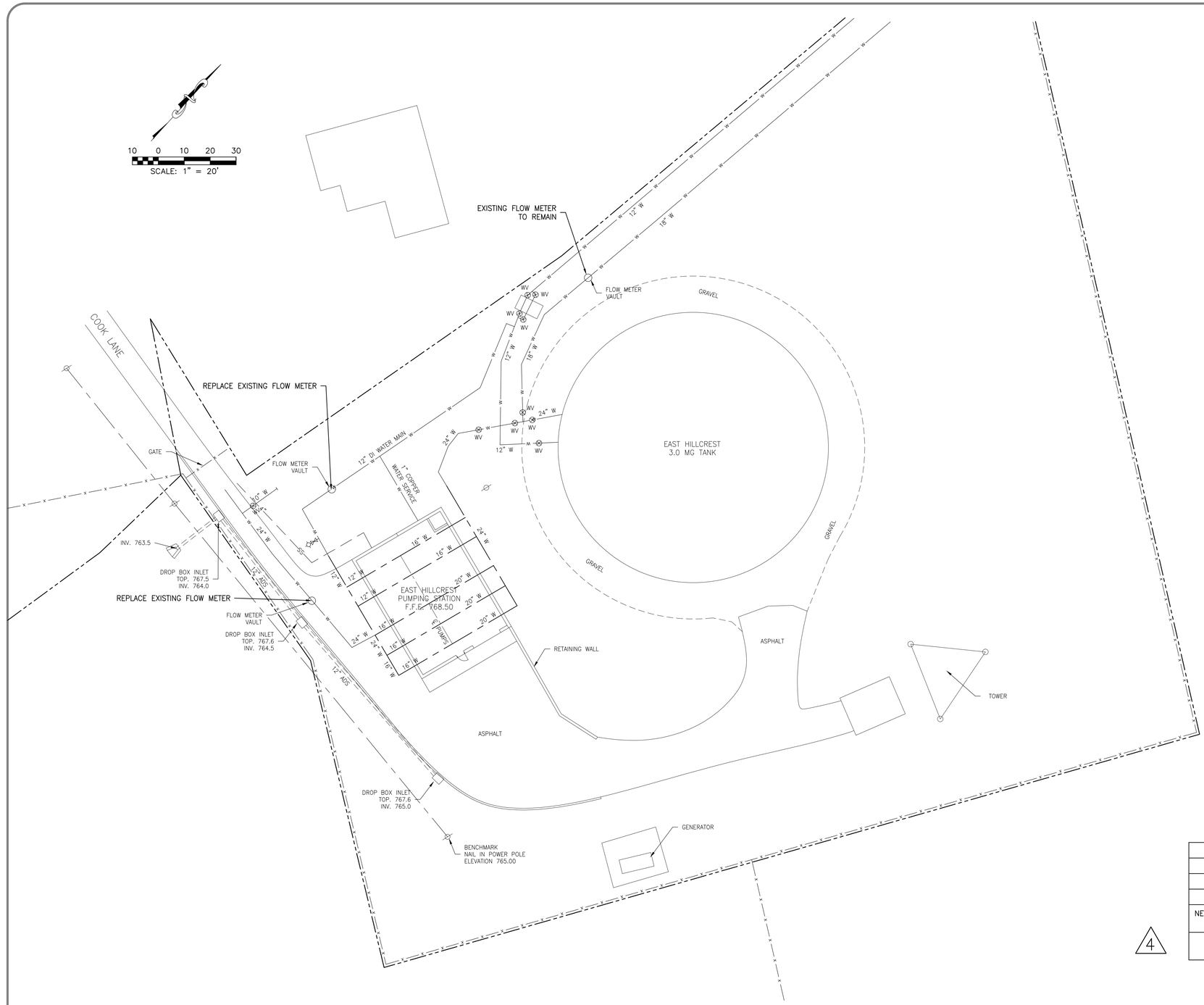
WATER TREATMENT PLANT
HIGH SERVICE PUMP UPGRADES
CITY OF SPRINGFIELD, TENNESSEE

REVISION

DATE	BY	NO.	DESCRIPTION
8/22/23	ADG	1	MISC. CHANGES (NEW SHEET)

ANTHONY DALE GIBSON
REGISTERED ENGINEER
No. 104371
STATE OF TENNESSEE

GRIGGS & MALONEY INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 FAX (615) 895-0632



CONSTRUCTION SEQUENCING

CONTRACTOR SHALL COORDINATE ALL IN PUMP STATION ACTIVITIES WITH THE CITY OF SPRINGFIELD WATER & WASTEWATER DEPARTMENT (SWWD). AT NO TIME SHALL THE PUMP STATION BE OUT OF SERVICE WITHOUT PRIOR SWWD APPROVAL. THE FOLLOWING INSTALLATION STEPS WILL BE COMPLETED IN ORDER, WITH ONE STEP COMPLETE PRIOR TO COMMENCEMENT OF THE NEXT STEP. SCADA INTEGRATION OF THE NEW AND REVISED EXISTING EQUIPMENT WILL BE COMPLETED AS DETAILED IN APPENDIX B. ALL WORK WILL BE COMPLETED WITHIN THE TIME LIMIT SET OUT IN THE ADDENDUM 1. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY PROJECT COMPONENTS TO INSTALL THE NEW OWNER SUPPLIED PUMP, CONTROL VALVES AND CONTROL BOXES, AND NEW VFD DRIVE UNIT. THIS INCLUDES ALL PIPE FITTINGS, GASKETS, NUTS AND BOLTS, ELECTRICAL CONDUIT AND FITTINGS, SMALL DIAMETER PUMP SEAL DRAIN PIPING, PRESSURE GAUGES, PRESSURE SWITCHES, ISOLATION VALVES AND SNUBBERS, PIPE SUPPORTS, AND ANCHOR BOLTS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL VENDOR STARTUP AND COMMISSIONING OF OWNER SUPPLIED EQUIPMENT.

STEP ONE

STEP ONE WILL CONSIST OF THE REMOVAL OF THE TWO EXISTING BLIND FLANGES FOR THE NEW PUMP NO. 3, AND THE INSTALLATION OF THE NEW INLET AND DISCHARGE ELBOWS WITH THE NEW 16 INCH BUTTERFLY VALVES. ALSO INCLUDED ARE THE REMOVAL OF THE EXISTING 16 INCH INLET VALVES FOR PUMPS NO. 1 & 2, WITH THE NEW INLET PIPING AS SHOWN ON THE DRAWINGS. THIS STEP WILL REQUIRE THE COMPLETE ISOLATION OF THE ENTIRE PUMP STATION. THE MAXIMUM TIME THE STATION CAN BE OUT OF SERVICE IS 12 HOURS. CONTRACTOR SHALL SCHEDULE ALL STEP ONE ACTIVITIES TO BE COMPLETED WITHIN THE TIME LIMIT. CONTRACTOR SHALL COORDINATE THIS SHUTDOWN WITH SWWD. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL LEAKAGE FLOWS CREATED BY THIS WORK TO PROTECT THE EXISTING EQUIPMENT. ALL NEW FITTINGS FOR THIS STEP ONE SHALL BE PAINTED, ASSEMBLED AND DISINFECTED PER AWWA STANDARDS PRIOR TO START OF PROJECT INSTALLATION. MINOR TOUCH-UP PAINTING WILL OCCUR ONCE STATION IS BACK ONLINE. SEE SECTION 11900 FOR PAINTING SPECIFICATIONS. UPON COMPLETION OF THESE PIPING MODIFICATIONS, THE EXISTING PUMPS NO. 1 & 2 WILL BE RETURNED TO SERVICE. CONTRACTOR WILL THEN COMPLETE THE REMAINING INSTALLATION OF THE NEW PUMP NO. 3 AND THE NEW VALVE AND VALVE CONTROLLER, INSTALL NEW VFD (BOTH OWNER SUPPLIED) AND ALL SCADA CONNECTIONS TO PLACE NEW PUMP NO. 3 IN PERMANENT SERVICE. ALL NEW PIPING AND PUMP WILL BE DISINFECTED AND FINAL PAINTED PRIOR TO ASSEMBLY. MINOR TOUCH-UP PAINTING WILL OCCUR AFTER SUCCESSFUL STARTUP, BUT PRIOR TO PLACEMENT IN PERMANENT SERVICE.

STEP TWO

ONCE NEW PUMP NO. 3 IS IN PERMANENT SERVICE, STEP TWO WILL COMMENCE. WORK ON PUMPS 1 & 2 WILL COMMENCE. WORK ON PUMPS NO. 1 AND 2 WILL BE COORDINATED SUCH THAT AT LEAST 2 OPERABLE PUMPS ARE AVAILABLE TO SWWD TO MEET THE NEEDS OF THE CITY. ALL PIPING AND VALVES, PIPE SUPPORTS AND FITTINGS SHALL BE PAINTED AND DISINFECTED PER THE SPECIFICATIONS PRIOR TO ASSEMBLY AND INSTALLATION. SCADA CONNECTIONS SHALL BE COMPLETED FOR EACH PUMP AS THAT PUMP IS RETURNED TO SERVICE. ALL EXISTING ABOVE CONCRETE DIP PIPING FOR PUMPS NO. 1 & 2 SHALL BE PAINTED.

GENERAL NOTES

1. ALL NEW CONDUIT SHALL BE INSTALLED FOR VALVE CONTROL BOXES PRIOR TO COMMENCEMENT OF STEP ONE.

2. THE EXISTING PADDLE WHEEL INLINE FLOW METERS IN THE 24" AND 12" STATION DISCHARGE LINES SHALL BE INSTALLED AND IN PERMANENT OPERATION PRIOR TO STEP ONE,

4

TABLE OF OWNER SUPPLIED EQUIPMENT		
EQUIPMENT	QUANTITY	MANUFACTURER & MODEL NO.
NEW PUMP & MOTOR	1	PEERLESS PUMP – MODEL # 8AE15G
NEW VFD	1	SQUARE D – MODEL 6 LVMCC – MODEL 6 MCC INDUSTRIAL PACKAGE
NEW PUMP CONTROL VALVES & CONTROL PANELS	3	DEZURIK – 12" SMART CHECK VALVE WITH LOCAL CONTROL INTERFACE
NEW BUTTERFLY VALVES	4	DEZURIK – 16" RUBBER SEATED BUTTERFLY VALVE

PROJECT NO. 1141-12
DATE: AUGUST 2022
DRAWN BY: DSM
CHECKED BY: RWM
APPROVED BY: RWM
SCALE: AS NOTED
SHEET NO. 1 OF 3

ADDENDUM 4
SITE PLAN

2021 EAST HILLCREST WATER PUMP STATION UPGRADE
CITY OF SPRINGFIELD, TENNESSEE

REVISIONS & SUBMITTALS

NO.	DESCRIPTION	DATE	BY
1	SUBMITTED TO TDEC	4/27/23	MGL
2	RELEASED FOR BID	8/1/23	MGL
3	ADDENDUM 4	8/30/24	MGE

GRIGGS & MALONEY INCORPORATED
Engineering & Environmental Consulting
P.O. BOX 2968, MURFREESBORO, TN 37133-2968
(615) 895-8221 * FAX (615) 895-0632

FILE NAME: L:\ENGINEERING\1141 CITY OF SPRINGFIELD\1141-16 WTP HIGH SERVICE PUMP UPGRADE\ADDENDUM\ADDENDUM 4\1141-16 ADD 4 SHT 1 SITE PLAN.DWG