Krebs Engineering, Inc.
15 Lagrange Street
Newnan, GA 30263
470-724-5050
January 25, 2023

ADDENDUM NO. 4

CONTRACT NO.: 20518
OWNER: COWETA COUNTY WATER & SEWERAGE AUTHORITY
PROJECT: SHENANDOAH WASTEWATER TREATMENT FACILITY IMPROVEMENTS
BID DATE: January 31, 2023
TO: ALL PROSPECTIVE CONTRACTORS AND SUPPLIERS

The changes, modifications, and/or additions covered by and set forth in this Addendum No. 4 shall become part of and be incorporated in the Specifications, Contract Documents, and Bid Documents for the above referenced project:

CLARIFICATIONS TO BE ADDED BY ADDENDUM:

AD4.1 **FIRE EXTINGUISHERS**

1. Contractor shall coordinate fire extinguisher locations with the owner and local building inspector. In general, each new building and new building addition will require fire extinguishers including:
    a. Two (2) fire extinguishers in the Aeration Blower Building Electrical Room.
    b. Two (2) fire extinguishers in the Aeration Blower Building Blower Room.
    c. One (1) fire extinguisher in the UV/Filter expanded electrical room.
    d. Five (5) fire extinguishers in the Solids Handling Building.
        i. One (1) fire extinguisher in the Pelletizer Room.
        ii. One (1) fire extinguisher in the Thermal Oil Heater Room.
        iii. Three (3) fire extinguishers distributed throughout the Dryer and Dewatering Rooms.

AD4.2 **SPECIFICATION 055300**

Question:
Will the gratings and checkered plates at the New Filters and the RAS/WAS Pump Station be rated as floors at 250 psf or walkways at 60 psf?

Answer:
a. The gratings and checkered plates at the New Filters and the RAS/WAS Pump Station shall be rated as floors (250 psf).

AD4.3 **SPECIFICATION 331114**

Question:
In Specification 331114 – METAL PIPES FOR SEWERAGE, section 2.3E calls for Neoprene rubber gaskets for air service. Will EPDM be acceptable?

Answer:
a. No, EPDM is not acceptable.

Question:
Section 2.3, H., 2., A, calls for cement lining for Wastewater service but in section 2.3, H., 4 calls for P401 epoxy lining. What type of lining will be required?

Answer:
a. See Specification 331114. Forcemains shall be lined with Protecto 401 epoxy.

Question:
Section 3.1 pressure pipe & gravity sewer pipe thickness schedule calls for class 52 ductile iron, but the Yard Piping Profile sheets C3-17 – C3-20 call for PR150, PR200, PR350. What class pipe will be required?

Answer:
a. Pressure class shall be as identified on the drawings.

AD4.4 **SPECIFICATION 331118**

Question:
Please provide a specification for 6" HDPE Plant Water piping shown on sheet C3-14 & C3-15. Will DR11 DIPS be acceptable?

Answer:
a. Refer to Addendum 3, Specification 331118 - Plastic Pipe and Fittings, Part 2 - Products, Section 2.2 - Plastic Pipe and Fittings, A., 15. DR 9 DIPS HDPE piping shall be used for the HDPE Plant Water Piping shown on Sheets C3-14 and C3-15.

AD4.5 **DRAWING C11-06**

Question:
Drawing C11-06 calls for 3/8" stainless steel check plates over the UV. The suppliers do not seem to have any 3/8" stainless steel checkered plates available. What would be a possible alternate, maybe 1/4" plate with stiffeners? There is not a call out if the stainless steel should be type 304 or type 316 stainless, please advise.

Answer:
a. See Specification 055300 – GRATINGS AND STAIRS.
b. 304 stainless steel shall be used.

SPECIFICATIONS TO BE ADDED BY ADDENDUM:

AD4.6 **SPECIFICATION SECTION 101400 – SIGNAGE**

1. Add the attached Specification Section 101400.

AD4.7 **SPECIFICATION SECTION 334600 – SUBDRAINAGE**

1. Add the attached Specification Section 334600.

SPECIFICATIONS TO BE REVISED BY ADDENDUM:

AD4.8 **PROPOSAL FORM**

1. Replace the PROPOSAL FORM in its entirety with the attached.
    a. Proposal form has been modified to include items 12 and 13
    b. Contract Period has been modified.

AD4.9 **CONTRACT AGREEMENT**

1. Replace the CONTRACT AGREEMENT in its entirety with the attached.
    a. Article III, Time of Completion has been modified.

AD4.10 **SPECIFICATION SECTION 011000 – SUMMARY**

1. Replace the Specification Section 011000 in its entirety with the attached.
    a. Section 1.3 has been modified to include milestone dates.

AD4.11 **SPECIFICATION SECTION 012200 – UNIT PRICES**

1. Replace Specification Section 012200 in its entirety with the attached.
    a. Unit Price Bid Item No 12 – Undercut, and Unit Price Bid Item No. 13 – Backfill, have been added.

AD4.12 **SPECIFICATION SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS**

1. Replace Specification Section 015000 in its entirety with the attached.
    a. In PART 2 – PRODUCTS, Section 2.3, KEYS AND KEYING, has been added.

AD4.13 **SPECIFICATION SECTION 220523 - VALVES**

1. Replace Specification Section 220523 – VALVES, 2.4.B with the following:
    "B. Valve bodies shall be constructed of cast (gray) iron ASTM A126-73 Class B, ductile iron ANSI/ASTM A536 Grade 65-45-12, alloy cast iron ANSI-ASTM A436 Type 1 or 2, or ANSI/ASTM A439 Type D2, or 316 Stainless Steel."

AD4.14 **SPECIFICATION SECTION 331215 – HYDRAULIC GATES**

1. Replace Specification Section 331215 in its entirety with the attached.
    a. In PART 2 – PRODUCTS, Section 2.4, GATE SCHEDULE, the size of the self-contained weir gate has been modified to reflect the design drawings (48” x 48”).

DRAWINGS TO BE REVISED BY ADDENDUM:

AD4.15 **DRAWING DT-01**

1. Replace Sheet DT-01 – Miscellaneous Details in its entirety with the attached. The ductile iron pipe bedding detail has been modified to include stone bedding material. A French drain detail has been added.

AD4.16 **DRAWING C3-11**

1. Replace Sheet C3-11 – Overall Yard Piping Plan in its entirety with the attached. Additional drainage piping has been added.

AD4.17 **DRAWING C6-03**

1. Replace Sheet C6-03 – Headworks Section in its entirety with the attached. The self-contained slide gate note has been modified (36” x 48”).

AD4.18 **DRAWINGS A0-02, A15-02, A15-03, A15-06**

1. Replace Sheets A0-02 – Architectural Standard Details, A15-02 – Solids Handling Building Architectural Roof Plan, A15-03 – Solids Handling Building – Architectural Exterior Elevations, and A15-06 - Plaque in their entirety with the attached.

AD4.19 **DRAWINGS S0-02, S8-01**

1. Replace Sheets S0-02 – Structural Notes, and S8-01 – Aeration Basin Foundation and Lower Level Structural Plan in their entirety with the attached.

AD4.20 **DRAWINGS M0-01, M0-02, M7-01, M11-01, M15-01**

1. Replace Sheets M0-01 – Mechanical Legend Abbreviations and Schedules, M0-02 – Mechanical Details, M7-01 – Aeration Building Mechanical Floor Plan, M11-01 – UV Filter Building Mechanical Floor Plan, and M15-01 – solids handling Building Mechanical Floor Plan in their entirety with the attached.

This Addendum No. 4 shall be attached to the front of your set of specifications and made a part of the Contract Documents. Receipt of this Addendum No. 4 shall be acknowledged on Page of the Proposal Form.

Krebs Engineering, Inc.

By_____

PROPOSAL FORM

MADE BY _____

ADDRESS _____

TO:

The undersigned, as Bidder, proposes and agrees, if this Bid is accepted, to enter into a Contract with **Coweta County Water & Sewerage Authority**, in the form of Contract specified and shown in the attached Contract Documents, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, and labor necessary to complete the construction of the **Shenandoah Wastewater Treatment Facility Improvements, Project Number 20518** as described in the Advertisement for Bids, and in the Contract Documents, which are hereby referred to and made a part of the same extent as if fully set out herein, and in full and complete accordance with the shown, noted, described and reasonably intended requirements of the Contract Documents, to the full and entire satisfaction of the Owner, with a definite understanding that no money will be allowed for extra work except as set forth in the attached Instructions to Bidders, General Conditions, and other Contract Documents, based on the following pricing:

ITEM NO.	APPROX. QUANTITIES	DESCRIPTION OF ITEM	UNIT PRICE	TOTAL PRICE FOR ITEM
1	1	Mobilization/Demobilization Lump Sum	Lump Sum	$
2	1	**Shenandoah WWTF Improvements:** Furnish and install all labor, materials, equipment, and appurtenances for the construction of the WWTP improvements, site grading and storm sewer improvements, selective demolition, yard piping, existing influent pump station, new headworks, new BNR aeration basin, new aeration basin blower/electrical building, improvements to the existing aeration basin (fine bubble diffusers, mixers, and BNR), new final clarifiers, new RAS/WAS pump station, additional (new) tertiary filters, new UV disinfection, new tertiary disk filters, new cascade (post) aeration, conversion of the existing final clarifiers to aerobic digesters, new solids handling facilities, chemical feed systems, and all miscellaneous yard piping, and other associated improvements. Lump Sum	Lump Sum	$
3	1	**Electrical** Furnish and install all labor, materials, equipment, and appurtenances for the electrical improvements associated with the construction of the WWTF improvements. Lump Sum	Lump Sum	$
4	1	Owner pre-purchased Biological Nutrient Removal System, by **Xylem-Sanitaire** Lump Sum	Lump Sum	$728,300
5	1	Owner pre-purchased UV Disinfection System by **Trojan Technologies** Lump Sum	Lump Sum	$603,110
6	1	Owner pre-purchased Solids Dewatering System by **FKC Co., Ltd.** Lump Sum	Lump Sum	$912,843

ITEM NO.	APPROX. QUANTITIES	DESCRIPTION OF ITEM	UNIT PRICE	TOTAL PRICE FOR ITEM
7	1	Owner pre-purchased Solids Biosolids Drying System by **BCR Environmental Corp.** Lump Sum	Lump Sum	$4,356,754
8	1	Furnish and install all labor, materials, equipment, and appurtenances for the SCADA System work as identified in Appendix “F”. SCADA PLC Programing, Equipment, and Field Instruments by **MR Systems** Lump Sum	Lump Sum	$1,483,676
9	2,750	Asphalt Paving Section Per Square Yard	$ /SY	$
10	4,600	Mill and Resurface Existing Asphalt Paving Per Square Yard	$ /SY	$
11	2,000	Concrete Paving Section Per Square Yard	$ /SY	$
12	2,100	Undercut (Below Subgrade) Unsuitable Soils, Haul, and Dispose Off-Site, as directed by the Engineer	$ /CY	$
13	2,100	Backfill Undercut Areas w/ Crushed Stone (Including Hauling and Compaction), as directed by the Engineer	$ /CY	$
			TOTAL PRICE FOR BASE BID $	

BASE BID: For construction complete as shown and specified in table above, the sum of

_____

Dollars

($_____).

ADDENDA: The Bidder acknowledges receipt of Addenda Nos. _____ , _____ , _____ , _____,_____, _____, _____ .

ALTERNATES: If alternates as set forth in the Contract Documents are accepted, the following adjustments are to be made to the Base Bid.

ITEM NO.	ALTERNATE DESCRIPTION	TOTAL ADD OR DEDUCT PRICE FOR ITEM
A1	Alternate to Furnish and Install base bid equivalent Tertiary Disk Filters – Circle one of the approved manufacturers below Five Star Filter Equipment equivalent Beacon Water Technologies equivalent Lump Sum	$

The award of the Contract will be based on the total/sum of the base bid price and the alternates (if any) selected by the Owner. The Owner will receive bids and all pricing will be read aloud, but the project will not be awarded until the bids are evaluated and a determination is made on which alternates are selected. Once the Alternates have been selected, the final bid amount will be calculated (base bid price plus adjustments for any alternate selected) for each bid submitted, and if an award is made, the project will be awarded to the responsive bidder with the lowest final bid amount.

The Bidder declares that he/she has examined the site of the work, and has familiarized himself/herself with the existing and proposed/new facilities (including the location, nature, sizes/dimensions, current and intended future use, etc.). The Bidder declares that he/she has fully informed himself/herself of conditions that would affect the proposed work, that, prior to the tender of his/her bid, he/she has examined the Contract Documents for the work and has read all special instructions and provisions contained in the Documents, and that he/she has satisfied himself/herself with respect to the quality and extent of work to be performed. The Bidder declares that the firm, the project manager and the superintendent are qualified and meet or exceed the experience requirements as outlined in the Instructions to Bidders and/or elsewhere in the Contract Documents.

The Bidder declares that he/she understands that, when quantities of work for which unit price bids are requested in the Proposal, such quantities are approximate only and are subject to either increase or decrease, that, should the quantities of any of the work items be increased, the Bidder proposes to perform the additional work at the unit prices bid by him, that, should the quantities of any of the work items be decreased, payment will be made only for the actual quantities of work performed and such payment will be based upon the unit prices bid by him/her, and that he/she shall make no claim for profits anticipated on the decrease in quantities of work. Actual quantities will be paid for as the work progresses, in accordance with the provisions of the Contract Agreement, and such quantities shall be subject to final measurements and determinations made upon completion of the work.

The Bidder understands that the Owner reserves the right, in the Owner's discretion, to reject any or all bids, to waive any informality in any bid, and to accept any bid considered to be advantageous to the Owner.

The Bidder agrees that his/her bid shall be valid for a period of sixty (60) calendar days after the date set for receipt of bids, and shall not be withdrawn for a period of sixty (60) calendar days after the date set for receipt of bids.

The Bidder has attached hereto a Bid Bond executed by a Surety Company authorized to do business in the state in which the project is located (with valid Power-of-Attorney attached), or a cashier's check drawn on a bank in the state in which the project is located, in favor of (made payable to) **Coweta County Water & Sewerage Authority**, the amount of 5% of the bid amount (total).

The Bidder agrees that, should he/she be notified that his/her Bid on the work has been accepted, he/she will, within ten (10) days from receipt of such notice, execute the formal Contract Agreement bound herein, and will furnish with the Contract evidence of Insurance Coverage of his/her construction operations and all of his/her operations associated with the project, all in accordance with the requirements of the General Conditions.

The Bidder further agrees that, in case of failure on his/her part to execute said Contract Agreement and to furnish all Bonds required by the Contract Documents, within ten (10) consecutive calendar days after receipt of notice of award of Contract to him, the monies payable to the Obligee of his/her Bid Bond, in accordance with the terms and conditions of the Bond, shall be paid to the Owner as liquidated damages for the delay and additional expense to the Owner caused by such failure on the part of the Bidder.

The Bidder hereby agrees that, should the work under the Contract be awarded to him/her, he/she will commence work under this Contract on or before a date to be specified in written "Notice to Proceed" given by the Owner, and that he/she will achieve Substantial Completion of the Contract within **1,035** consecutive calendar days following the Notice to Proceed, and will achieve Final Completion of the Contract within **1,095** consecutive calendar days following the Notice to Proceed. Phase 1 of the work shall be Substantially Complete within **730** calendar days after the date on which the Notice to Proceed is issued. Refer to Section 01 10 00-SUMMARY for additional completion requirements and Milestone Dates. The Bidder agrees to pay, as liquidated damages, the sum of **$1,500** for each consecutive calendar day after the date set for Substantial Completion of the work, or for any specified Milestone Date, until such time as Substantial Completion has been achieved. Once Substantial Completion has been achieved, the Bidder will not be assessed additional liquidated damages unless and until he/she fails to meet the Final Completion Date. If the Bidder fails to meet the Final Completion date, then he/she agrees to pay, as liquidated damages, the sum of **$1,500** for each consecutive calendar day after the date set for Final Completion of the work, all as provided in the General Conditions. At no time shall the Bidder pay more than **$1,500** per calendar day for liquidated damages. **The Bidder agrees that, once the Substantial and/or Final Completion dates have passed, the Owner/Engineer will begin deducting liquidated damages from the monthly progress payments.** The Bidder further agrees that he/she will not make any claim for extra compensation should completion of work under the Contract be affected in advance of the time specified hereinabove.

The undersigned Bidder states that he/she fully understands the meaning of "low, responsive, responsible Bidder", as defined in these Documents, and that these criteria will be applied in the evaluation of this Bid.

The undersigned, as Bidder, hereby declares that the name (or names) of the only person (or persons) interested in this Proposal, as principal (or principals), is (or are) as herein below set out and that no person other than that (or those) herein below stated has any interest in this Proposal, or in the Contract to be entered into; that this Proposal is made without connection with any other person, firm or corporation making a proposal; and that it is in all respect fair and in good faith, without collusion or fraud.

Following are the names and addresses of all persons, firms, and corporations interested in the foregoing bid:

_____

_____

_____
(Type or Print Name and Address of Firm)

_____
(Type or Print Contractor License No.)

_____
(Type or Print Name and Title of Officer/Legal Representative of Firm Submitting Bid)

_____
(Signature of Officer/Legal Representative of Firm Submitting Bid)

_____
(Type or Print Date)

CONTRACT AGREEMENT

THIS AGREEMENT is made and entered into as of the _____ day of _____ in the year of 2023, by and between Coweta County Water & Sewerage Authority (the "Owner"), and _____ (the "Contractor").

WITNESSETH: That the Owner and the Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article I. **CONTRACT DOCUMENTS.** The Contract Documents shall consist of: this Agreement; the Contractor's Proposal on the required form; the General Conditions; the Performance Bond on the required form; the Labor and Material Payment Bond on the required form; all Addenda issued prior to the submittal of the Proposal; all Modifications issued, agreed upon, and signed by the Owner after the execution of this Agreement; and the Drawings (Plans) and Specifications as prepared by Krebs Engineering, Inc. (the "Engineer"), and as on file in the office of the Engineer. The documents enumerated above form the Contract and all are as fully a part of the Contract as if attached to this Agreement and fully set forth herein. The Contract Documents are sometimes collectively referenced as the "Contract," and any reference to the "Contract" in this Agreement and elsewhere in the Contract Documents includes all of the Contract Documents.

Article II. **SCOPE OF WORK.** The work to be done under this Contract by the Contractor, at his/her own cost, shall consist of furnishing all labor, materials, supplies, tools, documentation, facilities, transportation, services, testing, and equipment, and of performing all work, necessary to construct and fully complete the project entitled Shenandoah Wastewater Treatment Facility Improvements, Project Number 20518 all in accordance with the Drawings and Specifications and with the requirements and provisions of the Contract Documents. The Contractor's scope of work under this Contract is not limited merely to physical construction and related services, material, or equipment, but also includes the totality of all of the Contractor's obligations (*e.g.*, including insurance, indemnity, and warranty obligations) under or arising from any of the Contract Documents.

Article III. **TIME OF COMPLETION.** The work to be performed under this Contract shall be commenced within 10 calendar days after the date on which the Notice to Proceed is issued. Phase 1 of the work shall be Substantially Complete within **730** calendar days after the date on which the Notice to Proceed is issued. The work shall be Substantially Complete within **1,035** calendar days after the date on which the Notice to Proceed is issued, and Final Completion of the work shall be achieved within **1,095** days after the date on which the Notice to Proceed is issued, subject, only to such extensions of time as may be expressly authorized by provisions of the Contract Documents. Refer to Section 01 10 00-SUMMARY for additional completion requirements and Milestone Dates.

Should the work under Contract not be fully completed within the times/dates specified, it is understood and agreed that the Contractor shall be liable to the Owner for liquidated damages, (to be deducted from the monthly/periodic and final estimates of work performed by the Contractor) computed at the rate of **$1,500.00** per day for each additional day required to achieve Substantial Completion of the work, or for any specified Milestone Date. Once Substantial Completion has been achieved, the Contractor will not be assessed additional liquidated damages unless and until he/she fails to meet the Final Completion Date. If the Contractor fails to meet the

Final Completion date, then he/she agrees to pay, as liquidated damages, the sum of **$1,500.00** for each consecutive calendar day after the date set for Final Completion of the work. At no time shall the Contractor pay more than **$1,500.00** per calendar day for liquidated damages.

It is understood and agreed that these liquidated damages are not a penalty, but are to reimburse and compensate the Owner for the damages caused by the delay in the completion of the work, and that these liquidated damages may be deducted from the amounts otherwise payable to the Contractor or alternately may be recovered directly from the Contractor or its performance bond surety. It is also understood and agreed that, in the event that the work should be completed in advance of the completion date specified, the Contractor will make no claim for extra payment therefor.

Article IV. **CONTRACT PRICE.** The Owner shall pay the Contractor in full for performance of work under this Contract, in accordance with the price or prices set forth in the Proposal submitted by the Contractor, which Proposal made a part hereof to the same extent as if fully set out herein, but subject to such additions and deductions as expressly provided for in the Contract Documents, the sum of _____ (the "Contract Price" or "Contract Amount").

The Contract Price may be adjusted only as expressly provided in the Contract Documents.

Article V. **CHANGES IN WORK AND EXTRA WORK**. The Owner shall have the right to increase or decrease quantities of work, to make changes in the work, and to require the Contractor to perform extra work necessary for the satisfactory completion of the project.

Where new and/or additional items of work are found to be necessary for the satisfactory completion of the project, and where the character of the work is such that a reasonable price for the performance of the work cannot be established by use of contract prices or combinations thereof, such new and/or additional items of work shall be classed as Extra Work.

The procedure to be followed in such cases shall be in accordance with the provisions of the Articles of the General Conditions relating to CHANGES IN WORK, and PAYMENT FOR EXTRA WORK.

Article VI. **PROGRESS PAYMENTS.** The Owner shall make progress payments to the Contractor in amounts equal to values of work performed on the project through the closing dates of the preceding estimate periods, but less five percent (5%) of the combined values and less previous payments made. The retainage as set forth above shall be held until final completion and acceptance of the work. At the Owner's discretion, and when the work has reached substantial completion, as determined by the Engineer in accordance with the provisions of the Contract Documents, the retainage may be reduced to such an amount as would reasonably cover 150% of the cost of correction of items of work heretofore found to be faulty and the cost of work remaining to be done in order to effect the completion of all of the work in full accordance with the provisions of the Contract Documents. Progress payments will be made in accordance with the provisions of the General Conditions.

Article VII. **FINAL PAYMENT.** Final payment, constituting the entire balance of the Contract Price, shall be paid by the Owner to the Contractor within thirty days after the full completion and acceptance of the work and satisfaction of all conditions and requirements for final payment provided in the Contract Documents. The work will not be accepted until the

Contractor has certified that he/she has completed all of the work in full accordance with the provisions of the Contract Documents, the Owner and the Engineer have completed the final review of the work and found that it appears to have been fully completed in accordance with the provisions of the Contract Documents, the Contractor has advertised completion of the work in accordance with the General Conditions, and the Contractor has presented to the Owner satisfactory evidence that all indebtedness connected with the work has been fully paid and satisfied, all as set forth in the General Conditions.

Article VIII. **MISCELLANEOUS PROVISIONS.** Terms used in this Agreement which are defined in the General Conditions shall have the same meanings as designated in those component parts of the Contract Documents.

The Contract Documents, which constitute the entire agreement between the Owner and the Contractor are listed in Article I of this Agreement and, except for Modifications issued after the execution of this Agreement, are enumerated below. The signatures which appear hereunder shall have the same force and effect as if appearing on all of the Contract Documents enumerated as follows:

1. Contract Agreement Pages _____
2. Proposal Pages _____
3. General Conditions Pages _____
4. Supplementary Conditions Pages _____
5. Performance Bond Pages _____
6. Labor and Material Payment Bond Pages _____
7. Specifications Pages _____
   Sections _____
8. Drawings Sheets _____
9. Addenda (include date of addenda): _____
   _____
   _____
   _____

IN WITNESS HEREOF, the said Contractor has hereunder executed this Agreement by his/her signature shown hereon, and said Owner has hereunder executed this Agreement by affixing hereto his/her corporate seal and by signature of his/her corporate officer(s) as shown, on the date first written above, in 3 counterparts, each of which shall, without proof or accounting for the other counterparts, be deemed an original.

By signing this Agreement, the contracting parties affirm, for the duration of the Contract, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the state of Georgia. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the Contract and shall be responsible for all damages resulting therefrom.

CONTRACTOR

_____
(Print/Type Name of Firm)

_____
(Print/Type Name and Title of Officer/Legally Authorized Individual)

_____
(Signature of Officer/Legally Authorized Individual)

_____
(Print/Type Name of Attesting Witness)

_____
(Signature of Attesting Witness)

OWNER

_____
(Print/Type Name of Owner)

_____
(Print/Type Name and Title of Owner Representative)

_____
(Signature of Owner Representative)

_____
(Print/Type Name of Attesting Witness)

_____
(Signature of Attesting Witness)

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 PROJECT INFORMATION

A. Project Name and Location/Address:
Shenandoah Wastewater Treatment Facility Improvements
1519 Poplar Rd
Newnan, GA 30265

B. Owner Information:
Coweta County Water & Sewerage Authority

C. Owner Contact:
545 Corinth Road
Newnan, GA 30263
770.254.3710

D. Engineer Information:
Krebs Engineering, Inc.
Jarred M. Jackson, P.E.
15 LaGrange Street
Newnan, GA 30263
470.724.5050
Jarred.Jackson@krebseng.com

E. Subconsultant Information :

1. MBA Engineers, Inc. (Structural)
Tripp Lindsey, P.E., S.E.
300 20th Street, North, Suite 100
Birmingham, AL 35203
205.323.6385
tlindsey@mbasei.com

2. Jackson, Renfro & Associates, Inc. (Electrical)
Phil Black, P.E.
141 Village Street, Suite #1
Birmingham, AL 35242
205.995.1078
phil@JRAee.com

3. Pinnacle Engineering, Inc. (Mechanical)
   Jeff Boyer, P.E.
   2111 Parkway Office Circle, Suite 125
   Birmingham, AL 35244
   205.733.6916
   jeffb@pinnacleegr.com

4. Architectrual Cooperative (Architect)
   Jared Bussey, AIA
   jaredb@architecturalcooperative.net
   2917 Central Avenue, Suite 101
   Birmingham, AL 35209
   205.533.3563

1.1 DESCRIPTION OF WORK INCLUDED IN THIS CONTRACT

The Work included in this Contract generally consists of improvements to the existing influent pump station, new headworks, new aeration blower/electrical building, new BNR aeration basin, improvements to the existing aeration basin (fine bubble diffusers, mixers, and BNR), new final clarifiers, new RAS/WAS pump station, additional (new) tertiary filters, new UV disinfection, new cascade (post) aeration, conversion of the existing final clarifiers to aerobic digesters, new solids handling facilities, chemical feed systems, miscellaneous yard piping, electrical, controls and SCADA improvements. This project is funded through GEFA; all pertinent federal requirements apply

The requirements of this Section and Division 1 apply to all of the Contract Documents.

1.2 OWNER PURCHASE CONTRACTS

A. The Owner has executed a purchase order(s) with suppliers of material and equipment to be incorporated into the Work. The purchase order(s) will be transferred to the Contractor and become part of this Contract. Contractor shall be responsible for coordinating the submittals, fabrication, and shipping/handling and delivery, and shall also be responsible for installation of the materials/equipment. The Contractor shall include all associated costs, including, but not limited to receiving, handling, storage if required, and installation/start-up of material and equipment, in the Contract Sum unless specifically stated otherwise in the Contract Documents.

B. The warranty and payment terms for the pre-selected equipment (BNR System, Solids Dewatering System, Biosolids Drying System, and UV Disinfection System) may change as a result of project delays, Contractor preference, or other reasons. Additionally, each manufacturer may have excluded certain items from their scope, and other labor, materials, and/or appurtenances may be required for a complete system. The Contractor is solely responsible for furnishing and installing all labor, materials, and appurtenances and for negotiating any additional changes to scope (e.g., additional warranty time) and/or cost with each pre-selected manufacturer in order to ensure that the Owner receives a complete, functional system that complies with all aspects of the Contract Documents. All additional costs and/or costs for items not included in manufacturers' scope of work shall be included in the base bid cost to construct the project.

C. Terms and Conditions for Pre-Purchased Equipment – The Contractor shall be responsible for contacting each supplier, reviewing all terms and conditions, and the schedule(s) with the supplier. The Contractor, if he/she deems it necessary, shall then negotiate and include all additional costs and/or adjustments to the Terms and Conditions as required to complete the Work. The Contractor shall be solely responsible for additional costs associated with changes to the Terms and Conditions.

D. Pre- purchased equipment is listed below:

1. Biological Nutrient Removal System. See Appendix "B" for copy purchase order and contract scope.

    a. Purchase Contract Firm and Representative:
        1) Xylem-Sanitaire
        2) Sean Sullivan (262) 327-7818, Sean.Sullivan@xylem.com
    b. Purchase Status: Order placed by the Owner to be transferred to the Contractor. Payment for the equipment will be made by the Contractor.

2. Solids Dewatering System: See Appendix "C" for copy purchase order and contract scope.
    a. Purchase Contract Firm and Representative:
        1) FKC Co, Ltd.
        2) Shane Harvey (360) 477-8038, sharvey@fkcscrewpress.com
    b. Purchase Status: Order placed by the Owner to be transferred to the Contractor. Payment for the equipment will be made by the Contractor.

3. Biosolids Drying System: See Appendix "D" for copy purchase order and contract scope.
    a. Purchase Contract Firm and Representative:
        1) BCR Environmental Corp.
        2) Keith Williams (512) 632-8158, KWilliams@bcrinc.com
    b. Purchase Status: Order placed by the Owner to be transferred to the Contractor. Payment for the equipment will be made by the Contractor.

4. UV Disinfection System: See Appendix "E" for copy purchase order and contract scope.
    a. Purchase Contract Firm and Representative:
        1) Trojan Technologies
        2) Farnaz Daynouri-Pancino (519) 636-3311, fdaynouri-pancino@trojantechnologies.com
    b. Purchase Status: Order placed by the Owner to be transferred to the Contractor. Payment for the equipment will be made by the Contractor.

1.3 PHASING AND SEQUENCE OF CONSTRUCTION

A. The Work shall be sequenced such that treatment processes are not interrupted. The WWTF must remain in compliance with the permitted discharge limitations, as identified in NPDES Permit No. GA0038822, at all times during the project. Bypass pumping will be required and temporary shutdowns of plant process must be coordinated and

scheduled with the Owner and Engineer. The Contractor shall submit a construction phasing plan prior to proceeding with the work.

a. Milestone Dates

1) The Bidder hereby agrees that, should the work under the Contract be awarded to him/her, he/she will commence work under this Contract on or before a date to be specified in written "Notice to Proceed" given by the Owner, and that he/she will achieve Substantial Completion of **Phase 1** of the Contract within **730** consecutive calendar days following the Notice to Proceed. The Bidder agrees to pay, as liquidated damages, the sum of **$1,500** for each consecutive calendar day after the date set for Substantial Completion of the work, or for any specified Milestone Date, until such time as Substantial Completion has been achieved. **Phase 1** of the Contract shall include all necessary labor, equipment, material to provided all treatment processes, piping, electrical, instrumentation, controls, and appurtenances necessary to achieve 3.4 MGD treatment capacity, including, but not limited to the following:

a) Influent Pump Station and Forcemain Improvements
b) Aeration Blower Building/Electrical Building
c) Two Generator Sets
d) Headworks
e) Aeration Basin No. 2
f) Clarifier Flow Splitter Box
g) Clarifiers No. 1 & No. 2
h) RAS/WAS & Drain Pump Station
i) Scum Pump Station
j) Filters No. 3 & No. 4
k) UV Disinfection
l) Post Aeration

1.4 WORK PERFORMED BY OWNER AND OTHER CONTRACTORS

A. SCADA system improvements shall be provided by the Owner's SCADA integrator.

B. Contractor shall fully cooperate and coordinate with Owner and other contractors to ensure that all work is completed in a smooth and orderly fashion without conflict, interference, or delay to work under this Contract or work done by Owner or other contractors.

1.5 ACCESS TO SITE

A. The Contractor shall have full use of the site unless otherwise stated in the Contract Documents. The Contractor shall limit work activities to areas within the limits of disturbance shown on the Drawings, and shall not disturb areas of the site that are beyond the Limits of Disturbance.

B. The Contractor shall maintain Owner use and access to buildings, driveways and other facilities at all times, unless specific exceptions are included in the Contract Documents.

C. The Contractor shall be solely responsible for protecting all existing and adjacent facilities from construction activities at all times, and shall be responsible for repairing any damage that results from construction of the Work.

1.6 COORDINATION WITH THE OWNER

A. Unless otherwise shown/stated specifically, the Owner will occupy the existing facilities during the construction period.

B. The Contractor shall minimize impacts from construction activities and shall not interfere with the Owner's operations unless and until 72 hours prior written notice has been provided to the Owner and written approval has been received from the Owner.

1.7 WORK HOURS AND OTHER RESTRICTIONS

A. The Contractor shall limit work hours as described in the General Conditions. On site work hours shall be between 7 a.m. and 6 p.m. unless prior written permission is obtained.

B. The Contractor shall take all necessary precautions/measures to limit noise, dust, odors and other disruptive impacts to the Owner and/or neighboring properties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 UNIT PRICES

A. Unit prices are based on estimated quantities of items, but the Contractor shall be paid based on the actual measured quantity of each unit price item that is furnished and/or installed. Unit prices shall include all labor, delivery, materials, equipment, services, overhead, and profit attributable to each unit price item. Once the actual quantities are known, then a Change Order will be issued to incorporate the quantity increase or decrease into the Work.

B. Refer to individual Specification Sections for additional information.

C. The Contractor shall measure the unit price quantities furnished and/or installed, but the Owner shall have the right to verify the Contractor's measurements with Owner's forces and/or independently at Owner's expense.

D. List of Unit Price Bid Items: A schedule and description of the unit price bid items included in this Contract are provided below:

1. Unit Price Bid Item No. 9: Install 2,750 square yards of Asphalt Paving Section per the Contract Documents.
   a. Description: Furnish and Install Asphalt Paving Section per the Contract Documents. Unit price shall include all necessary labor, equipment, and material to provide new asphalt paving section at the locations as directed.
   b. Unit of Measurement: Per square yard of asphalt paving section installed.
2. Unit Price Bid Item No. 10: Install 4,600 square yards of Mill and Resurface Existing Asphalt Paving per the Contract Documents.
   a. Description: Furnish and Install Mill and Resurface Existing Asphalt Paving per the Contract Documents. Unit price shall include all necessary labor, equipment, material, and material disposal to mill and resurface existing asphalt paving at the locations as directed.
   b. Unit of Measurement: Per square yard of Mill and Resurface Existing Asphalt Paving installed.
3. Unit Price Bid Item No. 11: Install 2,000 square yards of Concrete Paving Section per the Contract Documents.
   a. Description: Furnish and Install Concrete Paving Section per the Contract Documents. Unit price shall include all necessary labor, equipment, and material to provide new concrete paving section at the locations as directed.
   b. Unit of Measurement: Per square yard of concrete paving section installed.
4. Unit Price Bid Item No. 12: Undercut (below subgrade) unsuitable soils, haul, and dispose off-site, as directed by the Engineer.
   a. Description: Unsatisfactory soil excavation and disposal off site in accordance with Division 31 Section "Earth Moving."
   b. Unit of Measurement: Cubic yard of soil excavated, based upon survey of volume removed or haul tickets for selected method of backfill.

5. Unit Price Bid Item No. 13: Backfill undercut areas with crushed stone (including hauling and compaction), as directed by the Engineer.
    a. Description: Backfill undercut areas with crushed stone to include hauling, placement, and compaction in accordance with Division 31 Section “Earth Moving”.
    b. Unit of Measurement: Cubic Yard of crushed stone placed based on haul ticket.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 22 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for temporary utilities, temporary support facilities, and temporary security.

1.2 USE CHARGES

A. The Contractor shall include all transfer and use charges and associated costs for temporary facilities (including setup, installation, and removal) and permanent facilities in the Contract unless specifically indicated otherwise.

B. Temporary Water and Sewer Service from Existing System: Water from the Owner's existing water system is available for temporary use without metering and without payment of use charges until the (Final) Contract Completion date. Provide connections and extensions of services as required for construction operations.

C. Temporary Electric Power Service from Existing System: Electric power from the Owner's existing system is available for temporary use without metering and without payment of use charges until the (Final) Contract Completion date. Provide connections and extensions of services as required for construction operations.

D. Initiate and schedule the transfer of temporary utility service to the Owner upon project completion. Costs associated with establishing all utility services in the Owner’s name shall be borne by the Contractor.

1.5 QUALITY ASSURANCE

A. For all electric power service, the Contractor shall comply with all applicable codes (NECA, NEMA, and UL standards and regulations, and NFPA).

B. Contractor shall obtain the required permits for all utilities.

C. Contractor shall comply with all applicable OSHA and ADA provisions for temporary ingress/egress.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Temporary chain-link fencing shall be equivalent to existing fencing, or if no existing fencing, then temporary fencing shall be minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch- OD corner and pull posts, and 1-5/8-inch-OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum

2-3/8-inch-OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide concrete or galvanized-steel bases for supporting posts.

C. Wood Enclosure Fence: Plywood, 8 feet high, framed with four 2-by-4-inch rails, with preservative-treated wood posts spaced not more than 8 feet apart.

D. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with a flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2

2.2 TEMPORARY FACILITIES

A. Field Offices: Field offices shall be prefabricated or mobile units with temperature controls, foundations, and utilities.

B. Engineer's Field Office: Engineer's separate field office shall include the following:

1. Minimum dimensions of 12 feet wide by 40 feet long.
2. One (1) plantable and one (1) plan rack with not less than five (5) plan holders.
3. One (1) four drawer letter size file cabinet.
4. One (1) desk and desk chair.
5. Two (2) side chairs.
6. One (1) closet for storage of work gear, instruments and equipment.
7. One (1) separate room with toilet and lavatory providing hot and cold running water.
8. Two (2) sets of keys to all lockable doors.
9. Minimum of four (4) duplex electrical outlets.
10. Adequate lighting for office work.
11. Two (2) waste receptacles.
12. One (1) telephone service receptacle.
13. Installation and use charges for electrical power, natural gas (if required), potable water, and wastewater (if applicable).
14. Installation and use charges for telephone service.
15. Garbage (waste) disposal services and daily office clean-up services; and provision of soap, toilet paper, and paper towels, as needed.
16. Internet Access: Highspeed (DSL, cable modem, or wireless "hot spot") internet, unlimited access.
17. Printer: HP Officejet 4630 e-All-In-One Printer, Scanner, Copier and Fax, or recent equivalent.
18. APC Back-UPS 550 - Surge Protection and Battery Back-UP

C. Contractor shall furnish and maintain fire extinguishers with appropriate location, class, and extinguishing agent(s) for recommended exposures (in accordance with NFPA and other applicable codes).

D. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

E. Heating Equipment: Unless the Owner authorizes the use of a permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for the intended use for the type of fuel being consumed.

F. Air Conditioning Unit: Provide air condition units as necessary to ensure a cool operating environment.

G. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

H. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

2.3 KEYS AND KEYING:

A. Provide keyed brass cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished in the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys shall be provided at issuance of substantial completion.

B. Keying shall be made to match existing Administration Building.

C. Cylinders, removable and interchangeable core system: Patented MX8 Best 7-pin construction cores.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate with the Owner to locate the temporary facilities.

B. Isolate and protect Work areas and/or occupied facilities to prevent dust and fume entry.

C. Temporary Use of Facilities and Equipment: Any facilities or equipment that are used by the Contractor during construction shall be made to be in “like new” condition with full manufacturer’s warranty prior to being turned over to the Owner. Items not meeting this requirement to the satisfaction of the Owner shall be deemed to be “used” and shall be replaced at the Contractor’s expense.

D. Provide temporary fire protection as necessary to protect against fire losses during construction.

E. Make provisions to protect materials and facilities from water damage and potential for creating mold, and keep interior spaces clean and dry. Control moisture and humidity if necessary.

F. Do not remove temporary facilities until they are no longer needed.

3.2 INSTALLATION OF TEMPORARY UTILITIES

A. Contractor is responsible for coordinating with Owner and/or utility providers for temporary utility installation.

B. Contractor shall provide temporary toilets, wash stations, and potable water for use of construction personnel.

C. Contractor shall provide temporary heating/cooling/dehumidification when required by construction activities for curing, drying, protection or for other reasons.

D. Provide temporary lighting as needed for construction operations, inspections and security.

3.3 INSTALLATION OF TEMPORARY OFFICES AND SITE IMPROVEMENTS

A. Temporary offices, shops, and sheds shall be located within the construction area and away from existing and new buildings. Comply with all applicable codes for location and construction of temporary facilities.

B. Construct and maintain temporary roads and parking as needed for construction operations and as needed for the Owner's operations.

C. Protect existing site improvements to remain including curbs, pavement, and utilities.

D. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Contractor is solely responsible for establishing and maintaining temporary dewatering facilities and shall discharge all water in a lawful manner without affecting the facilities or adjacent properties. The contractor is solely responsible for any damage that occurs due to dewatering activities, failure to implement dewatering facilities or insufficient dewatering activities.

F. Furnish and install temporary project signs.

G. Protect the existing site and facilities to include vegetation, structures, and utilities, and shall comply with environmental regulations at all times.

H. Furnish and install all necessary temporary sediment and erosion control measures to prevent soil erosion and discharge of sediment-laden water runoff and airborne dust.

I. Protect existing trees and vegetation from construction operations.

J. For sites that have an existing perimeter fence, erect and/or maintain a temporary fence unless specifically noted otherwise.

K. Provide signs, barricades, and lights as required by local authorities and/or code.

L. Restore, repair and clean the site to include removal of temporary gravel and pavement, soils that are unsuitable for landscaping or grassing, and repairing/replacing paving, curbs and sidewalks.

M. Restore, repair and clean permanent facilities at Substantial Completion. Clean facilities again at Final Completion where necessary.

END OF SECTION 01 50 00

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following types of signs:

1. Interior directional panel signs.
2. Custom cast bronze dedicatory plaque.

B. Related Sections: The following Sections contain requirements that relate to this Section:

2. See signage schedule on drawings.

1.3 SUBMITTALS

A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.

C. Shop drawings showing fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.

1. Provide message list for each sign required, including large-scale details of wording and lettering layout.
2. For signs supported by or anchored to permanent construction, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.
3. Templates: Furnish full-size spacing templates for individually mounted dimensional letters and numbers.

D. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.

1. Samples for initial selection of color, pattern, and texture:
   a. Cast Acrylic Sheet and Plastic Laminate: Manufacturer's color charts consisting of actual sections of material including the full range of colors available for each material required.
   b. Aluminum: Samples of each finish type and color, on 6-inch-long sections of extrusions and not less than 4-inch squares of sheet or plate, showing the full range of colors available.

2. Samples for verification of color, pattern, and texture selected and compliance with requirements indicated:

    a. Cast Acrylic Sheet and Plastic Laminate: Provide a sample panel not less than 8-1/2 inches by 11 inches for each material, color, texture, and pattern required. On each panel include a representative sample of the graphic image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.
    b. Aluminum: Samples of each finish type and color, on 6-inch-long sections of extrusions and not less than 4-inch squares of sheet or plate. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.

1.4 QUALITY ASSURANCE

A. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work.

B. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Manufacturers of Interior Directional Panel Signs:
    a. Andco Industries Corp.
    b. APCO Graphics, Inc.
    c. ASI Sign Systems, Inc.
    d. Best Manufacturing Company.
    e. Charleston Industries, Inc.
    f. Leeds Architectural Letters, Inc.

2.2 MATERIALS

A. Aluminum Castings: Provide aluminum castings of alloy and temper recommended by the sign manufacturer for the casting process used and for the use and finish indicated.

B. ABS Plastic: Provide high-impact thermoplastic composed of copolymers of acrylonitrile, butadiene, and styrene.

C. Fasteners: Use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.

D. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use

toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

E. Colored Coatings for Acrylic Plastic Sheet: Use colored coatings, including inks and paints for copy and background colors, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are nonfading for the application intended.

2.3 PANEL SIGNS

A. Panel Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.

B. Framed Panel Signs: Fabricate frames to profile indicated; comply with the following requirements for materials and corner conditions:

1. Material: Acrylic plastic.
2. Corner Condition: Corners rounded to radius indicated.

C. Brackets: Fabricate brackets and fittings for bracket-mounted signs from extruded aluminum to suit sign panel construction and mounting conditions indicated. Factory-paint brackets in a color matching the background color of the sign panel.

D. Provide changeable message units with sign-background contrast complying with requirements of ADA.

E. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.

F. Provide braille components for signs in compliance with ADA requirements.

G. Subsurface Copy: Apply copy to the back face of clear acrylic sheet forming the panel face by process indicated to produce precisely formed opaque images free from rough edges.

1. Use reverse silk-screen process to print copy; overspray the copy with an opaque background color coating.
2. Use Dupont Chromalin heat- and pressure-laminated photopolymer film system to form copy and background color.

a. The manufacturer has the option of selecting either process indicated above.
b. The manufacturer has the option of selecting either process indicated above, or using subsurface engraving process, as appropriate to the copy form and the economics of production.

H. Applied Copy: Die-cut characters from vinyl film with pressure-sensitive adhesive backing. Apply copy to the exposed face of the sign panel.

1. Panel Material: Matte-finished opaque acrylic sheet.

2.4 CUSTOM CAST BRONZE DEDICATORY PLAQUE

A. Cast Bronze: Produce elements of plaque with smooth, flat faces, sharp corners and precisely formed lines. Fabricate casting in single piece. Cast lugs in the back of plaque & tap to receive threaded mounting studs. Comply with requirements for finish, style, and size.

1. Metal: Bronze
2. Overall Size: 16"x24"
3. Background Finish: Baked enamel
4. Copy to include, but not limited to, name of building, dedication date, names of board director members, engineers, contractor. Copy content and design to be approved by Owner prior to fabrication.

2.6 FINISHES

A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Engineer from the manufacturer's standards.
B. Metal Finishes: Comply with NAAMM "Metal Finishes Manual" for finish designations and applications recommendations.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

B. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:

1. Vinyl-Tape Mounting: Use double-sided foam tape to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
2. Silicone-Adhesive Mounting: Use liquid silicone adhesive recommended by the sign manufacturer to attach sign units to irregular, porous, or vinyl-covered surfaces. Use double-sided vinyl tape where recommended by the sign manufacturer to hold the sign in place until the adhesive has fully cured.
3. Shim Plate Mounting: Provide 1/8-inch-thick concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach the plate with fasteners and anchors suitable for secure attachment to the substrate. Attach panel sign units to the plate using the method specified above.

C. Bracket-Mounted Units: Provide the manufacturer's standard brackets, fittings, and hardware as appropriate for mounting signs that project at right angles from walls and ceilings. Attach brackets and fittings securely to walls or ceilings with concealed fasteners and anchoring devices to comply with manufacturer's directions.

3.2 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION 10 14 00

SECTION 33 12 15 - HYDRAULIC GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Slide Gates - The gates and appurtenances shall be supplied in accordance with the latest edition of AWWA C561 Standard for Fabricated Stainless Steel Slide Gates as modified herein. The allowable leakage rate for the stainless steel gates in this specification shall be 1/2 the allowable leakage listed in the latest revision of AWWA C561.

2. Weir Gates - The gates and appurtenances shall be supplied in accordance with the latest edition of AWWA C561 Standard for Fabricated Stainless Steel Slide Gates as modified herein. The allowable leakage rate for the stainless steel gates in this specification shall be 1/2 the allowable leakage listed in the latest revision of AWWA C561.

1.3 SUBMITTALS

A. Product Data:

1. Furnished specialties
2. Size
3. Accessories
4. Details of construction relative to materials
5. Dimensions of individual components
6. Profiles
7. Finishes.
8. Description of all materials.
9. Complete bill of materials.
10. Complete motor data (if applicable).
11. Structural design calculations.
12. Description of surface preparation, shop priming, and finish painting of gates.

B. Shop Drawings Showing:

1. Complete dimensional data.
2. Mounting details.Gate Locations.

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to

demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Engineer and owners, and other information specified.

D. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent professional engineer, indicate compliance of gates for applicable codes, based on comprehensive testing within the last two years of current products.

E. Maintenance Data: For gates to include in the maintenance manuals specified in Division 1. Include name, address, and telephone number of manufacturer's nearest authorized service representative.

F. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. The equipment specified herein shall be located as shown or described and installed in conformance with the manufacturer’s suggested method as approved by the Engineer.

B. All of the equipment specified under this Section shall be furnished by a single manufacturer with a minimum of 10 years experience designing and manufacturing water control gates. The manufacturer shall have manufactured water control gates for a minimum of 100 projects.

C. Source Limitations: Obtain each gate component as a complete unit from one source and by a single manufacturer.

D. Comply with all safety regulations for gates.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store gate in a manner to avoid significant or permanent damage to equipment.

1. In general, comply with the manufacturer's written instructions for storage of gates.
2. The equipment shall be stored in a clean, dry location free from construction dust, precipitation and excess moisture.

1.6 WARRANTY

A. Gate Warranty: Submit a written warranty, executed by manufacturer, agreeing to repair or replace gate components that fail in materials or workmanship within the specified warranty period.

B. Warranty Period: One year from date of Substantial Completion.

1. Warranty shall be for unlimited usage of the equipment for the specified rated capacity over the term of the warranty.

1.7 MAINTENANCE SERVICE

A. Contractor shall provide a manufacturer's technical representative for the equipment specified at the jobsite and/or classroom designated by the Owner for the minimum person days listed for the services listed below:

1. One (1) person days for installation assistance, inspection, functional and performance testing, and certification of the installation.
2. One (1) person day for start up.
3. Start up services shall be at times requested by the Contractor and as finally approved by the Owner.

B. Spare Parts

1. Contractor shall furnish to the Owner one set of all special tools required for the proper servicing of all equipment supplied under these specifications.
2. Contractor shall furnish all spare parts not including required lubrication as recommended by the manufacturer for one year's normal operation and maintenance of the equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Slide Gates - Stainless Steel

a. Whipps
b. Waco
c. Golden Harvest
d. Waterman Industries
e. Hydro Gate
f. Fontaine

2. Weir Gates – Stainless Steel

a. Whipps
b. Waco
c. Golden Harvest
d. Waterman Industries
e. Hydro Gate
f. Fontaine

3. Heavy Duty Electric Wrenches (Portable)

a. Milwaukee.
b. Approved Equivalent.

2.2 SLIDE GATES (STAINLESS STEEL)

A. General:

1. Gates shall be as specified herein and have the characteristics and dimensions shown on the Contract Drawings.
2. The gate shall utilize self-adjusting seals. Due to the difficulty of accessing gates when they are in service, gates that utilize adjustable wedges, wedging devices or pressure pads are not acceptable.
3. All structural components of the frame and slide shall be fabricated of 304 stainless steel having a minimum thickness of 1/4-inch and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.
4. Slide gate frames shall be shipped fully assembled with the invert member welded to the side frames and the slide installed in the frame unless the overall width of the slide gate exceeds 96 inches or the overall height of the slide gate exceed 25 feet.
5. All welds shall be performed by welders with AWS D1.6 certification.
6. Finish: Mill finish on stainless steel. Welds shall be sandblasted to remove weld burn and scale. All iron and steel components shall be properly prepared and shop coated with a primer.

B. Frame:

1. The frame assembly, including the guide members, invert member and yoke members, shall be constructed of formed stainless steel plate with a minimum thickness of 1/4-inch.
2. Frame design shall allow for embedded mounting, mounting directly to a wall with stainless steel anchor bolts and grout or mounting to a wall thimble with stainless steel mounting studs and a mastic gasket material. Mounting style shall be as shown on the Contract Drawings.
3. All wall mounted or wall thimble mounted gates shall have a flange frame. Flat frame gates are not acceptable.
4. The structural portion of the frame that incorporates the seat/seals shall be formed into a one-piece shape for rigidity. Guide members that consist of two or more bolted structural members are not acceptable. Guide member designs where water loads are transferred through the assembly bolts are specifically not acceptable.
5. Gussets shall be provided as necessary to support the guide members in an unseating head condition. The gussets shall extend to support the outer portion of the guide assembly and shall be positioned to ensure that the load is transferred to the anchor bolts or the wall thimble studs.
6. The frame shall extend to accommodate the entire height of the slide when the slide is in the fully opened position on upward opening gates or downward opening weir gates.
7. On self-contained gates, a yoke shall be provided across the top of the frame. The yoke shall be formed by two structural members affixed to the top of the side frame members to provide a one-piece rigid assembly. The yoke shall be

designed to allow removal of the slide.

8. A rigid stainless steel invert member shall be provided across the bottom of the opening. The invert member shall be of the flushbottom type on upward opening gates.
9. A rigid stainless steel top seal member shall be provided across the top of the opening on gates designed to cover submerged openings.
10. A rigid stainless steel member shall be provided across the invert of the opening on downward opening weir gates.

C. Slide:

1. The slide and reinforcing stiffeners shall be constructed of stainless steel plate. All structural components shall have a minimum thickness of 1/4-inch.
2. The slide shall not deflect more than 1/360 of the span or 1/16 inch, whichever is smaller, under the maximum design head.
3. When the width of the gate opening multiplied by the maximum design head is greater than 120 square feet, the portion of the slide that engages the guide members shall be of a “thick edge” design. Minimum material thickness of all members of the slide shall be ¼ inch (6 mm).
4. Reinforcing stiffeners shall be welded to the slide and mounted horizontally. Vertical stiffeners shall be welded on the outside of the horizontal stiffeners for additional reinforcement.
5. The stem connector shall be constructed of two angles or plates. The stem connector shall be welded to the slide. A minimum of two bolts shall connect the stem to the stem connector.

D. Stems:

1. A threaded operating stem shall be utilized to connect the operating mechanism to the slide. On rising stem gates, the threaded portion shall engage the operating nut in the manual operator or motor actuator. On non-rising stem gates, the threaded portion shall engage the nut on the slide.
2. The threaded portion of the stem shall have a minimum outside diameter of 1-1/2 inches. Stem extension pipes are not acceptable.
3. The stem shall be constructed of solid stainless steel bar for the entire length, the metal having a tensile strength of not less than 75,000 psi.
4. The stem shall be threaded to allow full travel of the slide unless the travel distance is otherwise shown on the Contract Drawings.
5. Maximum L/R ratio for the unsupported part of the stem shall not exceed 200.
6. In compression, the stem shall be designed for a critical buckling load caused by a 40 lb effort on the crank or handwheel with a safety factor of 2, using the Euler column formula.
7. The stem shall be designed to withstand the tension load caused by the application of a 40 lb effort on the crank or handwheel without exceeding 1/5 of the ultimate tensile strength of the stem material.
8. The threaded portion of the stem shall have machine rolled threads of the full Acme type with a 16 microinch finish or better. Stub threads are not acceptable.
9. Stems of more than one section shall be joined by stainless steel or bronze couplings. The coupling shall be bolted to the stems.

10. Stems, on manually operated gates, shall be provided with adjustable stop collars to prevent over closing of the slide.

E. Seals:

1. All gates shall be provided with a self-adjusting seal system to restrict leakage in accordance with the requirements listed in this specification.
2. All gates shall be equipped with UHMW polyethylene seat/seals to restrict leakage and to prevent metal to metal contact between the frame and slide.
3. The seat/seals shall extend to accommodate the 1-1/2 x the height of the slide when the slide is in the fully closed or fully opened position.
4. All upward opening gates shall be provided with a resilient seal to seal the bottom portion of the gate. The seal shall be attached to the invert member or the bottom of the slide and it shall be held in place with stainless steel attachment hardware.
5. All downward opening weir gates shall be provided with UHMW polyethylene seat/seals across the invert member.
6. The seal system shall be durable and shall be designed to accommodate high velocities and frequent cycling without loosening or suffering damage.
7. All seals must be bolted or otherwise mechanically fastened to the frame or slide. Arrangement with seals that are force fit or held in place with adhesives are unacceptable.
8. The seals shall be mounted so as not to obstruct the water way opening.
9. Gates that utilize rubber “J” seals or “P” seals are not acceptable.
10. The seal system shall have been factory tested to confirm negligible wear (less than 0.01”) and proper sealing. The factory testing shall consist of an accelerated wear test comprised of a minimum of 25,000 open-close cycles using a well-agitated sand/water mixture to simulate fluidized grit.

F. Manual Operators:

1. Unless otherwise shown on the Drawings, gates shall be operated by a manual handwheel or a manual crank-operated gearbox. The operator shall be mounted on the yoke of self-contained gates or on the pedestal of non-self-contained gates.
2. The gate manufacturer shall select the proper gear ratio to ensure that the gate can be operated with no more than a 25 lb effort when the gate is in the closed position and experiencing the maximum operating head.
3. An arrow with the word "OPEN" shall be permanently attached or cast onto the operator to indicate the direction or rotation to open the gate.
4. Handwheel operators shall be fully enclosed and shall have a cast aluminum housing.

    a. Handwheel operators shall be provided with a threaded cast bronze lift nut to engage the operating stem.
    b. Handwheel operators shall be equipped with roller bearings above and below the operating nut.

c. Positive mechanical seals shall be provided above and below the operating nut to exclude moisture and dirt and prevent leakage of lubricant out of the hoist.
d. The handwheel shall be removable and shall have a minimum diameter of 16 inches.

5. Crank-operated gearboxes shall be fully enclosed and shall have a cast aluminum or ductile iron housing.

    a. Gearboxes shall have either single or double gear reduction depending upon the lifting capacity required.
    b. Gearboxes shall be provided with a threaded cast bronze lift nut to engage the operating stem.
    c. Bearings shall be provided above and below the flange on the operating nut to support both opening and closing thrusts.
    d. Gears shall be steel with machined cut teeth designed for smooth operation.
    e. The pinion shaft shall be stainless steel and shall be supported on ball or tapered roller bearings.
    f. Positive mechanical seals shall be provided on the operating nut and the pinion shafts to exclude moisture and dirt and prevent leakage of lubricant out of the hoist.
    g. The crank shall be cast aluminum or cast iron with a revolving nylon grip and have a minimum radius of 12”.
    h. The crank shall be removable.

6. All gates having widths in excess of 72 inches and widths greater than twice their height shall be provided with two gearboxes connected by an interconnecting shaft for simultaneous operation.

    a. Interconnecting shafting shall be constructed of aluminum or stainless steel.
    b. Flexible couplings shall be provided at each end of the interconnecting shaft. Couplings shall be stainless steel or non-metallic.
    c. One crank shall be provided to mount on the pinion shaft of one of the gearboxes.

7. An extended operator system utilizing chain and sprockets shall be furnished by the manufacturer when the centerline of the crank or handwheel, on a non-geared operator, is located over 48-in above the operating floor. Chain wheels are not acceptable.

    a. A removable stainless steel or aluminum cover shall be provided to enclose chain and sprockets.
    b. The extended operator system shall lower the centerline of the pinion shaft to 36-in above the operating floor.
    c. A handwheel may be utilized in conjunction with a gearbox in lieu of the extended operator system if the centerline of the pinion shaft is 60-in or less above the operating floor.

8. Pedestals shall be constructed of stainless steel. Aluminum pedestals are not acceptable.

    a. The pedestal height shall be such that the handwheel or pinion shaft on the crank-operated gearbox is located approximately 36-in above the operating floor.
    b. Wall brackets shall be used to support floor stands where shown on the Drawings and shall be constructed of stainless steel.
    c. Wall brackets shall be reinforced to withstand in compression at least two times the rated output of the operator with a 40 lb effort on the crank or handwheel.
    d. The design and detail of the brackets and anchor bolts shall be provided by the gate manufacturer and shall be approved by the ENGINEER. The gate manufacturer shall supply the bracket, anchor bolts and accessories as part of the gate assembly.

9. Operators shall be equipped with fracture-resistant clear butyrate or lexan plastic stem covers.

    a. The top of the stem cover shall be closed and have a ventilation hole.
    b. The bottom end of the stem cover shall be mounted in a housing or adapter for easy field mounting.
    c. Stem covers shall be complete with indicator markings to indicate gate position.

10. When shown on the Contract Drawings, provide 2 inch square nut, mounted in a floor box, with a non-rising stem.

    a. The square nut shall be constructed of bronze.
    b. The floor box shall be constructed of stainless steel or cast iron and shall be set in the concrete floor above the gate as shown.

11. Provide one aluminum or stainless steel T-handle wrench for operation.

G. Anchor Bolts:

1. Anchor bolts shall be provided by the gate manufacturer for mounting the gates and appurtenances.
2. If epoxy type anchor bolts are provided, the gate manufacturer shall provide the studs and nuts.
3. Anchor bolts shall have a minimum diameter of 1/2-inch.

2.3 WEIR GATES

A. Weir gates shall be similar in construction to that specified for Slide Gates (Ultra Leak Tight Service) and shall be designed such that the upper edge of slide functions as an adjustable weir.

B. The section of gate below the liquid level shall be tightly sealed against the frame and

bottom closure member such that watertight shut off can be achieved.

2.4 GATE SCHEDULE

TYPE	QTY	SIZE (W x H)	LOCATION	OPERATOR
SURFACE-MOUNTED SLIDE GATE – EMBEDDED INVERT	1	30” x 30”	OVERFLOW STRUCTURE	BRACKET-MOUNTED PEDESTAL AND HAND CRANK
SURFACE-MOUNTED SLIDE GATE	1	42” x 42”	OVERFLOW STRUCTURE	BRACKET-MOUNTED PEDESTAL AND HAND CRANK
SELF-CONTAINED SLIDE GATE	4	36" x 48"	HEADWORKS	HAND CRANK
SELF-CONTAINED SLIDE GATE	3	48" x 48"	HEADWORKS	HAND CRANK
SELF-CONTAINED WEIR GATE	2	48” x 48”	HEADWORKS	HAND CRANK
SURFACE-MOUNTED SLIDE GATE	4	12” x 12”	AERATION BASIN	BRACKET-MOUNTED PEDESTAL AND HAND CRANK
SELF-CONTAINED WEIR GATE	2	72” x 24”	CLARIFIER SPLITTER BOX	BRACKET-MOUNTED PEDESTAL AND HAND CRANK
SURFACE-MOUNTED SLIDE GATE	2	18” x 18”	FILTERS	BRACKET-MOUNTED PEDESTAL AND HAND CRANK
SELF-CONTAINED SLIDE GATE	2	48.25” x 65”	UV DISINFECTION	ELECTRIC ACTUATOR

2.5 ELECTRIC WRENCHES

A. Electric wrenches shall:

1. Be double insulated capable of being operated with safety in adverse wet conditions.
2. Adjustable height tri-pod stand
3. Be suitable for operation on 120 volt, single phase 60 Hz.
4. Reversing switch, over-torque protection clutch, and 20 foot cord
5. Maximum output torque by the clutch shall match the requirement for manual input to prevent damage to the operator or gate, and potential injury to personnel.
6. Operator speed shall move the gate at approximately 12 inches per minute rate.

B. A total of one (1) electric wrench shall be delivered to the Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of gates.

3.2 INSTALLATION, GENERAL

A. General: Comply with manufacturer's detailed written instructions for installing gates.

3.3 CLEANING AND PROTECTING

A. Restore marred, abraded surfaces to their original condition.
B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure gate is without damage or deterioration at the time of Substantial Completion.

3.4 DEMONSTRATION

A. Startup Services: Engage a factory-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below:

1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
2. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
3. Review data in maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."
4. Schedule training with Owner with at least seven days' advance notice.

END OF SECTION 33 12 15

SECTION 33 46 00 – SUBDRAINAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes subdrainage systems for the following:
   1. Paved areas.
   2. Landscaped areas.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene.
B. HDPE: High-density polyethylene.
C. PE: Polyethylene.
D. PP: Polypropylene.
E. PS: Polystyrene.
F. PVC: Polyvinyl chloride.

1.4 SUBMITTALS

A. Product Data: For drainage conduit, and geotextile fabrics.

   1. Perforated pipe.
   2. Solid pipe.
   3. Drainage conduits.
   4. Geotextile fabrics.

PART 2 - PRODUCTS

2.1 PAVED AREA HEADERS

A. ABS Sewer Pipe and Fittings: ASTM D 2751.

   1. Solvent Cement: ASTM D 2235.
   2. Gaskets: ASTM F 477, elastomeric seal.

B. Cast-Iron Soil Pipe and Fittings: ASTM A 74, Service and Extra-Heavy classes, hub-and-spigot ends, gray, for gasketed joints.

   1. Gaskets: ASTM C 564, rubber, of thickness matching class of pipe.

C. PE Drainage Tubing and Fittings: AASHTO M 252, Type S, corrugated, with smooth waterway, for coupled joints.

1. Couplings: AASHTO M 252, corrugated, band type, matching tubing and fittings.

D. PE Pipe and Fittings: AASHTO M 294, Type S, corrugated, with smooth waterway, for coupled joints.

1. Couplings: AASHTO M 294, corrugated, band type, matching tubing and fittings.

E. PVC Sewer Pipe and Fittings: ASTM D 3034, SDR 35, bell-and-spigot ends, for gasketed joints.

1. Gaskets: ASTM F 477, elastomeric seal.

2.2 DRAINAGE PIPES AND FITTINGS

A. Perforated, PE Pipe and Fittings: ASTM F 405, corrugated, for coupled joints.

1. Couplings: Manufacturer's standard, band type.

B. Perforated, PE Pipe and Fittings: ASTM F 667, corrugated, for coupled joints.

1. Couplings: Manufacturer's standard, band type.

C. Perforated, PVC Sewer Pipe and Fittings: ASTM D 2729, bell-and-spigot ends, for loose joints.

2.3 SPECIAL PIPE COUPLINGS

A. Description: ASTM C 1173. Rubber or elastomeric sleeve and band assembly fabricated to match outside diameters of pipes to be joined.

2.4 CLEANOUTS

A. Cast-Iron Pipe: ASME A112.36.2M; with round-flanged, cast-iron housing; and secured, scoriated, Medium-Duty Loading class, cast-iron cover. Include cast-iron ferrule and countersunk, brass cleanout plug.

B. PVC Pipe: ASTM D 3034, PVC cleanout threaded plug and threaded pipe hub.

2.5 DRAINAGE CONDUIT

A. Pipe and Fittings: Perforated and corrugated, molded from HDPE complying with ASTM D 3350, with fittings and geotextile filter fabric jacket.

1. Size: 12 inches high by approximately 3/4 inch thick with a minimum flow rate of 30 gpm per foot.
2. Size: 18 inches high by approximately 3/4 inch thick with a minimum flow rate of 45 gpm per foot when tested according to ASTM D 4716.
3. Fittings: HDPE with combination NPS 4 and NPS 6 outlet connection.
4. Couplings: Corrugated HDPE band.

B. Pipe and Fittings: Perforated, molded from HDPE complying with ASTM D 1248 into shape of interconnected corrugated pipes, with fittings and geotextile filter fabric jacket.

1. Size: 6 inches high by approximately 1-1/4 inches thick with a flow rate of 15 gpm per foot when tested according to ASTM D 4716.
2. Size: 12 inches high by approximately 2-1/2 inches thick with a flow rate of 30 gpm per foot when tested according to ASTM D 4716.
3. Size: 18 inches high by approximately 3-3/4 inches thick with a flow rate of 45 gpm per foot when tested according to ASTM D 4716.
4. Fittings: HDPE with combination NPS 4 and NPS 6 outlet connection.
5. Couplings: HDPE.

C. Pipe and Fittings: Perforated, smooth PVC complying with ASTM D 4216 and ASTM D 2729.

1. Size: 8 inches high by approximately 2-1/4 inches thick with a minimum flow rate equal to NPS 4 pipe.
2. Fittings: PVC with NPS 4 outlet connection.
3. Couplings: PVC.

2.6 SOIL MATERIALS

A. Filter material: Slag, gravel or crushed stone meeting GDOT gradations for sizes 57, 67, 78.

2.7 GEOTEXTILE FILTER FABRICS

A. Geotextile filter fabric shall meet the requirements of AASHTO M288 for separation applications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces and areas for suitable conditions where subdrainage systems are to be installed.

B. If subdrainage is required for landscaping, locate and mark existing utilities, underground structures, and aboveground obstructions before beginning installation and avoid disruption and damage of services.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Division 2 Section "Earthwork."

3.3 SUBDRAINAGE SYSTEM APPLICATIONS

A. NPS 4 Piping:
1. Perforated, PE pipe and fittings, couplings, and coupled joints.

2. Perforated, PVC sewer pipe and fittings for loose, bell-and-spigot joints.

B. NPS 6 Piping:

1. Perforated, PE pipe and fittings, couplings, and coupled joints.

3.4 PAVED AREA DRAINAGE SYSTEM APPLICATIONS

A. NPS 4 Piping:

1. Perforated, PE pipe and fittings, couplings, and coupled joints.
2. Perforated, PVC sewer pipe and fittings for loose, bell-and-spigot joints.

B. NPS 6 Piping:

1. Perforated, PE pipe and fittings, couplings, and coupled joints.
2. Perforated, PVC sewer pipe and fittings for loose, bell-and-spigot joints.

3.5 PAVED AREA DRAINAGE SYSTEM HEADER APPLICATIONS

A. NPS 4 and NPS 6 Piping:

1. ABS pipe and fittings, couplings, and coupled joints.
2. PE drainage tubing and fittings, couplings, and coupled joints.
3. PVC sewer pipe and fittings, couplings, and coupled joints.

B. NPS 8 and NPS 10 Piping:

1. ABS pipe and fittings, couplings, and coupled joints.
2. PE drainage tubing and fittings, couplings, and coupled joints.
3. PVC sewer pipe and fittings, couplings, and coupled joints.

C. NPS 12 Piping:

1. ABS pipe and fittings, couplings, and coupled joints.
2. PE drainage tubing and fittings, couplings, and coupled joints.
3. PVC sewer pipe and fittings, couplings, and coupled joints.

D. NPS 15 Piping:

1. Cast-iron soil pipe and fittings, [Extra-Heavy] [Service] class; gaskets; and gasketed joints.
2. PE drainage tubing and fittings, couplings, and coupled joints.
3. PVC sewer pipe and fittings, couplings, and coupled joints.

3.6 IDENTIFICATION

A. Materials and their installation are specified in Division 2 Section "Earthwork." Arrange

for installation of green warning tapes directly over piping.

1. Install warning tape or detectable warning tape over ferrous piping.
2. Install detectable warning tape over nonferrous piping and over edges of underground structures.

3.7 PAVED AREA DRAINAGE INSTALLATION

A. Excavate for paved area drainage system after subgrade material has been compacted, but before aggregate base coarse has been placed. Include horizontal distance of at least 6 inches between drainage pipe and trench walls. Grade bottom of trench excavations to required slope and compact to firm, solid bed for drainage system.

B. Filter Material: Place supporting layer of drainage fill over compacted subgrade to compacted depth of not less than 4 inches. After installing drainage piping, add filter material to top of pipe to perform tests. After satisfactory testing, cover piping with filter material to elevation of bottom of slab and compact filter material.

1. Before installing filter material, lay flat-style geotextile filter fabric in trench and overlap trench sides. After installing filter material, wrap top of filter material with flat-style geotextile filter fabric.

3.8 LANDSCAPING DRAINAGE INSTALLATION

A. Install drainage pipe with a horizontal distance of at least 6 inches between pipe and trench walls. Grade bottom of trench excavations to required slope and compact to firm, solid bed for drainage system.

B. Filter material: Place supporting layer of filter material over trench bottom to compacted depth of not less than 4 inches. After installing drainage piping, add filter material to top of pipe to perform tests. After satisfactory testing, cover piping to within 12 inches of finish grade. Place filter material in layers not exceeding 3 inches in loose depth; compact each layer placed.

1. Before installing filter material, lay flat-style geotextile filter fabric in trench and overlap trench sides. After installing filter material, wrap top of filter material with flat-style geotextile filter fabric.

C. Drainage Conduit: Provide trench width to allow installation of drainage conduit. Grade bottom of trench excavations to required slope and compact to firm, solid bed for drainage system.

D. Fill to Grade: Place native fill material over drainage [fill] [conduit]. Place material in loose-depth layers not exceeding 6 inches. Thoroughly compact each layer. Fill to finish grade.

3.9 PIPING INSTALLATION

A. Install piping beginning at low points of system, true to grades and alignment indicated,

with unbroken continuity of invert. Bed piping with full bearing in filtering material. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions and other requirements indicated.

1. Paved Area Subdrainage: Install piping pitched down in direction of flow, at a minimum slope of 0.5 percent.
2. Landscaping Subdrainage: Install piping pitched down in direction of flow, at a minimum slope of 0.5 percent and with a minimum cover of 36 inches (915 mm), unless otherwise indicated.
3. Lay perforated pipe with perforations down.

B. Use increasers, reducers, and couplings made for different sizes or materials of pipes and fittings being connected. Reduction of pipe size in direction of flow is prohibited.

C. Install PE piping according to ASTM D 2321.

D. Install PVC piping according to ASTM D 2321.

3.10 PIPE JOINT CONSTRUCTION

A. Cast-Iron Soil Pipe and Fittings: Hub and spigot, with rubber compression gaskets according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook." Use gaskets that match class of pipe and fittings.

B. Join PE pipe, tubing, and fittings with couplings for soiltight joints according to AASHTO's "Standard Specifications for Highway Bridges," Division II, Section 26.4.2.4, "Joint Properties."

C. Join perforated, PE pipe and fittings with couplings for soiltight joints according to AASHTO's "Standard Specifications for Highway Bridges," Division II, Section 26.4.2.4, "Joint Properties"; or according to ASTM D 2321.

D. Join PVC pipe and fittings according to ASTM D 3034 with elastomeric seal gaskets according to ASTM D 2321.

E. Join perforated, PVC pipe and fittings according to ASTM D 2729, with loose, bell-and-spigot joints.

F. Special Pipe Couplings: Join piping made of different materials and dimensions with special couplings made for this application. Use couplings that are compatible with and that fit both pipe materials and dimensions.

3.11 SUBDRAINAGE CLEANOUT INSTALLATION

A. Install cleanouts from subdrainage piping to finished grade. Locate cleanouts at beginning of piping run and at changes in direction. Install fittings so cleanouts open in direction of flow in piping.

B. In vehicular-traffic areas, use NPS 4 cast-iron soil pipe and fittings for subdrainage piping branch fittings and riser extensions to cleanout plug. Set cleanout frames and covers in a cast-in-place concrete anchor, 18 by 18 by 12 inches in depth. Set top of

cleanout plug flush with finished grade. Cast-iron pipe may also be used for cleanouts in nonvehicular-traffic areas.

C. In nonvehicular-traffic areas, use NPS 4 PVC pipe and fittings for subdrainage piping branch fittings and riser extensions to cleanout plug. Set cleanout frames and covers in a cast-in-place concrete anchor, 12 by 12 by 6 inches in depth. Set top of cleanout plug 1 inch above finished grade.

3.12 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect outfalls of subdrainage system to storm drainage system.

C. Where required, connect outfalls of subdrainage to stormwater sump pumps.

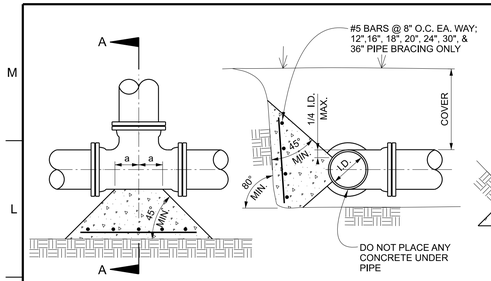
3.13 FIELD QUALITY CONTROL

A. Testing: After installing drainage fill to top of pipe, test drain piping with water to ensure free flow before backfilling. Remove obstructions, replace damaged components, and repeat test until results are satisfactory.

3.14 CLEANING

A. Clear interior of installed piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed. Place plugs in ends of uncompleted pipe at end of each day or when work stops.

END OF SECTION 33 46 00



PLAN

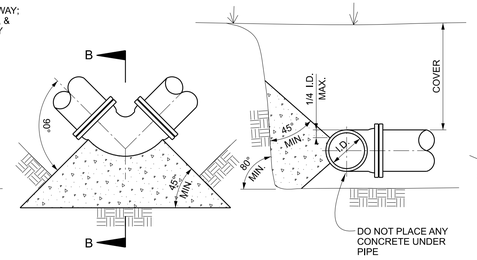
SECTION A-A

NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR TEES

PIPE DIA.	a	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	1	2
6"	6"	3'-0"	2	3
8"	7"	3'-0"	4	6
10"	9"	3'-0"	5	8
12"	10"	5'-0"	7	12
14"	1'-0"	5'-0"	10	16
16"	1'-1"	5'-0"	13	21
18"	1'-2"	5'-0"	16	26
20"	1'-4"	5'-0"	19	32
24"	1'-8"	5'-0"	28	46
30"	1'-11"	5'-0"	43	71
36"	2'-2"	5'-0"	62	102
42"	2'-4"	5'-0"	84	139
48"	2'-7"	5'-0"	109	181



PLAN

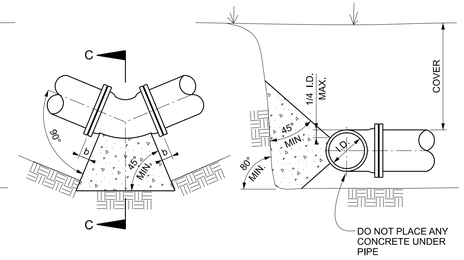
SECTION B-B

NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR 90° BENDS

PIPE DIA.	b	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	2	2
6"	5"	3'-0"	3	4
8"	5"	3'-0"	5	8
10"	5"	3'-0"	7	12
12"	6"	5'-0"	10	16
14"	6"	5'-0"	14	22
16"	6"	5'-0"	18	29
18"	6"	5'-0"	22	36
20"	6"	5'-0"	27	45
24"	7"	5'-0"	39	64
30"	8"	5'-0"	60	100
36"	8"	5'-0"	87	144
42"	9"	5'-0"	118	196
48"	9"	5'-0"	154	256



PLAN

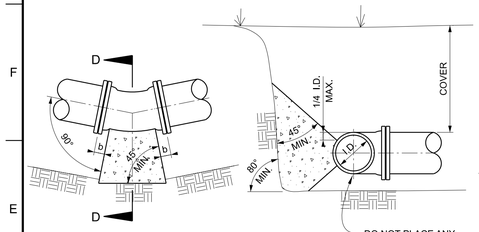
SECTION C-C

NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR 45° BENDS

PIPE DIA.	b	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	1	1
6"	5"	3'-0"	2	3
8"	5"	3'-0"	3	4
10"	5"	3'-0"	4	7
12"	6"	5'-0"	6	9
14"	6"	5'-0"	8	12
16"	6"	5'-0"	10	16
18"	6"	5'-0"	12	20
20"	6"	5'-0"	15	25
24"	7"	5'-0"	21	35
30"	8"	5'-0"	33	55
36"	8"	5'-0"	47	78
42"	9"	5'-0"	64	107
48"	9"	5'-0"	84	139



PLAN

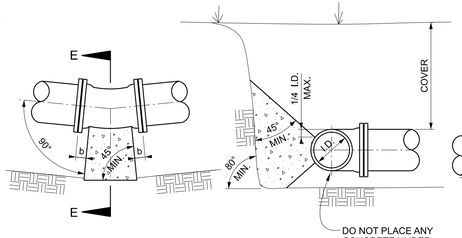
SECTION D-D

NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

TYPICAL CONCRETE BRACING FOR 22½° BENDS

PIPE DIA.	b	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	1	1
6"	5"	3'-0"	1	2
8"	5"	3'-0"	2	2
10"	5"	3'-0"	2	4
12"	6"	5'-0"	3	5
14"	6"	5'-0"	4	7
16"	6"	5'-0"	5	8
18"	6"	5'-0"	6	10
20"	6"	5'-0"	8	13
24"	7"	5'-0"	11	18
30"	8"	5'-0"	17	28
36"	8"	5'-0"	24	40
42"	9"	5'-0"	33	55
48"	9"	5'-0"	43	71



PLAN

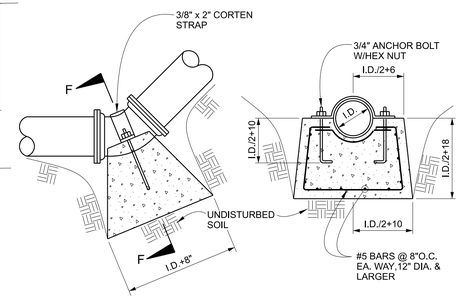
SECTION E-E

NOTES:

1. CONCRETE MUST BE POURED AGAINST UNDISTURBED SOIL.
2. DUCTILE IRON JOINTS SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE. PIPE SHALL BE WRAPPED IN PLASTIC ENCASEMENT.
3. ASSUMED ALLOWABLE SOIL BEARING STRESS IS 2,500 lbs./ SQ. FT. CONTACT ENGINEER SHOULD SOIL WITH LOWER BEARING STRESS BE ENCOUNTERED.

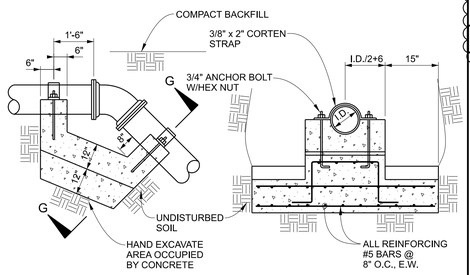
TYPICAL CONCRETE BRACING FOR 11¼° BENDS

PIPE DIA.	b	MIN. COVER	150 PSI BEARING AREA (SQ. FT.)	250 PSI BEARING AREA (SQ. FT.)
4"	5"	3'-0"	1	1
6"	5"	3'-0"	1	1
8"	5"	3'-0"	1	1
10"	5"	3'-0"	1	2
12"	6"	5'-0"	2	3
14"	6"	5'-0"	2	4
16"	6"	5'-0"	3	4
18"	6"	5'-0"	3	5
20"	6"	5'-0"	4	7
24"	7"	5'-0"	6	9
30"	8"	5'-0"	9	14
36"	8"	5'-0"	12	20
42"	9"	5'-0"	17	28
48"	9"	5'-0"	22	36



ELEVATION

SECTION F-F

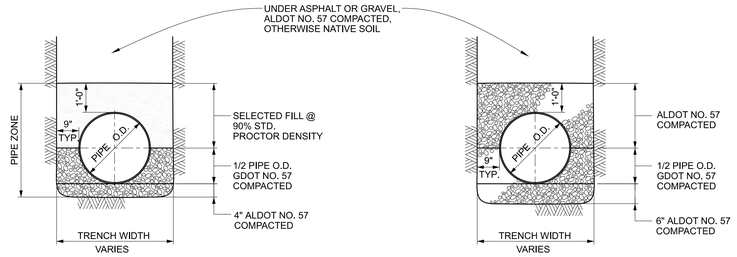


ELEVATION

SECTION G-G

CONCRETE BRACING FOR VERTICAL BENDS

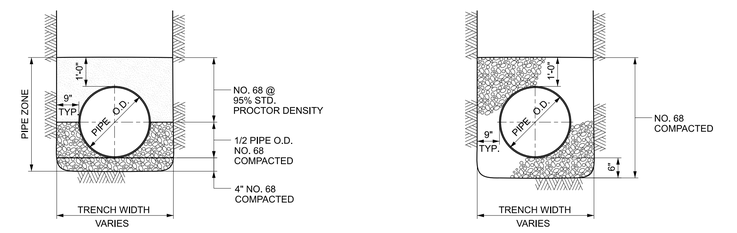
A1 STANDARD PIPE BRACING DETAILS — NO SCALE



TRENCH EXCAVATED IN SOIL

TRENCH EXCAVATED IN ROCK

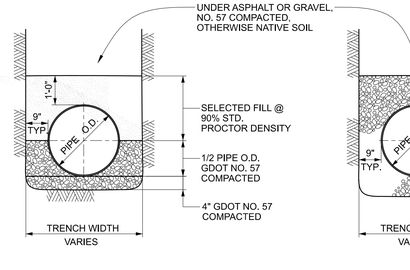
K10 REINFORCED CONCRETE PIPE BEDDING & BACKFILL DETAIL — NO SCALE



TRENCH EXCAVATED IN SOIL

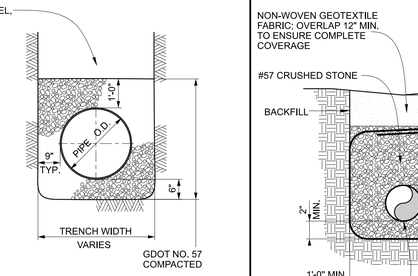
TRENCH EXCAVATED IN ROCK

G10 PVC PIPE BEDDING & BACKFILL DETAIL — NO SCALE



TRENCH EXCAVATED IN SOIL

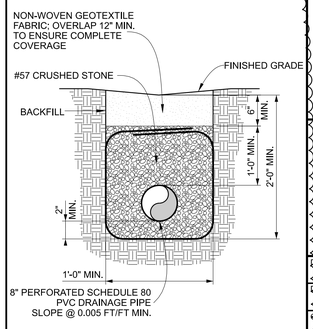
N.T.S.



TRENCH EXCAVATED IN ROCK

N.T.S.

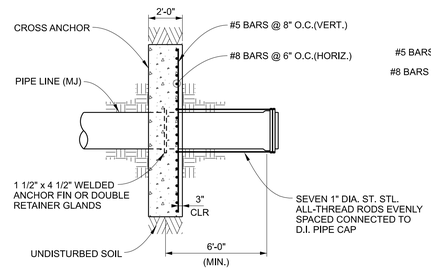
G10 DUCTILE IRON PIPE BEDDING & BACKFILL DETAIL



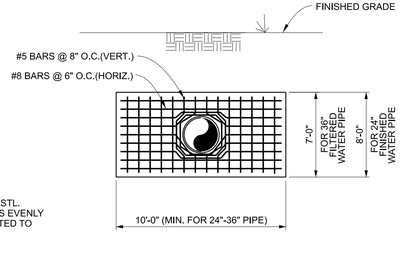
N.T.S.

G14 FRENCH DRAIN DETAIL

NOTE: OTHER METHOD OF RESTRAINING PLUG MAY BE CONSIDERED, IF DESIRED. SUBMIT OTHER OPTIONS TO ENGINEER FOR REVIEW. 4



PLAN



ELEVATION

A10 CONCRETE CROSS ANCHOR DETAIL — NO SCALE

KREBS ENGINEERING

GEORGIA REGISTERED No. 41549 PROFESSIONAL ENGINEER 12/07/22 JARRED M. JACKSON

COWETA COUNTY WATER & SEWERAGE AUTHORITY

SHENANDOAH WASTEWATER TREATMENT FACILITY IMPROVEMENTS

COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

Designed	Project No.
JMJ	20518
Drawn: CLM	
Checked: MAS	

Revisions

No.	Date	Description
4	01/25/23	ADDENDUM 4

Sheet Title: MISCELLANEOUS DETAILS

Issue Date: DEC., 2022

Sequence: 74 of --

Sheet No.: DT-01

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1/25/2023
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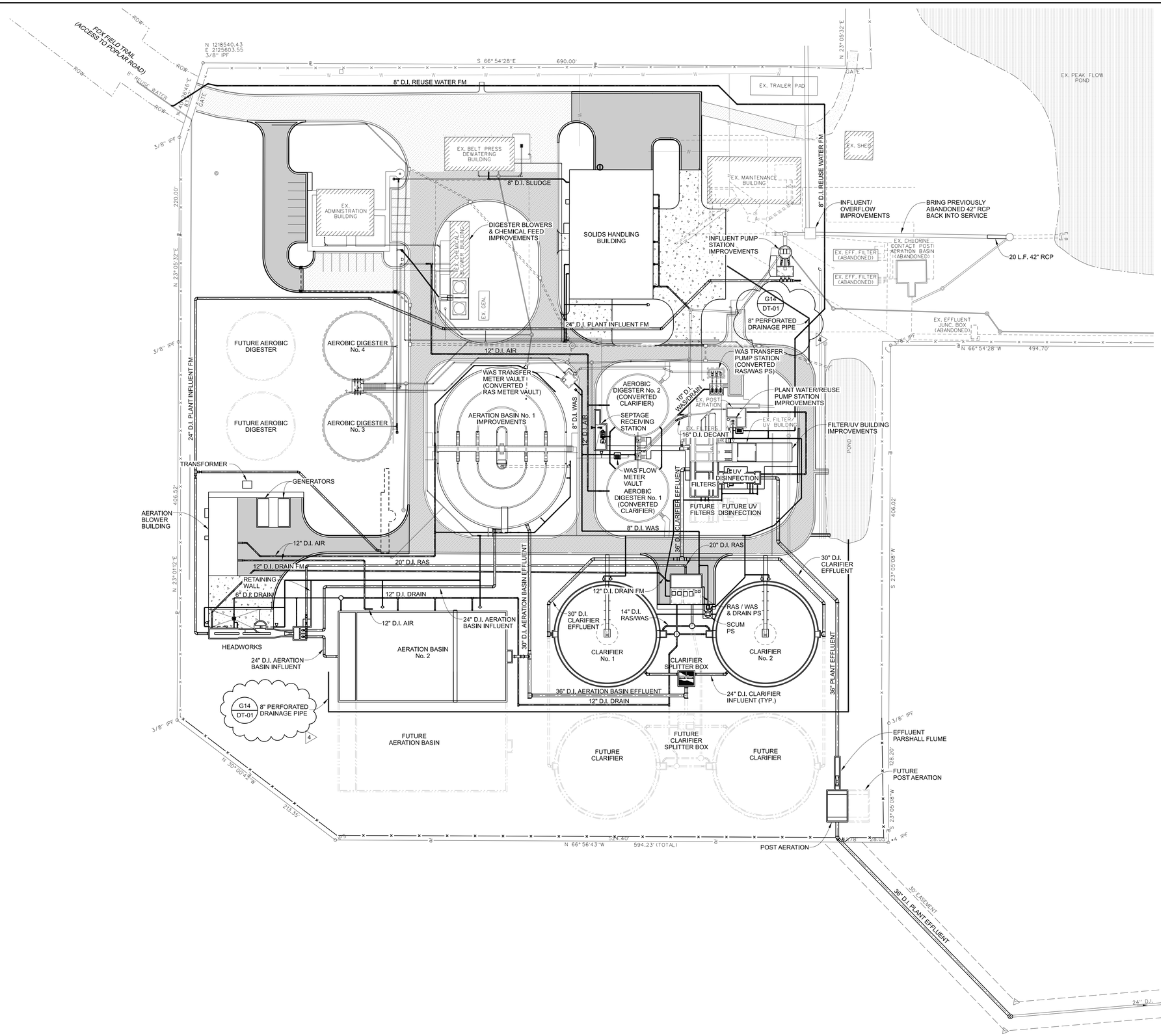

KREBS ENGINEERING

GEORGIA REGISTERED No. 41549 PROFESSIONAL ENGINEER 12/07/78 JARRED M. JACKSON

COWETA COUNTY WATER & SEWERAGE AUTHORITY
SHENANDOAH WASTEWATER TREATMENT FACILITY IMPROVEMENTS
COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

Designed: JMJ	Project No.: 20518
Drawn: CLM	
Checked: MAS	

Revisions

No.	Date	Description
4	01/25/23	ADDENDUM 4

Sheet Title: OVERALL YARD PIPING PLAN

Issue Date: DEC., 2022 | Sheet No.: C3-11

Sequence: -- of --

A1 | PLAN | 1" = 50'

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1/24/2023
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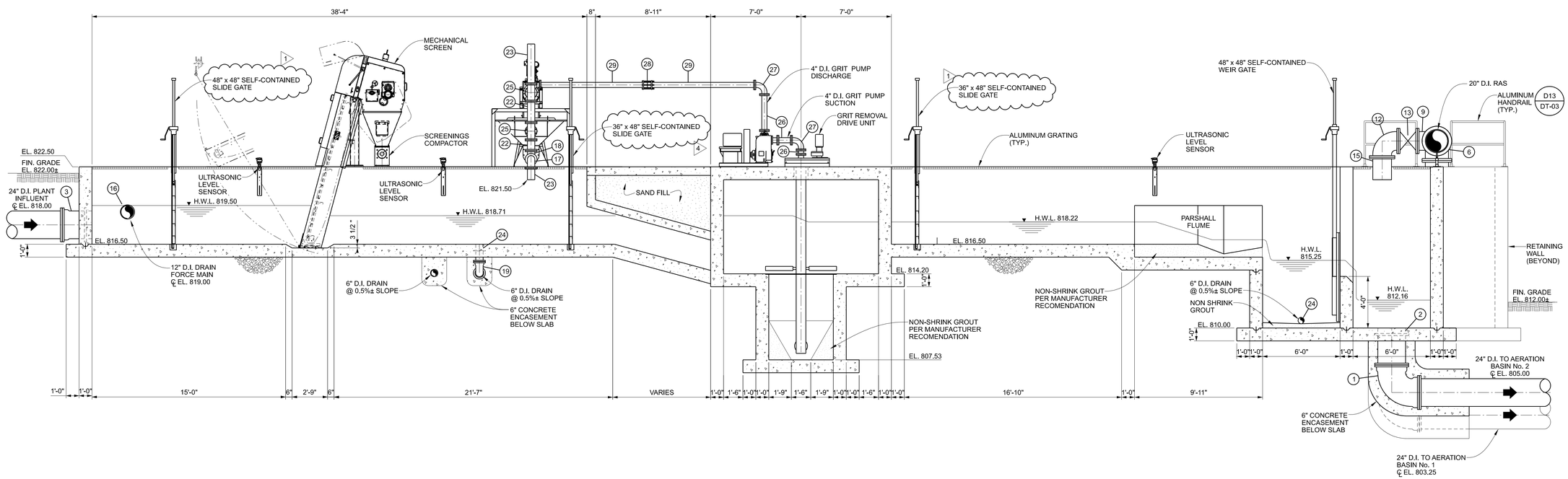
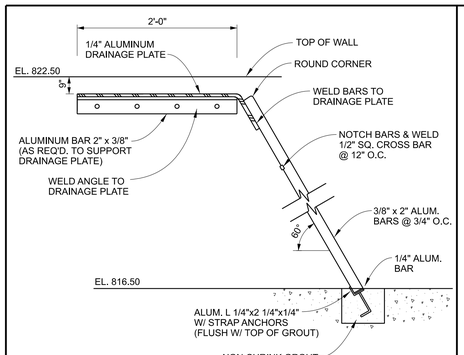
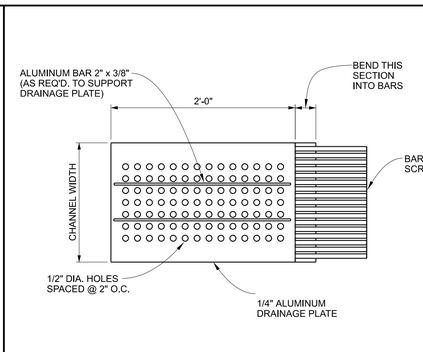


FITTINGS LIST

1. 24" D.I. 90° BEND, RJ-RJ
2. 24" D.I. WALL PIPE, PE-WS-PE
3. 24" D.I. WALL PIPE, MJ-WS-PE
4. RESERVED
5. 20" D.I. 90° BEND, RJ-RJ
6. 20" D.I. 90° BEND, FLG-FLG
7. 20" D.I. PIPE, FLG-PE
8. 20" D.I. PIPE, FLG-FLG
9. 20" x 16" TEE, FLG-FLG
10. 20" D.I. BLIND FLANGE
11. RESERVED
12. 16" D.I. 90° BEND, FLG-FLG
13. 16" D.I. PLUG VALVE, FLG-FLG
14. RESERVED
15. 16" D.I. PIPE, FLG-PE
16. 12" D.I. WALL PIPE, MJ-WS-PE
17. 6" D.I. 90° BEND, FLG-FLG
18. 6" D.I. 90° BASE BEND, FLG-FLG
19. 6" D.I. 90° BEND, RJ-RJ
20. 6" x 6" D.I. TEE, ALL MJ
21. 6" D.I. PLUG VALVE, MJ-MJ
22. 6" D.I. PIPE, FLG-FLG
23. 6" D.I. PIPE, FLG-PE
24. 6" D.I. WALL PIPE, PE-WS-PE
25. 6" x 6" D.I. TEE, ALL FLG
26. 4" D.I. PIPE, FLG-FLG
27. 4" D.I. 90° LR BEND, FLG-FLG
28. 4" MECHANICAL COUPLING
29. 4" D.I. PIPE, FLG-PE





A1 SECTION 1/4" - 1'-0"

A10 BAR SCREEN DETAIL NO SCALE

A13 DRAINAGE PLATE DETAIL NO SCALE

KREBS ENGINEERING

GEORGIA REGISTERED No. 41549 PROFESSIONAL 12/07/23 ENGINEER JARRED M. JACKSON

COWETA COUNTY WATER & SEWERAGE AUTHORITY
SHENANDOAH WASTEWATER TREATMENT FACILITY IMPROVEMENTS
COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

Designed	JMJ
Drawn	CLM
Checked	MAS
Project No.	20518

Revisions

No.	Date	Description
1	01/13/23	ADDENDUM 1
4	01/25/25	ADDENDUM 4

Sheet Title: HEADWORKS SECTION

Issue Date: DEC., 2022

Sheet No.: C6-03

Sequence: -- of --

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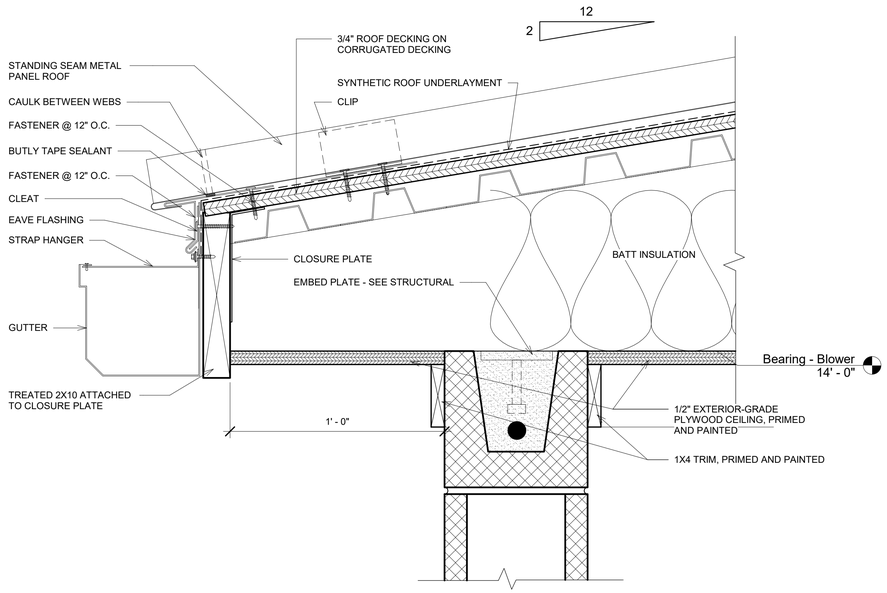
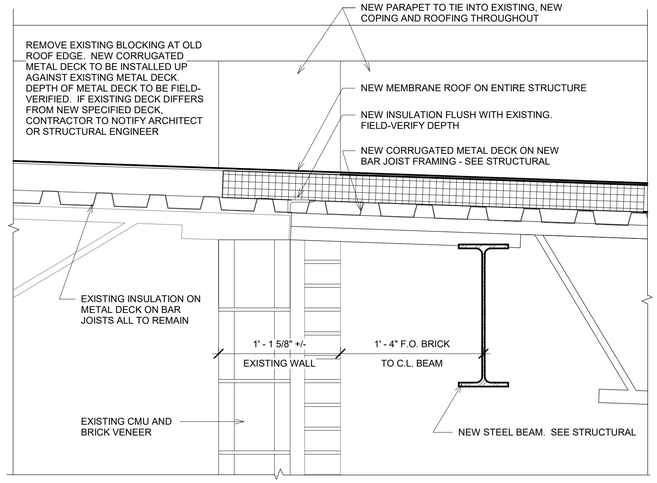
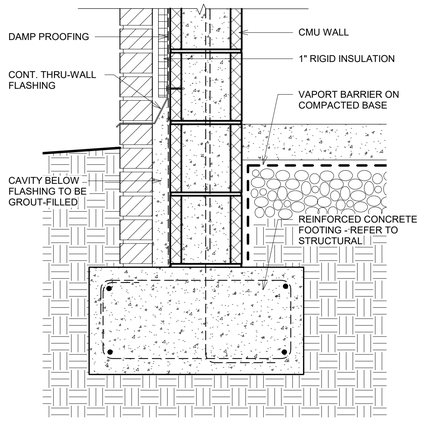


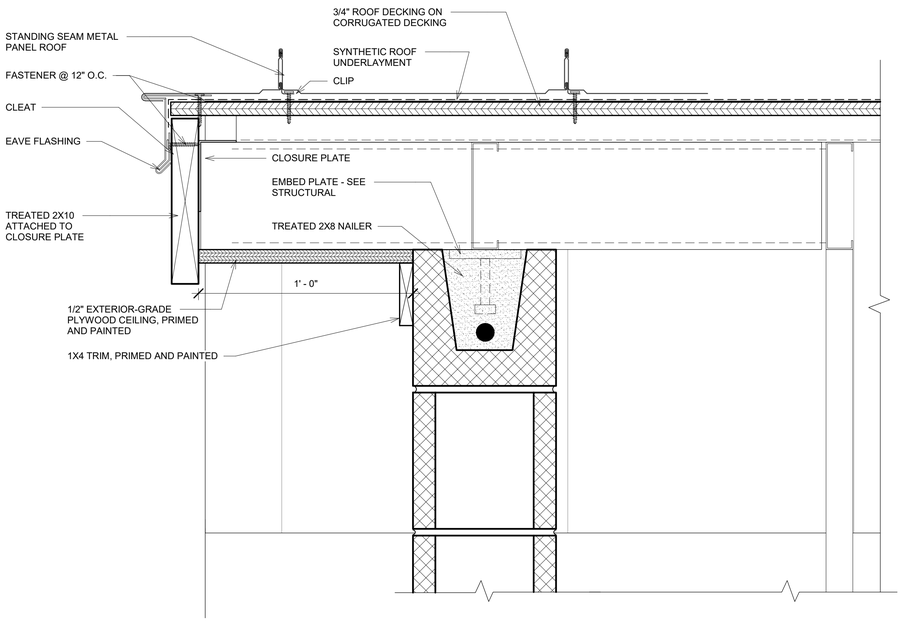
2 Roof Edge Detail - A
3" = 1'-0"



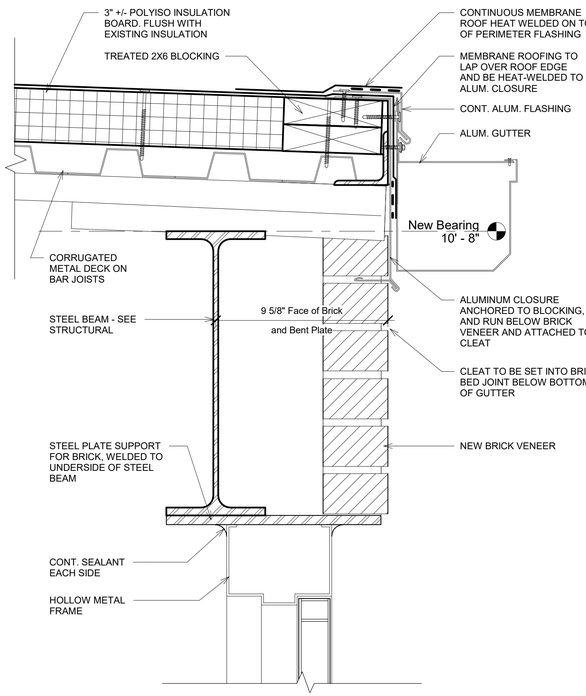
4 Roof Interface Detail
1 1/2" = 1'-0"



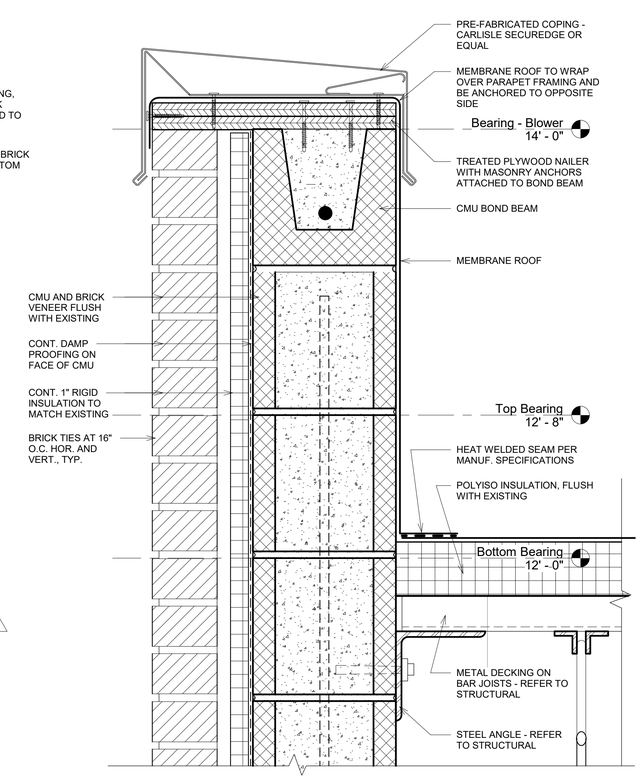
7 Foundation Detail
1 1/2" = 1'-0"



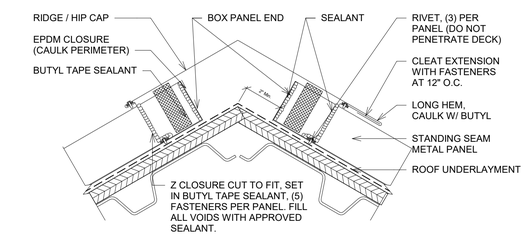
3 Roof Edge Detail - B
3" = 1'-0"



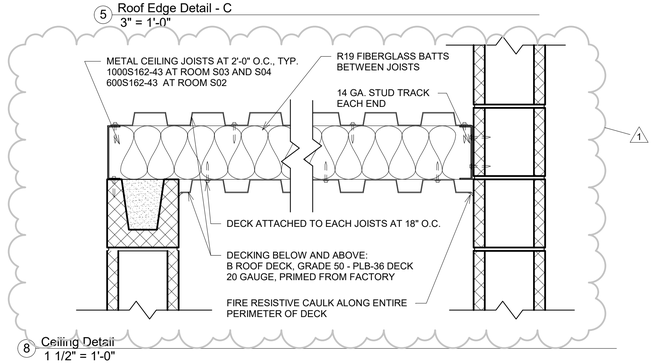
5 Roof Edge Detail - C
3" = 1'-0"



6 Roof Edge Detail - D
3" = 1'-0"



1 Roof Ridge Detail
3" = 1'-0"



8 Ceiling Detail
1 1/2" = 1'-0"

KREBS ENGINEERING
STATE OF GEORGIA REGISTERED NO. RA014763 PROFESSIONAL ARCHITECT JARED BUSSEY
DEC., 2022
jb A
Jared Bussey, Architect
1604 28th Ave. S
Birmingham, AL 35209
205-533-3563

COWETA COUNTY
WATER AND SEWERAGE AUTHORITY
SHENANDOAH WATER
TREATMENT FACILITY IMPROVEMENTS
COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

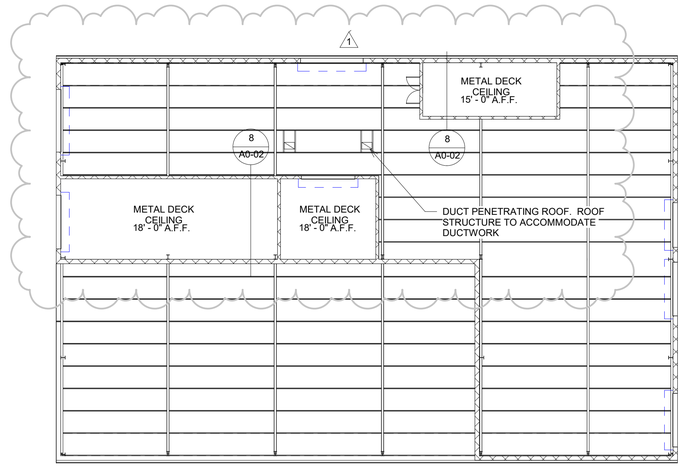
Designed	JHB
Drawn	JHB
Checked	JHB
Project No.	20518

Revisions

No.	Date	Description
1	1-25-23	ADDENDUM 4

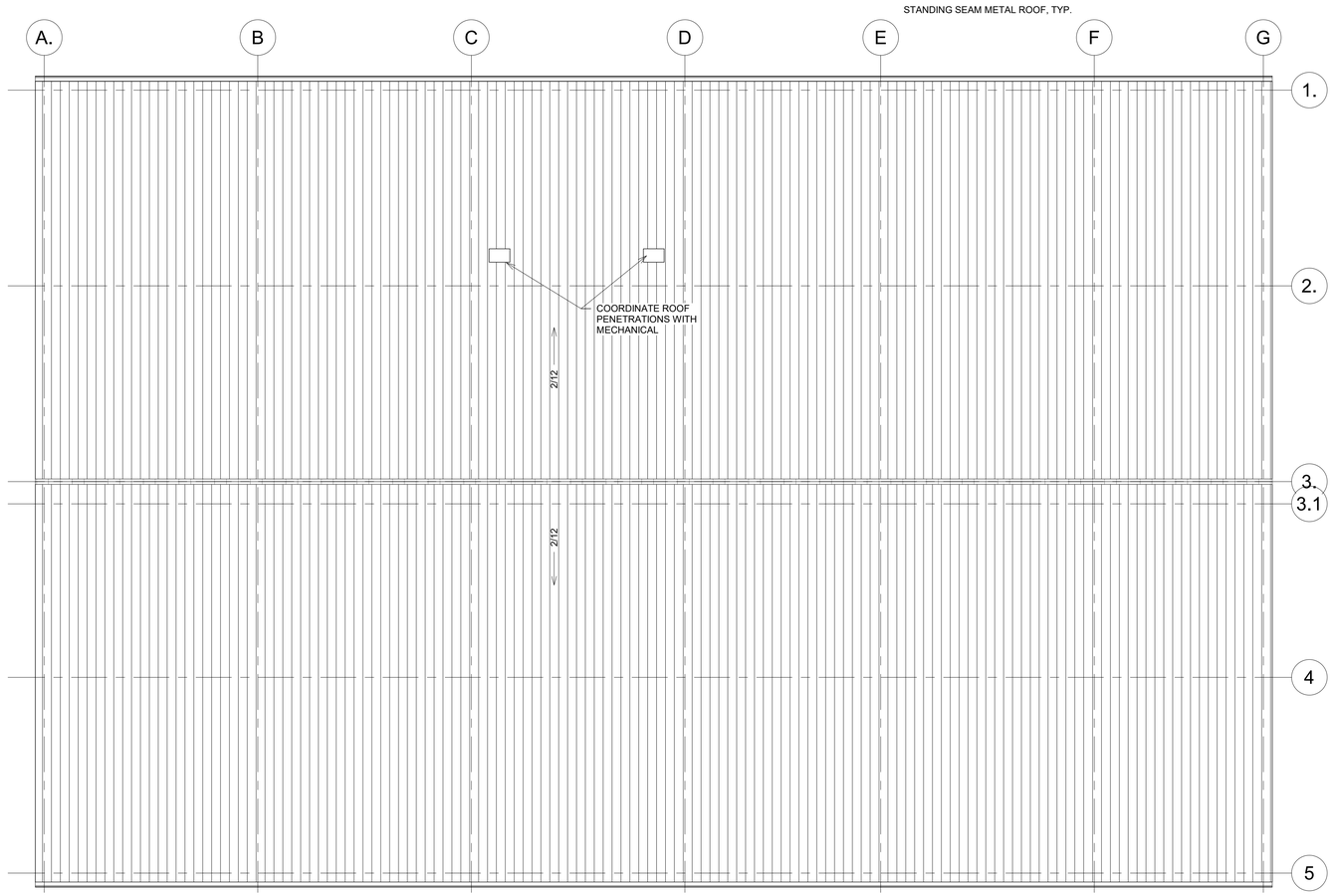
Sheet Title
ARCHITECTURAL STANDARD DETAILS

Issue Date	DEC., 2022
Sequence	of ...
Sheet No.	A0-02

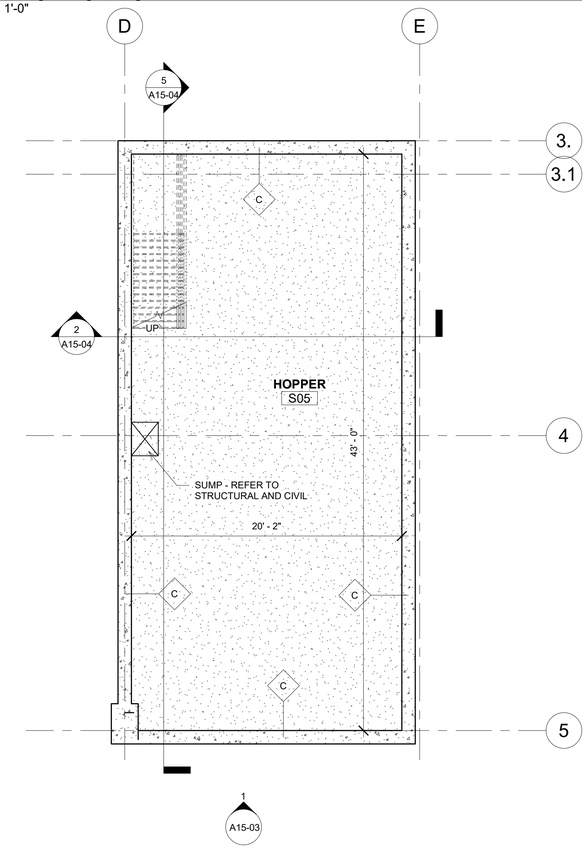


CEILING:
METAL STUDS TO SPAN ROOM (REFER TO STRUCTURAL)
R-19 BATT INSULATION IN BETWEEN FRAMING
METAL DECKING ON TOP AND BOTTOM OF FRAMING. SEE DETAIL.

3 Solids Handling Building - Ceiling Plan
1/16" = 1'-0"



2 Roof Plan - Solids Handling
1/8" = 1'-0"



1 Floor Plan - Solids Handling Hopper Slab
3/16" = 1'-0"

KREBS ENGINEERING

STATE OF GEORGIA
REGISTERED
NO. RA014763
PROFESSIONAL
ARCHITECT
JARED BUSSEY

DEC., 2022

jbA
Jared Bussey, Architect
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COWETA COUNTY
WATER AND SEWERAGE AUTHORITY
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TREATMENT FACILITY IMPROVEMENTS
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WATER & SEWERAGE
AUTHORITY

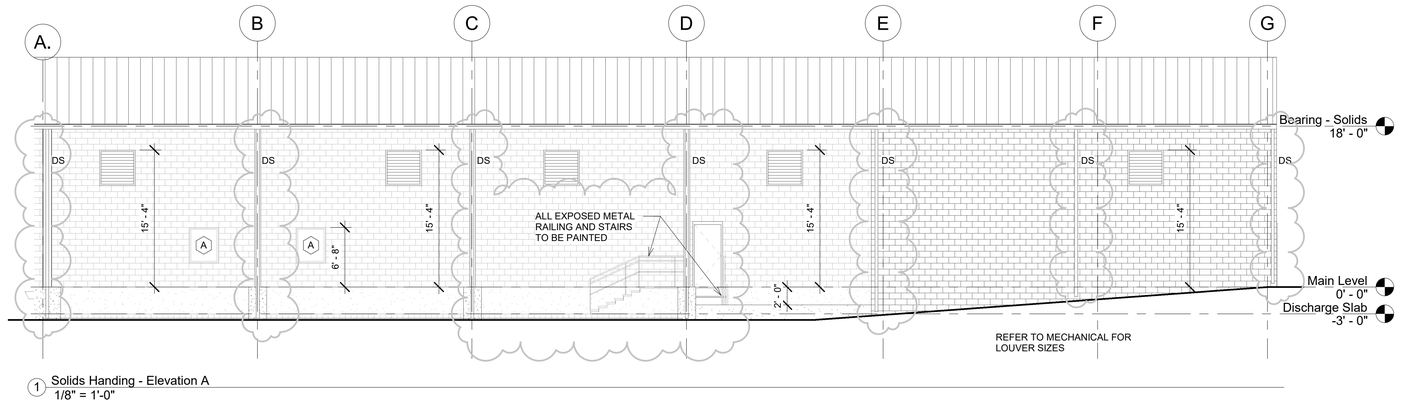
Designed JHB	Project No. 20518
Drawn JHB	
Checked JHB	

Revisions

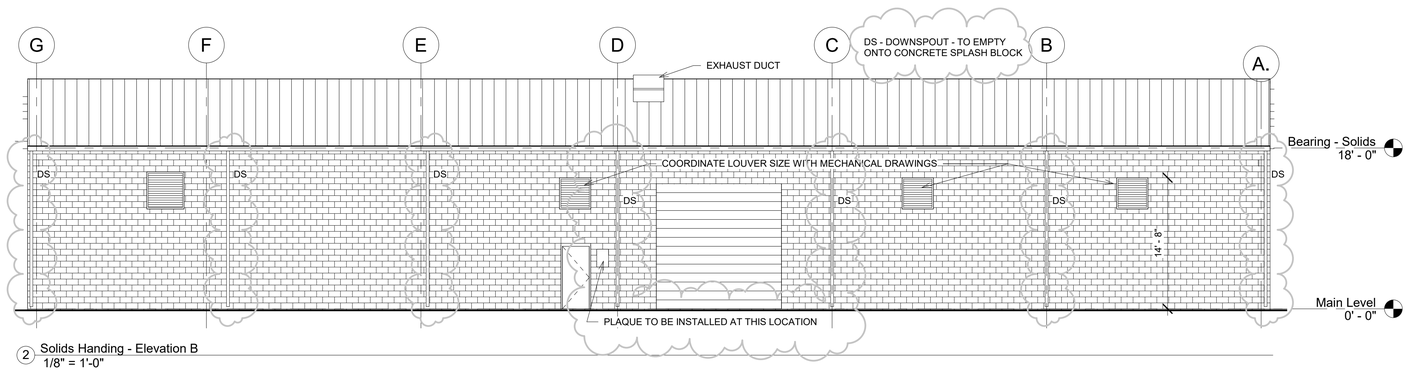
No.	Date	Description
1	1-25-23	ADDENDUM 4

Sheet Title
SOLIDS HANDLING BUILDING ARCHITECTURAL ROOF PLAN

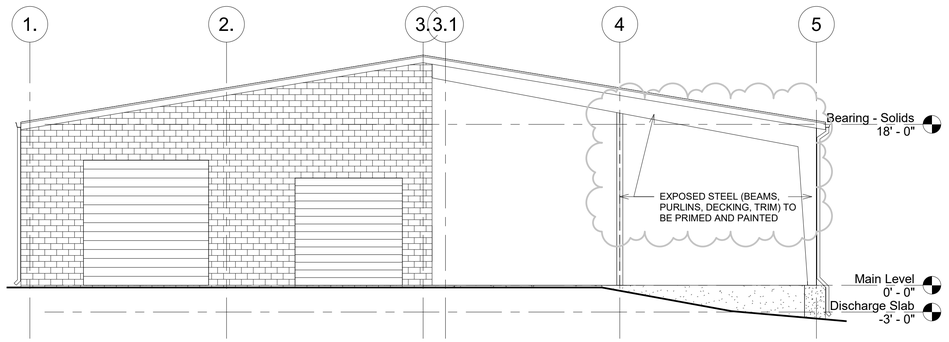
Issue Date DEC., 2022	Sheet No. A15-02
Sequence of ...	



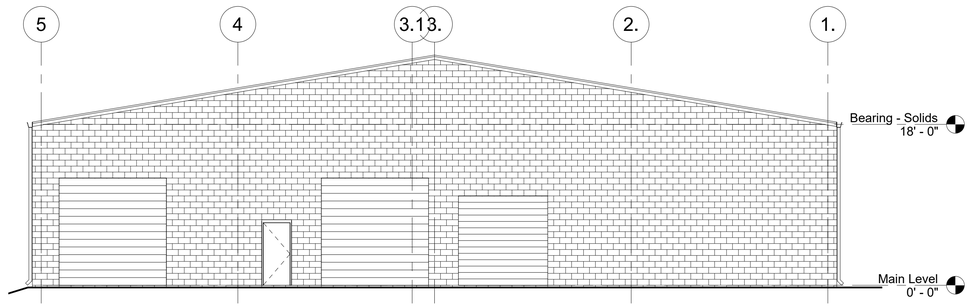
1 Solids Handing - Elevation A
1/8" = 1'-0"



2 Solids Handing - Elevation B
1/8" = 1'-0"



3 Solids Handing - Elevation C
1/8" = 1'-0"



4 Solids Handing - Elevation D
1/8" = 1'-0"

KREBS ENGINEERING

STATE OF GEORGIA
REGISTERED
NO. RA014763
PROFESSIONAL
ARCHITECT
JARED BUSSEY

DEC., 2022

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Jared Bussey, Architect
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Birmingham, AL 35209
205-533-3563

COWETA COUNTY
WATER AND SEWERAGE AUTHORITY

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AUTHORITY

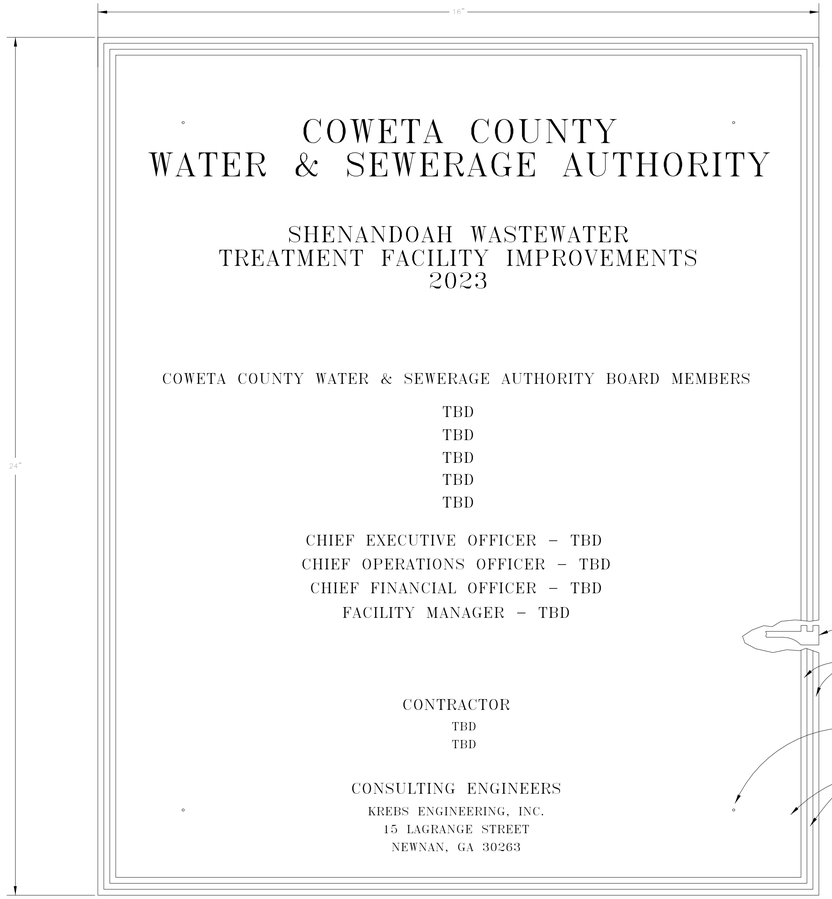
Designed JHB	Project No. 20518
Drawn JHB	
Checked JHB	

Revisions

No.	Date	Description
1	01/25/23	ADDENDUM NO. 4

Sheet Title
SOLIDS HANDLING BUILDING - ARCHITECTURAL EXTERIOR ELEVATIONS

Issue D DEC., 2022	A15-03
Sequence of ...	



KREBS ENGINEERING

STATE OF GEORGIA
REGISTERED
NO. RA014763
PROFESSIONAL
ARCHITECT
JARED BUSSEY

DEC., 2022

jbA
Jared Bussey, Architect
1604 28th Ave. S
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205-533-3563

COWETA COUNTY
WATER AND SEWERAGE AUTHORITY
SHENANDOAH WATER WATER
TREATMENT FACILITY IMPROVEMENTS
COWETA COUNTY, GEORGIA

COWETA COUNTY
WATER & SEWERAGE
AUTHORITY

Designed: JHB	Project No.: 20518
Drawn: JHB	
Checked: JHB	

Revisions

No.	Date	Description
1	01/25/23	ADDENDUM NO. 4

Sheet Title: PLAQUE

Issue Date: DEC., 2022	Sheet No.: A15-06
Sequence of ...	

PRE-ENGINEERED METAL BUILDING:

1. THE DESIGN, MANUFACTURE, QUALITY ASSURANCE AND ERECTION OF THE PRE-ENGINEERED METAL BUILDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MBMA METAL BUILDING SYSTEMS MANUAL.

2. THE PRE-ENGINEERED METAL BUILDING MANUFACTURER IS RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE PRE-ENGINEERED METAL BUILDING. ALL DESIGN DRAWINGS FOR THE PRE-ENGINEERED METAL BUILDING SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF GEORGIA.

   A. MBA ENGINEERS, INC. IS NOT RESPONSIBLE OR LIABLE FOR THE PRE-ENGINEERED METAL BUILDING DESIGN.

3. THE FOUNDATIONS AND DETAILS SHOWN ON THESE DRAWINGS ARE BASED UPON PRELIMINARY AND/OR ASSUMED LOADING AND ARE SHOWN FOR BID PURPOSES ONLY. WHEN THE PRE-ENGINEERED METAL BUILDING MANUFACTURER HAS BEEN SELECTED, AND THE FINAL DESIGN FOR THE METAL BUILDING IS COMPLETED, THE PRE-ENGINEERED METAL BUILDING ENGINEER SHALL FURNISH FINAL BUILDING REACTIONS AND NECESSARY DETAILS TO FOUNDATION ENGINEER FOR REVIEW AND MODIFICATION OF THE FOUNDATION DESIGN, IF REQUIRED.

4. THE PRE-ENGINEERED METAL BUILDING MANUFACTURER SHALL DESIGN AND FURNISH ALL ANCHOR BOLTS FOR THE METAL BUILDING COLUMNS. COORDINATE WITH THE STRUCTURAL DRAWINGS FOR CONCRETE STRENGTHS AND EMBEDMENT RESTRICTIONS.

5. THE PRE-ENGINEERED METAL BUILDING AND COMPONENTS SHALL BE DESIGNED IN ACCORDANCE WITH THE GRAVITY AND LATERAL DESIGN LOAD REQUIREMENTS OF THE PROJECT BUILDING CODE. IN ADDITION, THE FOLLOWING DESIGN REQUIREMENTS SHALL ALSO APPLY:

   A. DESIGN METAL BUILDING FRAME FOR 20 PSF LIVE LOAD (WITHOUT REDUCTION) AND 5 PSF COLLATERAL LOAD.
   B. LIMIT LATERAL DEFLECTION OF METAL BUILDING FRAME TO L/600.
   C. DESIGN FOR ALL ARCHITECTURAL DEAD LOADS. COORDINATE WITH ARCHITECTURAL DRAWINGS TO ESTIMATE THESE LOADS.
   D. DESIGN FOR ANY MECHANICAL UNITS OR FANS. COORDINATE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.

DESIGN CRITERIA:

1. GOVERNING CODE:

   A. INTERNATIONAL BUILDING CODE, I.B.C. 2018

2. GRAVITY DESIGN LOADS:

   A. DEAD

      1. DESIGN DEAD LOADS ARE BASED ON THE SELF WEIGHT OF CONSTRUCTION MATERIALS SHOWN IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. ANY ALTERNATE MATERIALS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER TO REVIEW.

   B. LIVE:

      1. TYPICAL FLOOR 100 PSF
      2. ROOF 20 PSF

   C. SNOW

      1. GROUND SNOW LOAD (Pg) = 5 PSF
      2. FLAT ROOF SNOW LOAD (Pf) = 5 PSF
      3. SNOW EXPOSURE FACTOR (Ce) = 1.0
      4. SNOW LOAD IMPORTANCE FACTOR (Is) = 1.0
      5. THERMAL FACTOR (Ct) = 1.0

3. LATERAL DESIGN LOADS:

   A. WIND

      1. DESIGNED PER ASCE 7-16
      2. ULTIMATE WIND SPEED = 114 MPH
      3. RISK CATEGORY = III
      4. BUILDING CATEGORY = ENCLOSED
      5. EXPOSURE CATEGORY = C
      6. INTERNAL PRESSURE COEFFICIENT (GCpi) = ±0.18
      7. COMPONENTS & CLADDING WIND PRESSURES SEE CHART

   B. EARTHQUAKE

      1. SEISMIC RISK CATEGORY = III
      2. SEISMIC IMPORTANCE FACTOR (Ie) = 1.25
      3. MAPPED SPECTRAL RESPONSE ACCELERATIONS
         A. Ss = 0.160
         B. S1 = 0.082
      4. SOIL SITE CLASS = D
      5. DESIGN SPECTRAL RESPONSE ACCELERATIONS
         A. Sds = 0.171
         B. Sd1 = 0.131
      6. SEISMIC DESIGN CATEGORY = B
      7. BASIC SEISMIC-FORCE-RESISTING SYSTEM
         BLOWER BLDG. & UV FILTER BLGD. - ORDINARY REINFORCED MASONRY SHEARWALLS
      8. DESIGN BASE SHEAR = 30 KIPS
      9. SEISMIC RESPONSE COEFFICIENT (Cs) = 0.107
      10. RESPONSE MODIFICATION FACTOR (R) = 2
      11. ANALYSIS PROCEDURE:
          EQUIVALENT LATERAL FORCE

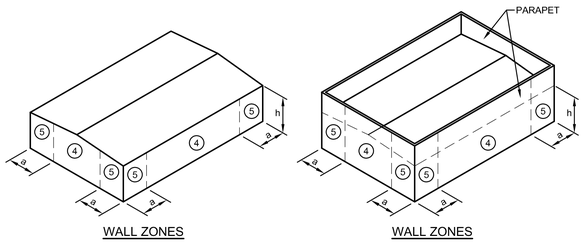
SPECIAL INSPECTIONS:

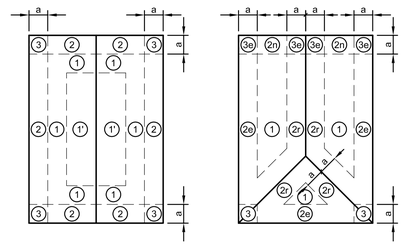
1. THE OWNER SHALL EMPLOY A QUALIFIED TESTING AGENT/ENGINEER TO PROVIDE SPECIAL INSPECTIONS. SPECIAL INSPECTORS SHALL SUBMIT RESUME OF EXPERIENCE AND QUALIFICATIONS OF ALL INDIVIDUALS PERFORMING WORK TO THE ARCHITECT/STRUCTURAL ENGINEER OF RECORD FOR APPROVAL PRIOR TO ANY WORK BEING PERFORMED. SPECIAL INSPECTIONS SHOULD BE IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2018 ED. AND AS INDICATED IN THE SPECIFICATIONS.

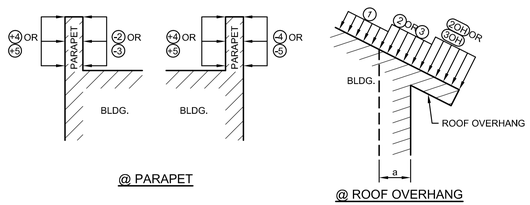
COMPONENTS AND CLADDING DESIGN WIND PRESSURES (PSF)

ZONE	EFFECTIVE WIND AREA									
	10 SF		20 SF		50 SF		100 SF		200 SF	
	XXX	-XXX	XXX	-XXX	XXX	-XXX	XXX	-XXX	XXX	-XXX
1	16	-43	16	-42	16	-38	16	-36	16	-36
1'	16	-26	16	-26	16	-26	16	-26	16	-26
2	16	-60	16	-56	16	-51	16	-47	16	-47
3	16	-81	16	-74	16	-64	16	-56	16	-56
2OH	16	-60	16	-56	16	-51	16	-47	16	-47
3OH	16	-94	16	-85	16	-73	16	-64	16	-64
4	29	-31	27	-30	26	-28	24	-27	24	-27
5	29	-38	27	-36	26	-32	24	-30	24	-30

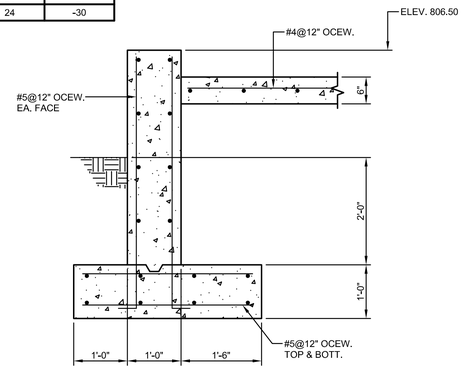
NOTE:
1. PLUS AND MINUS SIGNS DENOTE PRESSURE ACTING TOWARD AND AWAY FROM BUILDING SURFACES.
2. PRESSURE ZONE LOCATIONS ARE IN ACCORDANCE WITH ASCE 7-16.
3. PRESSURES INDICATED ARE BASED ON ULTIMATE WIND SPEEDS PER ASCE 7-16. TO CONVERT PRESSURES TO NOMINAL LOADS, MULTIPLY VALUES IN CHART BY A FACTOR OF 0.6.
4. a = 3'



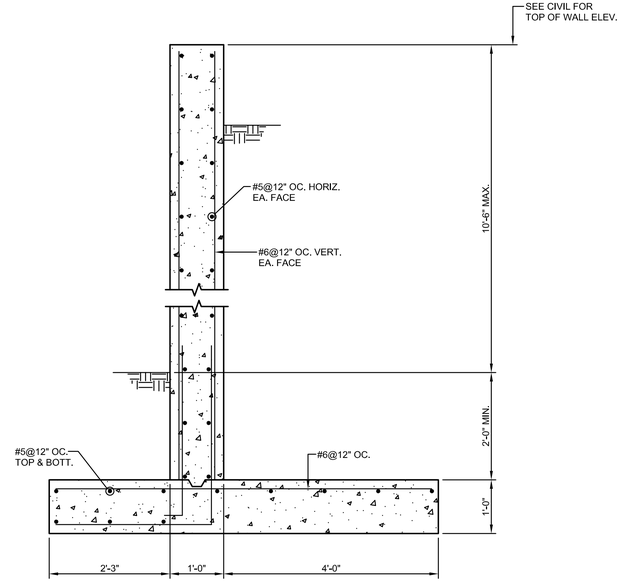




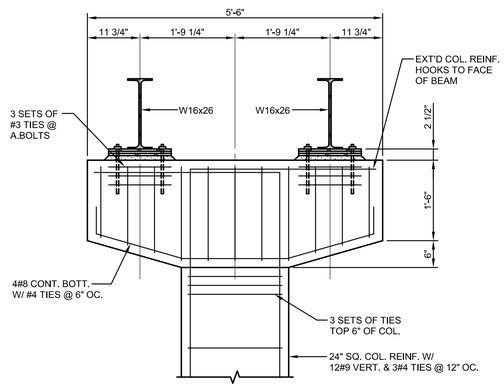
ZONE LAYOUT DIAGRAMS



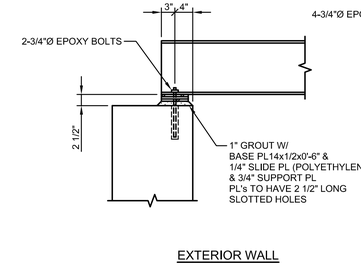
SEPTAGE RECEIVING STATION RETAINING WALL



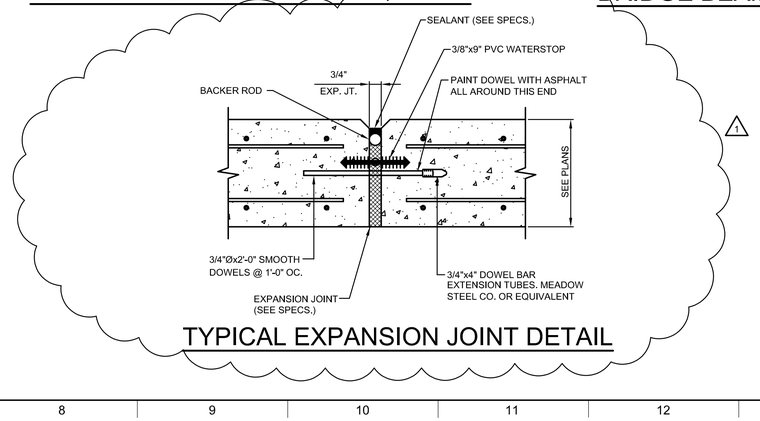
TYPICAL SITE RETAINING WALL DETAIL



AERATION BASIN BRIDGE SUPPORT



BRIDGE BEAM TO CONC. DETAILS



TYPICAL EXPANSION JOINT DETAIL

KREBS ENGINEERING

GEORGIA PROFESSIONAL ENGINEER No. 33120 PROFESSIONAL 12/07/22 ENGINEER HOKE S. LINDSEY

COWETA COUNTY
WATER & SEWERAGE AUTHORITY
SHENANDOAH WASTEWATER TREATMENT
FACILITY IMPROVEMENTS
COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

Designed	Project No.
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Drawn: HSL	
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Revisions

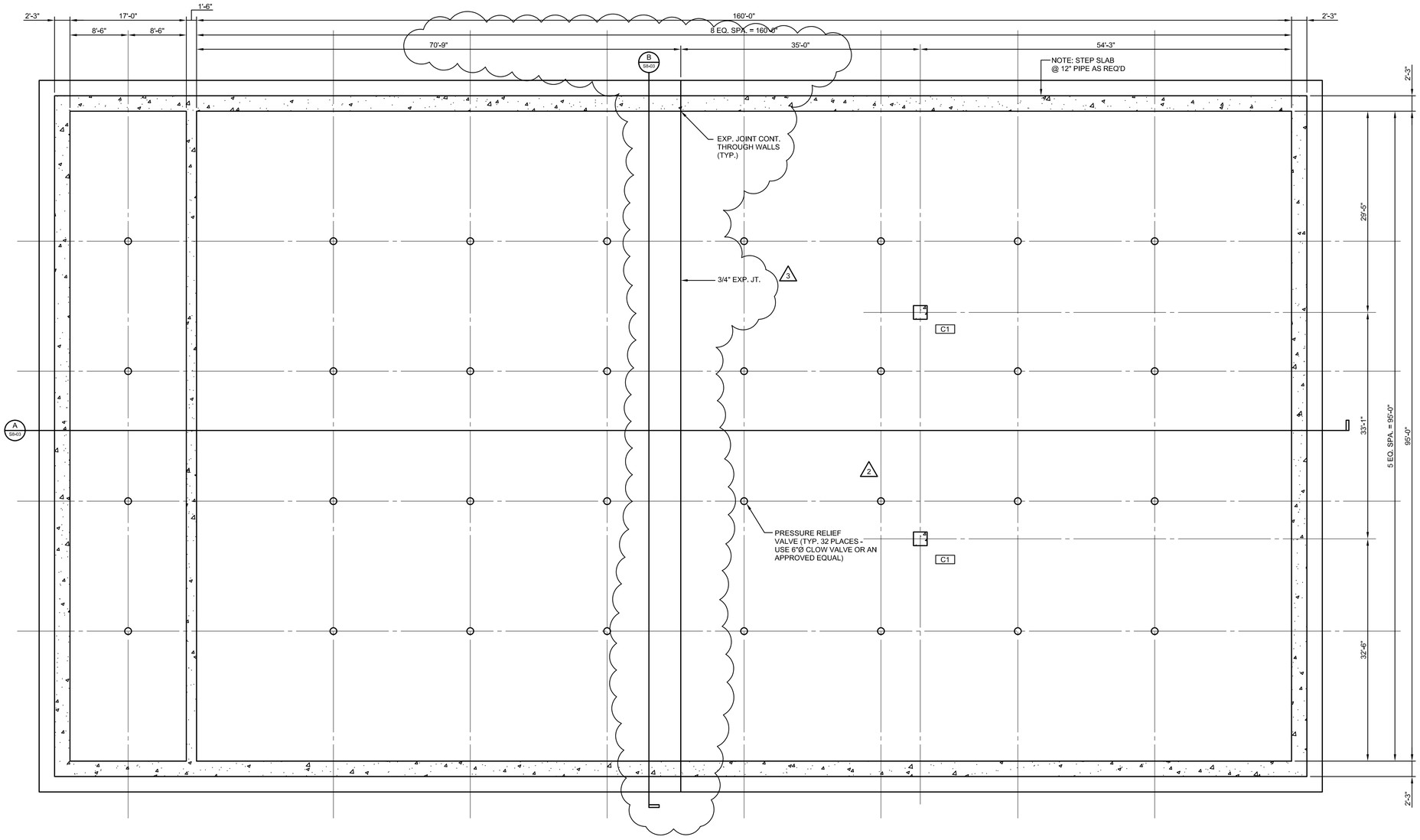
No.	Date	Description
1	1-25-23	ADDENDUM #4

Sheet Title: GENERAL STRUCTURAL NOTES

Issue Date: DEC., 2022
Sheet No.: S0-02
Sequence of

MBA ENGINEERS, INC.
STRUCTURAL CIVIL GEOTECHNICAL

$NODES
$DATES
$STATUS
$FILES



FOUNDATION & LOWER LEVEL PLAN

1/8" = 1'-0" TOP OF SLAB ELEV. 789.00

NOTES:
1. C1 - DENOTES 24x24 COLUMN. REINF. W/ 12#9 VERT. & 3#4 TIES @ 12" OC. G.C. TO COORD. COL. LOCATION W/ EXIST. BRIDGE SUPPORT DIMS.

KREBS ENGINEERING

GEORGIA REGISTERED No. 33120 PROFESSIONAL 12/07/22 ENGINEER HOKE S. LINDSEY

COWETA COUNTY
WATER & SEWERAGE AUTHORITY

SHENANDOAH WASTEWATER TREATMENT
FACILITY IMPROVEMENTS

COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

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Revisions

No.	Date	Description
1	1-13-23	ADDENDUM #1
2	1-20-23	ADDENDUM #3
3	1-25-23	ADDENDUM #4

Sheet Title: AERATION BASIN FND. & LOWER LEVEL STRUCTURAL PLAN

Issue Date: DEC., 2022

Sheet No.: S8-01

Sequence of

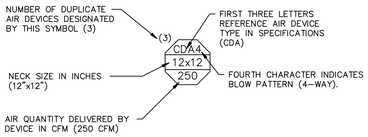
MBA ENGINEERS, INC. STRUCTURAL CIVIL GEOTECHNICAL

$NODES
$DATES
$USERS
$FILES

LEGEND

- 12x20 — DUCT SIZE, FIRST FIGURE IS SIDE SHOWN INSIDE CLEAR DIMENSION UNLESS NOTED OTHERWISE
- 24x12 — LOW PRESSURE, RECTANGULAR (GALVANIZED STEEL)
- R — DUCT RISE
- D — DUCT DROP
- DUCT TRANSITION
- RECTANGULAR TO ROUND DUCT TRANSITION
- TURNING VANES
- ELBOW, 90° (LONG RADIUS)
- TEE
- TEE, TURNED UP
- TEE TURNED DOWN
- ELBOW, TURNED DOWN
- ELBOW, TURNED UP
- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- UNION
- T — WALL MOUNTED THERMOSTAT
- H — WALL MOUNTED HUMIDISTAT
- S — WALL MOUNTED TEMPERATURE SENSOR
- C — WALL MOUNTED CARBON DIOXIDE SENSOR
- D — WALL MOUNTED DEVICE W/ COVER GAURD
- SMOKE DETECTOR
- TIE NEW INTO EXISTING
- UC — UNDERCUT DOOR 3/4 INCHES
- SUPPLY AIR FLOW
- RETURN OR EXHAUST AIR FLOW

NOTE: THIS LEGEND IS FOR REFERENCE ONLY. ALL SYMBOLS WHICH APPEAR WITHIN THE LEGEND MAY NOT APPLY TO THIS PROJECT.



4 AIR DEVICE LEGEND
M0-01 NO SCALE

ABBREVIATIONS

AB.CL'G	ABOVE CEILING
ABV.	ABOVE
AC	ALTERNATING CURRENT
A/C	AIR COMPRESSOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
ALT.	ALTERNATE
AMP	AMPERE
AO	ANALOG OUTPUT
APPROX.	APPROXIMATELY
ARCH.	ARCHITECTURAL
AVG	AVERAGE
B	BOILER
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWP	CHILLED WATER PUMP
CLG	CEILING
CT	COOLING TOWER
CU	CONDENSING UNIT
CWP	CONDENSER WATER PUMP
DEFL	DEFLECTION
DET	DETAIL
DI	DIGITAL INPUT
DIA	DIAMETER
ø	DIAMETER
DO	DIGITAL OUTPUT
EDB	ENTERING DRY BULB
ELEC.	ELECTRICAL
ELEV.	ELEVATION
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXIST.	EXISTING
°F	DEGREES FAHRENHEIT
GFF	GAS FIRED FURNACE
GPM	GALLONS PER MINUTE
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FOOT OR FEET
HD.	HEAD
HP	HORSE POWER
HR	HOUR(S)
HT.	HEIGHT
HTR	HEATER
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HWP	HOT WATER PUMP
HX	HEAT EXCHANGER
HZ	FREQUENCY (HERTZ)
ID	INSIDE DIAMETER
IN.	INCHES
KW	KILOWATT
KWH	KILOWATT HOUR
MAX	MAXIMUM
MBH.	1000 BTU PER HOUR
MECH.	MECHANICAL
MFR.	MANUFACTURER
MIN	MINIMUM
NO.	NUMBER
N/A	NOT APPLICABLE
NC	NOISE CRITERIA
O.D.	OUTSIDE DIAMETER
OA	OUTSIDE AIR
⌔	OVAL DUCTWORK
ORIG.	ORIGINAL
PH.	PHASE
PIU	POWERED INDUCTION UNIT
PRESS	PRESSURE
RTN	RETURN AIR
RTU	ROOFTOP AIR HANDLING UNIT
SDC	STAND ALONE DIGITAL CONTROLLER
SENS.	SENSIBLE
SQ.	SQUARE
SPLY	SUPPLY
TEMP	TEMPERATURE
VAV	VARIABLE AIR VOLUME
W	WATT
W/	WITH
W.P.D.	WATER PRESSURE DROP

DUCTLESS INDOOR UNIT SCHEDULE

EQUIPMENT NO.	MANUFACTURER/ MODEL NO.	SERVICE	CFM	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	MOUNTING	ELECTRICAL					WEIGHT (LBS)	REMARKS
							DISCONNECT	MOTOR STARTER	MCA	MOCP	VOLTS/PH./HZ.		
DSS-1.1	TRANE TPLA024	UV ELECTRICAL	640	24	26	CEILING	BY DIV. 26	INTEGRAL	--	--	208/1/60	60	2), 3), 4)
DSS-1.2	TRANE TPLA024	UV ELECTRICAL	640	24	26	CEILING	BY DIV. 26	INTEGRAL	--	--	208/1/60	60	2), 3), 4)
DSS-2.1	TRANE TPKA0A024	BLOWER ELECTRICAL	635	24	26	WALL	BY DIV. 26	INTEGRAL	--	--	208/1/60	45	1), 2), 3), 4)
DSS-2.2	TRANE TPKA0A024	BLOWER ELECTRICAL	635	24	26	WALL	BY DIV. 26	INTEGRAL	--	--	208/1/60	45	1), 2), 3), 4)
DSS-3.1	TRANE TPKA0A024	SOLIDS ELECTRIC	635	24	26	WALL	BY DIV. 26	INTEGRAL	--	--	208/1/60	45	1), 2), 3), 4)

REMARKS:
1) LOCATE UNIT ON WALL, COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.
2) PROVIDE WITH INTEGRAL CONDENSATE DRAIN PUMP
3) POWER FOR THIS UNIT IS PROVIDED FROM OUTDOOR UNIT.
4) PROVIDE WIRED THERMOSTAT, OR NON-REMOVEABLE BRACKET FOR REMOTE CONTROL

DUCTLESS OUTDOOR UNIT SCHEDULE

EQUIPMENT NO.	MANUFACTURER/ MODEL NO.	SERVICE	NOMINAL COOLING CAPACITY (TONS)	NOMINAL HEATING CAPACITY (BTUH)	ELECTRICAL				WEIGHT (LBS)	VIBRATION ISOLATION			REMARKS
					DISCONNECT	MCA	MOCP	VOLTS/PH./HZ.		TYPE	DEFL. (IN.)	BASE	
OHP-1.1	TRANE TRUZA024	DSS 1.1	2	26	BY DIV. 26	19	26	208/1/60	125	--	--	--	1), 2), 3)
OHP-1.2	TRANE TRUZA024	DSS 1.2	2	26	BY DIV. 26	19	26	208/1/60	125	--	--	--	1), 2), 3)
OHP-2.1	TRANE TRUZA024	DSS 2.1	2	26	BY DIV. 26	19	26	208/1/60	125	--	--	--	1), 2), 3)
OHP-2.2	TRANE TRUZA024	DSS 2.2	2	26	BY DIV. 26	19	26	208/1/60	125	--	--	--	1), 2), 3)
OHP-3.1	TRANE TRUZA024	DSS 2.3	2	26	BY DIV. 26	19	26	208/1/60	125	--	--	--	1), 2), 3)

REMARKS:
1) POWER FOR INDOOR UNIT IS PROVIDED FROM THIS UNIT.
2) REFRIGERANT R-410A, 13.8 SEER.
3) COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.

POWER VENTILATOR SCHEDULE

EQUIPMENT NO.	MANUFACTURER/ MODEL NO.	SERVICE	CFM	E.S.P. (IN. W.C.)	RPM	MAX. SONES	ELECTRICAL				LOCATION	TYPE	DRIVE	VIBRATION ISOLATION			WGT (LBS.)	REMARKS
							DISCONNECT	MOTOR STARTER	HP	MOTOR VOLTS/PH./HZ.				TYPE	DEFL. (IN.)	BASE		
EF-2.1	COOK 24XPLH	BLOWER ROOM	1,500	0.35	1079	24.0	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	135	2),6)
EF-2.2	COOK 24XPLH	BLOWER ROOM	1,500	0.35	1079	24.0	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	135	2),6)
EF-3.1	COOK 36XMWH	SOLIDS HANDLING	4,000	0.35	556	15.5	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	175	1),3),4),6),7)
EF-3.2	COOK 36XMWH	SOLIDS HANDLING	4,000	0.35	556	15.5	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	175	1),3),4),6),7)
EF-3.3	COOK 36XMWH	SOLIDS HANDLING	4,000	0.25	492	12.3	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	675	1),3),4),6),7)
EF-3.4	COOK 36XMWH	SOLIDS HANDLING	4,000	0.25	492	12.3	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	675	1),3),4),6),7)
SF-3.1	COOK 36XMWHS	SOLIDS HANDLING	4,000	0.25	492	12.3	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	400	1),3),4),5)6),7)
SF-3.2	COOK 36XMWHS	SOLIDS HANDLING	4,000	0.25	492	12.3	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	400	1),3),4),5)6),7)
SF-3.3	COOK 36XMWHS	SOLIDS HANDLING	4,000	0.25	492	12.3	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	400	1),3),4),5)6),7)
SF-3.4	COOK 36XMWHS	SOLIDS HANDLING	4,000	0.25	492	12.3	BY DIV. 26	BY DIV. 26	3/4	460/3/60	WALL	PROPELLER	BELT	--	--	--	400	1),3),4),5)6),7)
SF-3.5	COOK 195SQNH11D	SOLIDS HANDLING	3,500	0.25	1140	17	BY DIV. 26	BY DIV. 26	3/4	460/3/60	INLINE	CENTRIFUGAL	DIRECT	--	--	--	250	1),3),4),5)6),7)
SF-3.6	COOK 195SQNH11D	SOLIDS HANDLING	3,500	0.25	1140	17	BY DIV. 26	BY DIV. 26	3/4	460/3/60	INLINE	CENTRIFUGAL	DIRECT	--	--	--	250	1),8),9)

REMARKS:
1) FAN ASSEMBLY SHALL BE COATED WITH PHENOLIC EPOXY POWDER
2) INTERLOCK WITH LOCAL THERMOSTAT.
3) FAN SHALL OPERATE CONTINUOUSLY
4) PROVIDE WITH ROTARY BELT TENSIONER AND MOTOR SIZE WIRED GUARD
5) PROVIDE WITH 90 DEGREE INTAKE HOOD.
6) PROVIDE WITH HEAVY DUTY ALUMINUM GRAVITY DISCHARGE SHUTTER
7) FAN SHALL BE ON EMERGENCY POWER
8) SUSPEND FROM STRUCTURE.
9) INTERLOCK FAN WITH HOT OIL BURNER CONTROLS. FAN SHALL ENERGIZE WITH BURNER.

ELECTRIC UNIT HEATER SCHEDULE

EQUIPMENT NO.	MANUFACTURER/ MODEL NO.	KW	STAGES	EAT (°F)	FAN DATA			ELECTRICAL		MOUNTING	WEIGHT (LBS.)	REMARKS
					CFM	HP	TYPE	DISCONNECT	VOLTS/PH./HZ.			
EUH-2.1	CHROMOLOX HD3D-10	10	1	45	1180	1/15	PROP	BY DIV. 26	460/3/60	WALL	55	1), 2)
EUH-2.2	CHROMOLOX HD3D-10	10	1	45	1180	1/15	PROP	BY DIV. 26	460/3/60	WALL	55	1), 2)
EUH-2.3	CHROMOLOX HD3D-10	10	1	45	1180	1/15	PROP	BY DIV. 26	460/3/60	WALL	55	1), 2)
EUH-2.4	CHROMOLOX HD3D-10	10	1	45	1180	1/15	PROP	BY DIV. 26	460/3/60	WALL	55	1), 2)
EUH-3.1	CHROMALOX HD3D-20	20	1	45	1330	1/15	PROP	BY DIV. 26	460/3/60	WALL	60	1), 2)
EUH-3.2	CHROMALOX HD3D-20	20	1	45	1330	1/15	PROP	BY DIV. 26	460/3/60	WALL	60	1), 2)
EUH-3.3	CHROMALOX HD3D-20	20	1	45	1330	1/15	PROP	BY DIV. 26	460/3/60	WALL	60	1), 2)
EUH-3.4	CHROMALOX HD3D-20	20	1	45	1330	1/15	PROP	BY DIV. 26	460/3/60	WALL	60	1), 2)
EUH-3.5	CHROMALOX HD3D-20	20	1	45	1330	1/15	PROP	BY DIV. 26	460/3/60	WALL	60	1), 2)
EUH-3.6	CHROMALOX HD3D-20	20	1	45	1330	1/15	PROP	BY DIV. 26	460/3/60	WALL	60	1), 2)
EUH-3.7	CHROMALOX HD3D-20	20	1	45	1330	1/15	PROP	BY DIV. 26	460/3/60	WALL	60	1), 2)

REMARKS:
1) UNIT SHALL BE WALL-MOUNTED. PROVIDE MANUFACTURER'S WALL-MOUNTING BRACKETS.
2) PROVIDE REMOTE MOUNTED NEMA 4X THERMOSTAT.

SNCKOES
SDATES
STIMES
SWAS

KREBS ENGINEERING

GEORGIA REGISTERED No. 41413 PROFESSIONAL ENGINEER ZACHARY B. LAND
12/7/22

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Job No.: 21168 File: 21168D01

COWETA COUNTY WATER & SEWERAGE AUTHORITY
SHENANDOAH WASTEWATER TREATMENT FACILITY IMPROVEMENTS
COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

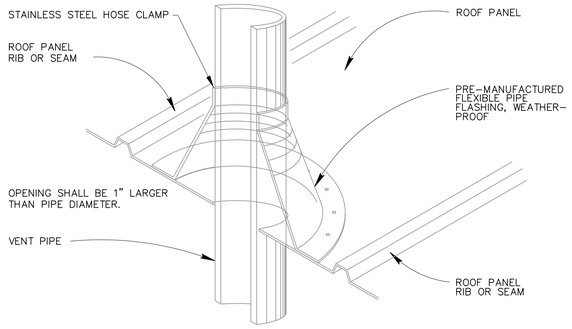
Designed	Project No.
JAB	20518
Drawn: DS	
Checked: CBA	

Revisions

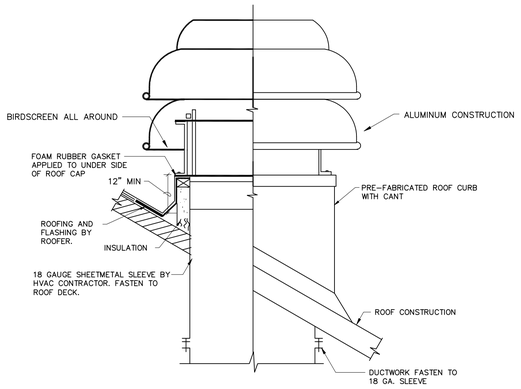
No.	Date	Description
2	01/25/23	ADDENDUM 4

Sheet Title: MECHANICAL LEGEND, ABBREV, & SCHEDULES

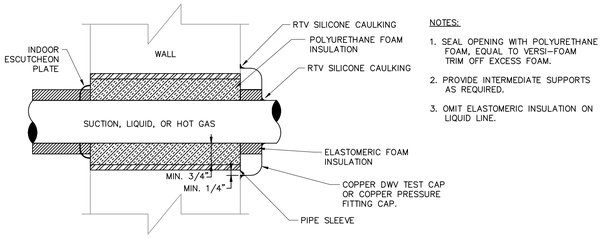
Issue Date	Sheet No.
DEC., 2022	M0-01
Sequence: – of –	



10 M0-02 VENT THROUGH METAL ROOF DETAIL
NO SCALE

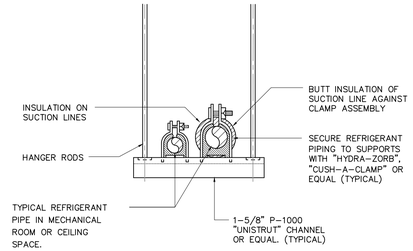


5 M0-02 INTAKE DOME DETAIL
NO SCALE

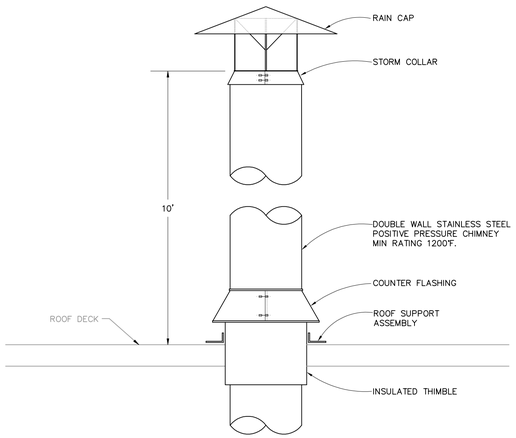


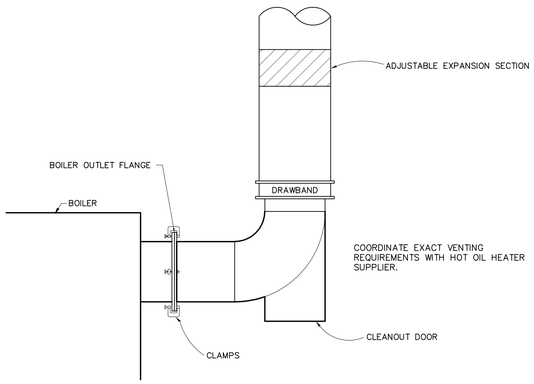
NOTES:
1. SEAL OPENING WITH POLYURETHANE FOAM, EQUAL TO VERSI-FOAM TRIM OFF EXCESS FOAM.
2. PROVIDE INTERMEDIATE SUPPORTS AS REQUIRED.
3. OMIT ELASTOMERIC INSULATION ON LIQUID LINE.

1 M0-02 REFRIGERANT LINE – WALL PENETRATION DETAIL
NO SCALE



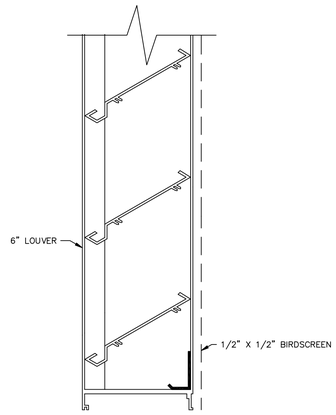
2 M0-02 REFRIGERANT PIPING SUPPORT DETAIL
TYPICAL FOR PIPING SUSPENDED FROM STRUCTURE
NO SCALE



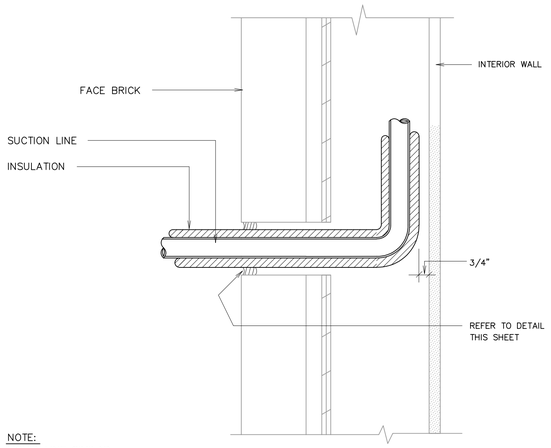


NOTES:
ALL COMPONENTS OF VENTING SHALL BE FACTORY FURNISHED EQUAL TO SELKIRK IPS-C

11 M0-02 BURNER EXHAUST STACK DETAIL
NO SCALE

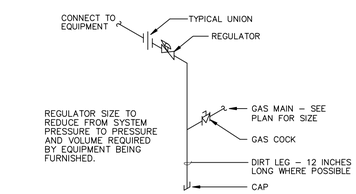


8 M0-02 LOUVER DETAIL
NO SCALE

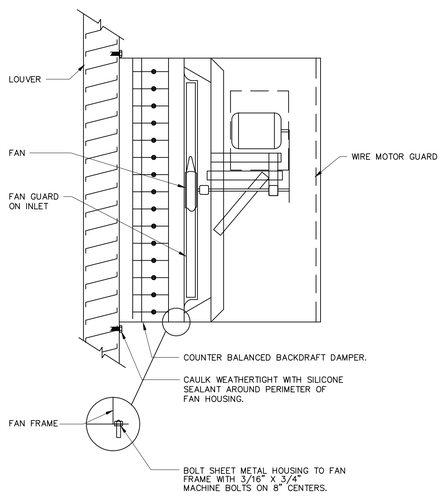


NOTE:
LIQUID LINE SIMILAR

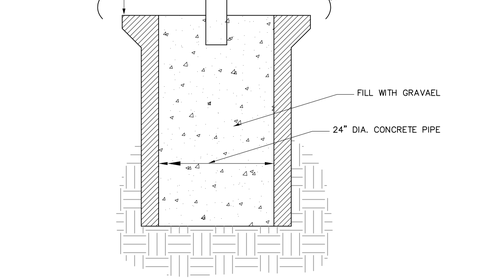
6 M0-02 REFRIGERANT PIPE AT WALL PENETRATION
NO SCALE



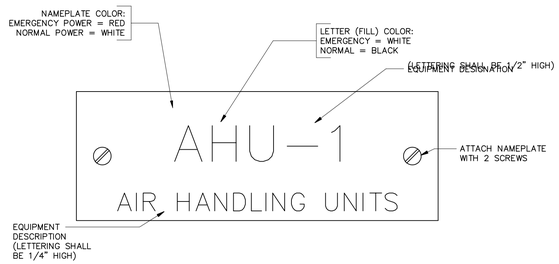
9 M0-02 TYPICAL GAS CONNECTION
NO SCALE



7 M0-02 WALL EXHAUST FAN DETAIL
NO SCALE



3 M3.2 CONDENSATE DISPOSAL WELL DETAIL
NO SCALE



4 M0-02 MECHANICAL EQUIPMENT NAMEPLATE DETAIL
NO SCALE

$NOTES
$DATES
$TIMES
$FILES

KREBS ENGINEERING

GEORGIA REGISTERED No. 41413 PROFESSIONAL ENGINEER ZACHARY B. LAND
12/7/22

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COWETA COUNTY
WATER & SEWERAGE AUTHORITY

SHENANDOAH WASTEWATER TREATMENT FACILITY IMPROVEMENTS

COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

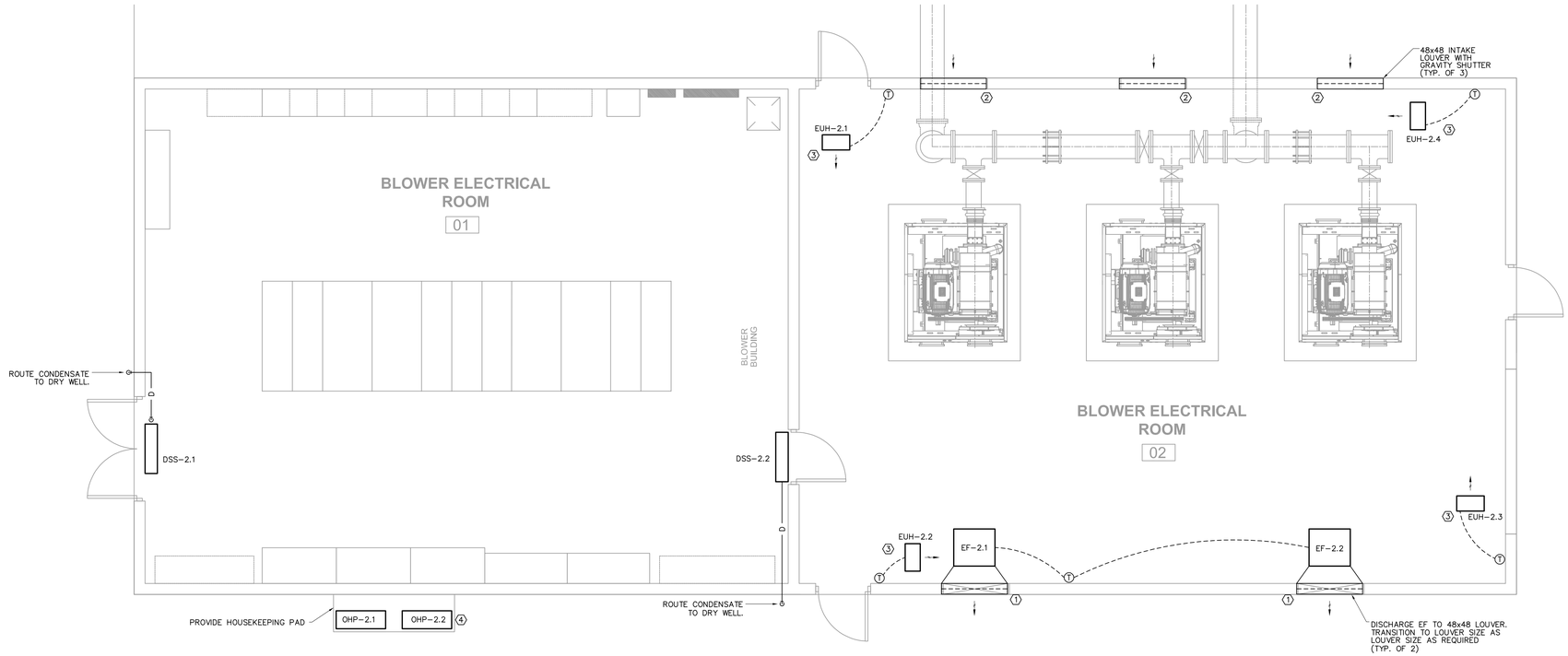
Designed	Project No.
JAB	20518
Drawn: DS	
Checked: CBA	

Revisions

No.	Date	Description
1	01/13/23	ADDENDUM 1
2	01/25/23	ADDENDUM 4

Sheet Title
MECHANICAL DETAILS

Issue Date: DEC., 2022
Sequence: – of –
Sheet No.: 1
M0-02



NORTH

AERATION BUILDING FLOOR PLAN
MECHANICAL

0 1 2 3 4 8

GRAPHIC SCALE (FEET)

GENERAL NOTES:

1. VERIFY EXISTING CONDITIONS IN FIELD PRIOR TO BEGINNING WORK.
2. SPACE ABOVE CEILING IS LIMITED. CAREFUL COORDINATION WITH LIGHTING, ELECTRICAL, PLUMBING, STRUCTURAL, AND ARCHITECTURAL WORK IS CRITICAL TO DUCTWORK INSTALLATION.
3. PROVIDE NECESSARY OFFSETS IN PIPING, ELECTRICAL CONDUIT, AND DUCTWORK AS REQUIRED TO ACCOMMODATE NEW WORK. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL DETAILS NOR CHANGES IN DUCTWORK ELEVATIONS NECESSARY FOR COMPLETE INSTALLATION.
4. COORDINATE EXACT SIZE, LOCATION, AND COLOR OF WALL MOUNTED LOUVERS WITH ARCHITECT PRIOR TO ORDERING.
5. MOUNT TEMPERATURE CONTROLS 48" ABOVE FINISHED FLOOR. COORDINATE EXACT LOCATION WITH ARCHITECT.

DRAWING NOTES:

1. MOUNT SUPPLY FAN HIGH IN EXTERIOR WALL. COORDINATE EXACT LOCATION WITH ARCHITECTURAL ELEVATIONS.
2. MOUNT EXHAUST FAN HIGH IN EXTERIOR WALL. COORDINATE EXACT LOCATION WITH ARCHITECTURAL ELEVATIONS.
3. SUSPEND UNIT HEATER FROM STRUCTURE. INSTALL BELOW CABLE TRAY HEIGHT. INSTALL UNIT HEATER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. ANCHOR OUTDOOR CONDENSING UNIT TO CONCRETE HOUSEKEEPING PAD. TERMINATE CONDENSATE DRAIN PIPING TO DISPOSAL WELL. ROUTE CONDENSATE AND REFRIGERANT PIPING UP INSIDE WALL AND AS HIGH AS POSSIBLE THROUGH ELECTRICAL ROOM TO INDOOR FAN COIL UNIT. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS OR EQUIPMENT. ALL PIPING SHALL BE COMPLETELY INSULATED AND ALL INSULATION JOINTS SHALL BE SEALED.
5. PROVIDE WEATHERHOOD INTAKE FOR SUPPLY FANS. COORDINATE EXACT FINISH COLOR WITH ARCHITECT.

SNODES
SDATES
STIMES
SFILES

KREBS ENGINEERING

GEORGIA REGISTERED No. 41413 PROFESSIONAL ENGINEER ZACHARY B. LAND
12/7/22

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COWETA COUNTY WATER & SEWERAGE AUTHORITY
SHENANDOAH WASTEWATER TREATMENT FACILITY IMPROVEMENTS
COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

Designed	JAB
Drawn	DS
Checked	CBA
Project No.	20518

Revisions

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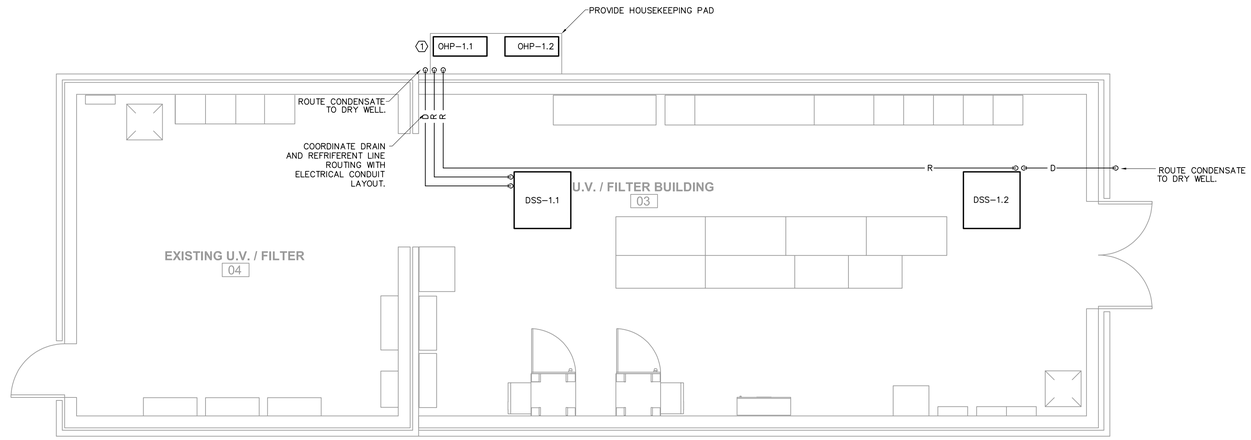
2	01/25/23	ADDENDUM 4

Sheet Title: AERATION BUILDING MECHANICAL FLOOR PLAN

Issue Date	DEC., 2022
Sequence	-- of --
Sheet No.	M7-01



NORTH

UV FILTER BUILDING FLOOR PLAN
MECHANICAL

0 1 2 3 4 8

GRAPHIC SCALE (FEET)

GENERAL NOTES:

1. VERIFY EXISTING CONDITIONS IN FIELD PRIOR TO BEGINNING WORK.
2. SPACE ABOVE CEILING IS LIMITED. CAREFUL COORDINATION WITH LIGHTING, ELECTRICAL, PLUMBING, STRUCTURAL, AND ARCHITECTURAL WORK IS CRITICAL TO DUCTWORK INSTALLATION.
3. PROVIDE NECESSARY OFFSETS IN PIPING, ELECTRICAL CONDUIT, AND DUCTWORK AS REQUIRED TO ACCOMMODATE NEW WORK. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL DETAILS NOR CHANGES IN DUCTWORK ELEVATIONS NECESSARY FOR COMPLETE INSTALLATION.
4. COORDINATE CEILING AIR DEVICE LOCATIONS WITH LIGHTING PLAN AND ARCHITECT'S REFLECTED CEILING PLAN.
5. COORDINATE EXACT SIZE, LOCATION, AND COLOR OF WALL MOUNTED LOUVERS WITH ARCHITECT PRIOR TO ORDERING.
6. MOUNT TEMPERATURE CONTROLS 48" ABOVE FINISHED FLOOR. COORDINATE EXACT LOCATION WITH ARCHITECT.

DRAWING NOTES:

1. ANCHOR OUTDOOR CONDENSING UNIT TO CONCRETE HOUSEKEEPING PAD. TERMINATE CONDENSATE DRAIN PIPING TO DISPOSAL WELL. ROUTE CONDENSATE AND REFRIGERANT PIPING UP INSIDE WALL AND AS HIGH AS POSSIBLE THROUGH ELECTRICAL ROOM TO INDOOR FAN COIL UNIT. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS OR EQUIPMENT. ALL PIPING SHALL BE COMPLETELY INSULATED AND ALL INSULATION JOINTS SHALL BE SEALED.

$NOTICES
$DATES
$TIMES
$RULES

KREBS ENGINEERING

GEORGIA REGISTERED No. 41413 PROFESSIONAL ENGINEER ZACHARY B. LAND

12/7/22

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Job No.: 21168 File: 21168M01

COWETA COUNTY
WATER & SEWERAGE AUTHORITY

SHENANDOAH WASTEWATER TREATMENT
FACILITY IMPROVEMENTS

COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

Designed	Project No.
JAB	20518
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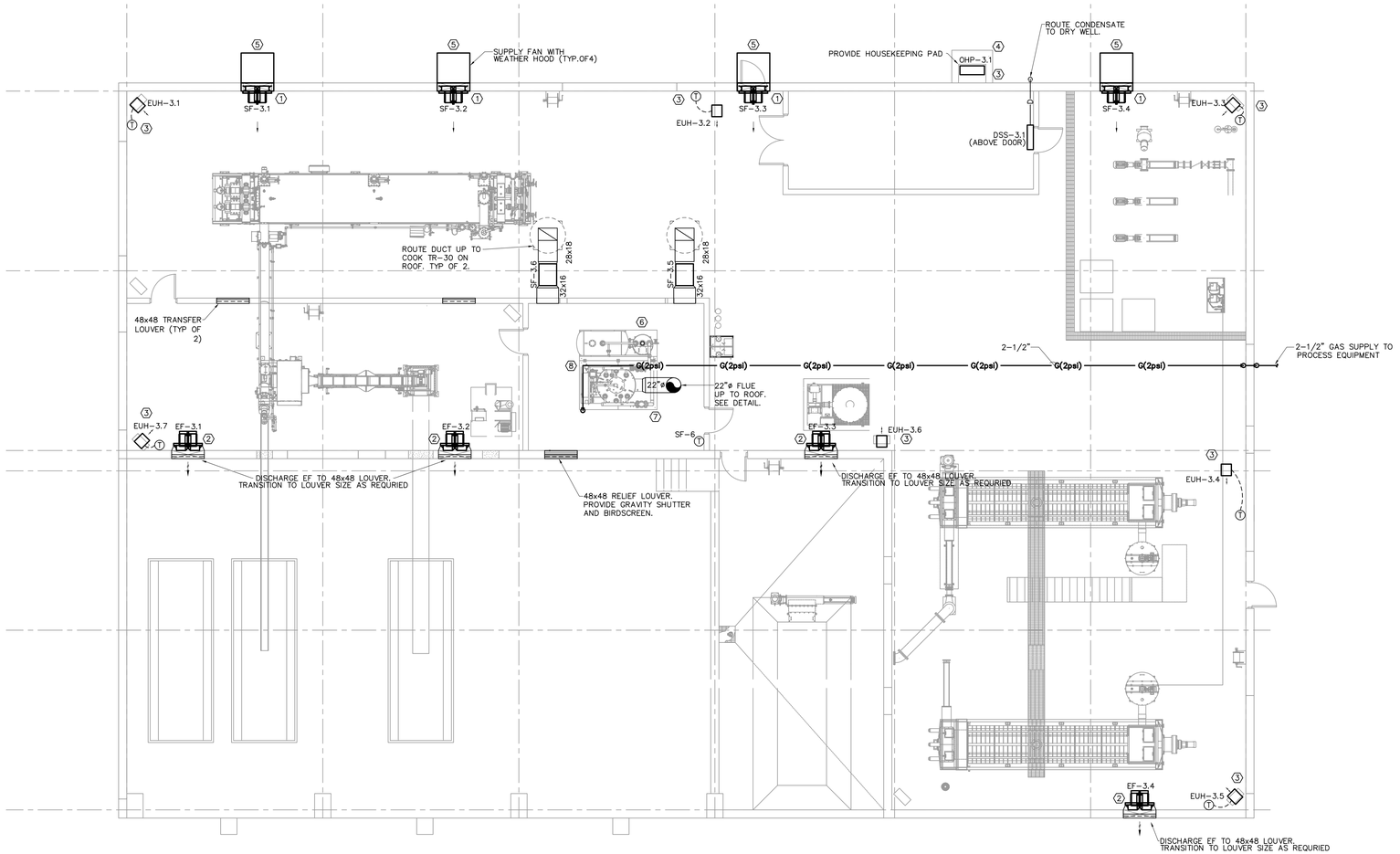
No.	Date	Description
2	01/25/23	ADDENDUM 4

Sheet Title

UV FILTER BUILDING
MECHANICAL
FLOOR PLAN

Issue Date	Sheet No.
DEC., 2022	M11-01
Sequence -- of --	



SOLIDS HANDLING BUILDING MECHANICAL FLOOR PLAN

MECHANICAL

NORTH

0 2 4 6 8 16

GRAPHIC SCALE (FEET)

GENERAL NOTES:

1. VERIFY EXISTING CONDITIONS IN FIELD PRIOR TO BEGINNING WORK.
2. SPACE ABOVE CEILING IS LIMITED. CAREFUL COORDINATION WITH LIGHTING, ELECTRICAL, PLUMBING, STRUCTURAL, AND ARCHITECTURAL WORK IS CRITICAL TO DUCTWORK INSTALLATION.
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4. COORDINATE EXACT SIZE, LOCATION, AND COLOR OF WALL MOUNTED LOUVERS WITH ARCHITECT PRIOR TO ORDERING.
5. MOUNT TEMPERATURE CONTROLS 48" ABOVE FINISHED FLOOR. COORDINATE EXACT LOCATION WITH ARCHITECT.

DRAWING NOTES:

1. MOUNT SUPPLY FAN HIGH IN EXTERIOR WALL. COORDINATE EXACT LOCATION WITH ARCHITECTURAL ELEVATIONS.
2. MOUNT EXHAUST FAN HIGH IN EXTERIOR WALL. COORDINATE EXACT LOCATION WITH ARCHITECTURAL ELEVATIONS.
3. SUSPEND UNIT HEATER FROM STRUCTURE. INSTALL BELOW CABLE TRAY HEIGHT. INSTALL UNIT HEATER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. ANCHOR OUTDOOR CONDENSING UNIT TO CONCRETE HOUSEKEEPING PAD. TERMINATE CONDENSATE DRAIN PIPING TO DISPOSAL WELL. ROUTE CONDENSATE AND REFRIGERANT PIPING UP INSIDE WALL AND AS HIGH AS POSSIBLE THROUGH ELECTRICAL ROOM TO INDOOR FAN COIL UNIT. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS OR EQUIPMENT. ALL PIPING SHALL BE COMPLETELY INSULATED AND ALL INSULATION JOINTS SHALL BE SEALED.
5. PROVIDE WEATHERHOOD INTAKE FOR SUPPLY FANS. COORDINATE EXACT FINISH COLOR WITH ARCHITECT.
6. PROVIDE 6" FLANGED PIPE VENT UP TO ROOF FROM HEATER TANK. PIPING SHALL BE 6" FLANGED PIPE WITH DOWNTURN ELBOW 24" ABOVE ROOF. PROVIDE STAINLESS STEEL BIRD SCREEN OVER OPEN VENT END. EXTERIOR PIPING SHALL BE GALVANIZED OR PAINTED FOR CORROSION PROTECTION.
7. PROVIDE 1200°F COMPLIANT, INSULATED CHIMNEY VENTING FOR OIL HEATER. INNER LINER SHALL BE 316 STAINLESS STEEL WITH 2" CERAMIC INSULATION AND ALUMINIZED STEEL OUTER JACKET. VENTING SHALL BE EQUAL TO SELKIRK IPS-C.
8. PROVIDE (2) 1/2" VENT LINES FROM GAS REGULATOR AND GAS PILOT REGULATOR. ROUTE DEDICATED VENTS TO ROOF. TERMINATE WITH DOWNTURN ELBOW.

KNOCKS
SOAKES
STAKES
SHALLS

KREBS ENGINEERING

GEORGIA REGISTERED No. 41413 PROFESSIONAL ENGINEER ZACHARY B. LAND

12/7/22

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WATER & SEWERAGE AUTHORITY
SHENANDOAH WASTEWATER TREATMENT FACILITY IMPROVEMENTS
COWETA COUNTY, GEORGIA

COWETA COUNTY WATER & SEWERAGE AUTHORITY

Designed	JAB
Drawn	DS
Checked	CBA
Project No.	20518

Revisions

No.	Date	Description
1	01/13/23	ADDENDUM 1
2	01/25/23	ADDENDUM 4

Sheet Title: SOLIDS HANDLING BUILDING MECHANICAL FLOOR PLAN

Issue Date	DEC., 2022
Sequence	-- of --
Sheet No.	M15-01

THIS IS THE LAST PAGE

Attachments to Addendum No. 4 preceding this page:

1.	SPECIFICATION	PROPOSAL FORM	
2.	SPECIFICATION	CONTRACT AGREEMENT	
3.	SPECIFICATION	011000	SUMMARY
4.	SPECIFICATION	012200	UNIT PRICES
5.	SPECIFICATION	015000	TEMPORARY FACILITIES AND CONTROLS
6.	SPECIFICATION	101400	SIGNAGE
7.	SPECIFICATION	331215	HYDRAULIC GATES
8.	SPECIFICATION	334600	SUBDRAINAGE
9.	PLAN SHEET	DT-01	MISCELLANEOUS DETAILS
10.	PLAN SHEET	C3-11	OVERALL YARD PIPING PLAN
11.	PLAN SHEET	C6-03	HEADWORKS SECTION
12.	PLAN SHEET	A0-02	ARCHITECTURAL STANDARD DETAILS
13.	PLAN SHEET	A15-02	SOLIDS HANDLING BUILDING ARCHITECTURAL ROOF PLAN
14.	PLAN SHEET	A15-03	SOLIDS HANDLING BUILDING - ARCHITECTURAL EXTERIOR ELEVATIONS
15.	PLAN SHEET	A15-06	PLAQUE
16.	PLAN SHEET	S0-02	GENERAL STRUCTURAL NOTES
17.	PLAN SHEET	S8-01	AERATION BASIN FND. & LOWER LEVEL STRUCTURAL PLAN
18.	PLAN SHEET	M0-01	Mechanical Legend, Abbreviations, & Schedules
19.	PLAN SHEET	M0-02	Mechanical Details
20.	PLAN SHEET	M7-01	Aeration Blower Building Mechanical Floor Plan
21.	PLAN SHEET	M11-01	UV Filter Building Mechanical Floor Plan
22.	PLAN SHEET	M15-01	Solids Handling Building Mechanical Floor Plan

A total of 64 pages or sheets of drawings (including this page) have been included in Addendum No. 4.General Contractors are requested to return this page as an acknowledgement that you have received this Addendum by e-mail. This will NOT be mailed. A copy of this Addendum may be picked up at the office of the Engineer.

Return acknowledgement to Krebs Engineering, Inc. by email to Shelly Fritz – Shelly.Fritz@krebseng.com

Received By_____

Contractor_____

Date_____