

ADDENDUM NO. 1
INDIAN CREEK WRF EXPANSION TO 3 MGD
HENRY COUNTY WATER AUTHORITY

Sealed bids will be received until
11:00 AM local time on October 4, 2016

This addendum hereby amends and/or modifies the Contract Documents, Detailed Specifications, and Drawings, as indicated, that have been issued for this project by Engineering Strategies, Inc. Additionally, questions received by the Engineer are answered at the end of this addendum. All bidders are subject to the provisions of this addendum and shall acknowledge receipt of this addendum on the bid form.

1 CONTRACT DOCUMENTS

A. Section 00300

1. **REPLACE** entire section with the attached Section 00300.

2 DETAILED SPECIFICATIONS

A. Section 11251

1. Paragraph 2.1.A, **ADD** "SyncoFlo, Inc." to the approved manufacturers.

B. Section 11320

1. **REPLACE** entire section with the attached Section 11320.

C. Section 15062

1. **REPLACE** paragraph 2.1.A.6.a. with the following:
 - a. Flange Joints:
 - 1) Bolts shall be heavy hex type, Type 316 stainless steel in accordance with ASTM A193, Grade B8M.
 - 2) Nuts shall be heavy hex type, Type 316 stainless steel in accordance with ASTM A194, Grade 8M.
 - 3) Washers shall be SAE flat washers, Type 316 stainless steel.
2. **REPLACE** paragraph 2.1.B.6.a. and 2.1.B.6.b. with the following:
 - a. Mechanical Joints:
 - 1) Bolts shall be Type 316 stainless steel tee-head bolts in accordance with ASTM F593.
 - 2) Nuts shall be heavy hex type, Type 316 stainless steel in accordance with ASTM F593.
 - 3) Washers shall be SAE flat washers, Type 316 stainless steel.
 - b. Flange Joints:
 - 1) Bolts shall be heavy hex type, Type 316 stainless steel in accordance with ASTM A193, Grade B8M.
 - 2) Nuts shall be heavy hex type, Type 316 stainless steel in accordance with ASTM A194, Grade 8M.
 - 3) Washers shall be SAE flat washers, Type 316 stainless steel.

D. Section 15064

1. **ADD** the following to paragraph 2.1:

G. Polyvinyl Chloride (PVC) Sewer Pipe

1. PVC Material: Cell Classification 12454-B in accordance with ASTM D1784
2. Thickness Class: SDR 26 in accordance with ASTM D3034
3. Joints: Bell and spigot type in accordance with ASTM D3212
4. Gaskets: Plain rubber gaskets in accordance with ASTM F477
5. Color: Green

E. Section 15100

1. Paragraph 2.2.C, **ADD** Pratt Model PSI Surge Inhibitor Check Valve to the approved manufacturers.
2. Paragraph 2.2.E, **ADD** DeZurik and Pratt/Milliken to the approved manufacturers.
3. **REPLACE** paragraph 2.2.H with the following:

H. Solenoid Valves

1. Air Service

- a. Normally closed, 2-way solenoid valve.
- b. Body shall be brass or Type 316L stainless steel as shown on drawings.
- c. Minimum 150 PSI working pressure.
- d. Threads shall be FNPT.
- e. Seals and discs shall be PTFE.
- f. 120V, 60 hertz, single-phase power.
- g. Solenoid valves shall be rated for Class 1, Division 2 service.
- h. Manufacturers
 - 1) ASCO
 - 2) Engineer approved equal.

2. Chemical Service

- a. Normally closed, 2-way solenoid valve.
- b. Body shall be CPVC or other material suitable for the chemical that valve is in contact with.
- c. Minimum 80 PSI working pressure at 140°F.
- d. Threads shall be FNPT.
- e. Seals and discs shall be FKM or PTFE.
- f. 120V, 60 hertz, single-phase power.
- g. Solenoid valves shall be rated for Class 1, Division 2 service.
- h. Manufacturers
 - 1) Plast-O-Matic Valves. Inc.
 - 2) Engineer approved equal.

4. Paragraph 2.3, **ADD** Kinetrol to the approved manufacturers.

3 DRAWINGS

- A. **REPLACE** the following drawings with the attached drawings.

1. 00-C-13
2. 00-C-15
3. 00-C-38
4. 00-C-41
5. 20-M-3

6. 35-M-7
7. 45-M-9
8. 60-M-1
9. 60-M-2
10. 35-S-2
11. 35-S-3
12. 35-S-6
13. E-150
14. E-201

B. Drawings 00-C-17 through 00-C-22 have been provided in .pdf format as requested in Q1-2.

4 QUESTIONS AND ANSWERS

Q1-1: *Sheet G-2, General Note 6 calls for all hardware to be 316 stainless steel. Specification section 15062 for ductile iron calls for zinc plated hardware for buried and exposed pipe joints. Please confirm that 316 stainless steel is required for all hardware buried and exposed.*

A1-1: All hardware shall be 316 stainless steel.

Q1-2: *Are CADD files available for earthwork? If not, are full scale .pdf's available?*

A1-2: Full scale .pdf's of the grading plan are included in this addendum.

Q1-3: *Please advise the location and joint type for PA piping in the Aeration and Membrane Tanks between the preselected MBR system and PA piping.*

A1-3: All stainless steel pipe shall have restrained expansion joints in accordance with Detail 21 on Sheet No. 45-M-9. Note that Detail 21 has been revised.

Q1-4: *Sheet 30-S-1 is missing.*

A1-4: If Sheet No. 30-S-1 is missing from a set of bid documents that was purchased from Engineering Strategies, Inc., please call (770) 429-0001.

Q1-5: *Please advise a correction to an elevation on sheet 35-M-7, Section F as both ends are shown as the same elevation.*

A1-5: Detail has been revised.

Q1-6: *Please advise where sheet 45-M-9, Detail 21 applies.*

A1-6: Detail 21 shall apply to all stainless steel piping. Note that this detail has been revised.

Q1-7: *There appears to be some inconsistencies in the hazard classification for valves listed in the 11290 drum screen section. Section 2.3.4 indicates the screens and washers will be located outdoors in a Class 1, Division 2, Group D area, which would normally require only NEMA 4 rated equipment. However, NEMA 7 valves are specified in 2.3.B.9.d and 2.3.C.3.c. The emergency stop switch in 2.3.B.11.a is also listed as NEMA 7. Can you please confirm that NEMA 4X valves and e-stops and brass body solenoid valves are acceptable?*

A1-7: The E-stops and valves shall be rated for Class 1, Division 2, Group D area. NEMA 4X rating does not guarantee meeting Class 1, Division 2, Group D requirements. NEMA 7 does.

**** END OF ADDENDUM ****

SECTION 00300
BID

PROJECT IDENTIFICATION:

**HENRY COUNTY WATER AUTHORITY
INDIAN CREEK WRF EXPANSION TO 3 MGD**

THIS BID IS SUBMITTED TO:

Henry County Water Authority
100 Westridge Industrial Boulevard
McDonough, GA 30253

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. Bidder accepts all of the terms and conditions of the Advertisement for Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty (60) days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Agreement with the Bonds, Certifications of Insurance, and other documents required by the Bidding Requirements within fifteen (15) days after the date of Owner's Notice of Award.
3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:
 - (a) Bidder has examined and carefully studied the Bidding Documents and the following Addenda receipt of all of which is hereby acknowledged: (List Addenda by Addendum Number and Date)

 - (b) Bidder has visited the site and is familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work, and bidder has not relied upon any oral representations by employees or agents of Owner or Engineer.
 - (c) Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
 - (d) Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site which have been identified in the Supplementary Conditions as provided in paragraph 4.02.A of the General Conditions. Bidder accepts the determination, if any, set forth in paragraph SC-4.02.A of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely as provided in paragraph 4.02 of the General Conditions. Bidder acknowledges that such reports and drawings are not Contract Documents and may not be complete for Bidder's purposes. Bidder acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which

relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

- (e) Bidder is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
- (f) Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- (g) Bidder has given Engineer written notice of all conflicts, errors, ambiguities or discrepancies that Bidder has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
- (h) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

Instructions for unit price bid form: For each Bid item, Bidders shall enter a price for each single unit, then multiply by the estimated quantity shown and enter the total amount in the space indicated in numerals. Also write out in words each Bid Item Unit Price in the space provided. Bidder acknowledges that estimated quantities are not guaranteed and final payment will be based on actual quantities determined in accordance with the Contract Documents. The Project will be awarded in one contract on the basis of the lowest Total Bid or lowest Alternate Bid if requested in the Bid Form, as determined by Owner to be in Owner's best interest. As defined in Division 01, General Requirements, Bidder shall complete the Work in accordance with the Contract Documents for the following bid prices:

All Bid items shall include costs for furnishing to Owner all materials, equipment and supplies and for all costs incurred in completing the Work including design services and the installation of all materials, equipment and supplies furnished, complete in place and ready for continuous service, all other labor, permit fees, taxes, insurance, miscellaneous costs, overhead and profit.

Item No.	Description	Total Price
1.	Lump Sum Price for Indian Creek WRF Expansion to 3 MGD, complete, in accordance with the work described in the Contract Documents.	\$
2.	Major Equipment Allowance for the purchase of the Membrane Biological Reactor System as described in GE Water & Process Technologies "As-Sold Proposal for Henry County Water Authority, MBR Preselection Request for Proposals, Indian Creek Water Reclamation Facility, Locust Grove, Georgia," GE Proposal Number: 089928. Allowance does not include federal, state, or local taxes. Taxes, if applicable, and any other associated costs shall be included in Item 1.	\$ 2,802,249.00
3.	Major Equipment Allowance for the purchase of a Gorman-Rupp self-priming centrifugal pump and control panel for the relocated belt filter press. Allowance does not include federal, state, or local taxes, unloading, or installation. Taxes, if applicable, and all other associated costs shall be included in Item 1.	\$ 23,840.00
4.	Major Equipment Allowance for the purchase of equipment from Keystone Conveyor Corporation required to extend the existing sludge conveyor to the relocated belt filter press. Allowance does not include federal, state, or local taxes, unloading, installation, controls, or motor starters. Taxes, if applicable, and all other associated costs shall be included in Item 1.	\$ 45,880.00
5.	Extra Work Allowance, for additional work as directed by the Owner. No payments shall be made to the Contractor for extra work unless specific work items are negotiated and authorized by the Owner. Allowance in the amount of:	\$ 350,000.00

TOTAL BASE BID, ITEMS 1 THROUGH 5, INCLUSIVE: \$ _____

TOTAL BASE BID, IN WORDS: _____ DOLLARS

Deduct for Ductile Iron Process Air Piping

Provide a deductive amount for providing unlined ductile iron pipe, fittings, and accessories for the process air piping between the Process Blowers and the isolation valves at the top of the drop legs at the aeration basins and between the Membrane Blowers and the stainless steel air header pipe at the membrane tanks. All process air drop legs into tanks shall remain stainless steel.

Deduct for Ductile Iron Process Air Piping	(\$ _____)
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The Total Bid in Part 1 shall include the costs for the circled Manufacturers/Suppliers listed in the Major Equipment Schedule, exclusive of any alternate bid items.

The Major Equipment Schedule lists the base bid equipment manufacturer/supplier as applicable for major equipment items and key suppliers for the Indian Creek WRF Expansion to 3 MGD project. The Bidder must indicate which named manufacturer/supplier of major equipment it intends to be provide by circling one of the manufacturers/suppliers listed. Listed equipment suppliers must meet the terms and conditions and technical requirements of the Contract.

If Bidder does not circle one of the equipment manufacturers/suppliers for each piece of major equipment, the Owner will select the manufacturer/supplier that is to be provided. No adjustments will be made to Total Base Bid if Owner is required to make selection.

Deductive alternates will be considered for certain equipment. Bidder may enter the name of the manufacturer along with the deductive price that will be deducted from the Total Base Bid if the deductive alternate is selected. If a deductive alternate is proposed, the Bidder must still circle the listed Manufacturer/Supplier whose equipment is included in the Total Base Bid. Award will be based on the Total Base Bid not including any deductive alternates.

Major Equipment Schedule		
Specification Section Number	Equipment Description	Manufacturer/Supplier
11202	Fabricated Gates	Fontaine Waterman Whipps, Inc.
11245	Submersible Pumps	Flygt (Xylem) Ebara
11246	Self-Priming Centrifugal Pumps	Gorman-Rupp
11251	Packaged Water Booster System	Flo-Pac Aqua-Pac Flowtronex SyncroFlo, Inc.
11256	Polymer Feed System	Neptune Polymaster Fluid Dynamics Polyblend Velodyne Velocity Dynamics
11259	Peristaltic Chemical Feed Pumps	Watson Marlow Verderflex

Major Equipment Schedule		
<i>Specification Section Number</i>	<i>Equipment Description</i>	<i>Manufacturer/ Supplier</i>
11290	Internally Fed Drum Screens	Parkson Corporation WesTech Engineering
11320	Grit Removal System	Smith & Loveless WesTech Engineering Lakeside Equipment Corporation
11365	UV Disinfection System	Trojan Wedeco
11377	Fine Bubble Aeration Equipment	Sanitaire Environmental Dynamics, Inc. Aquarius Technologies, Inc.
11500	Polyethylene Storage Tanks	Poly Processing Company Snyder Industries, Inc. Assmann Corporation of America
11510	Fiberglass Shelters	Tracom, Inc. Warminster Fiberglass Company

6. Bidder agrees that the Work will be **substantially complete within 545 consecutive calendar days** after the date when the Contract Times commence to run as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within **575 consecutive calendar days** after the date when the Contract Times commence to run.

Bidder accepts the provisions of the Agreement as to **Liquidated Damages** in the event of failure to complete the Work within the time(s) specified in the Agreement.

7. The following documents are attached to this Bid Form and are made a condition of this Bid:

Bid Bond
Statement of Qualifications
Non-collusion Affidavit of Bidder
Corporate Certificate
Contractor's License Certification
Affidavit of Status
Security and Immigration Certification
Contractor Affidavit and Agreement
Subcontractor Affidavit and Agreement (if applicable)

The required bid security in the form of bid bond must be included and attached to the Bid Bond form.

8. Communications concerning this Bid shall be addressed to:

The address of Bidder indicated below.

BIDDER'S NAME _____
Primary Contact Person _____
Secondary Contact Person _____
Bidder's Street Address _____
Bidder's Phone Number _____
Bidder's Email Address _____

9. Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.
10. Bidder agrees that the Owner has the right to accept or reject any bid or all proposals and to waive all formalities.

THIS BID SUBMITTED on _____, 20__

Company

By: _____
Signature

Name

Title

Address

CORPORATE SEAL

City/State/Zip Code

(_____) _____
Telephone

Georgia Utility Contractor License No.

**** END OF SECTION ****

**SECTION 11320
GRIT REMOVAL SYSTEM**

1 GENERAL

1.1 SCOPE OF WORK

- A. The work covered by this section includes furnishing all labor, materials, and equipment required to install, test, and place into satisfactory operation grit removal systems and appurtenances as specified herein and as shown on the drawings.
- B. The new grit removal systems will be installed in the existing 360-degree Smith and Loveless 4.0 vortex grit chambers.

1.2 SUBMITTALS

- A. The Contractor shall submit shop drawings and product data to the Engineer in accordance with the requirements of Section 01300, Submittals.
- B. At a minimum, the submittals shall contain, but not be limited to, the following information to establish compliance with these specifications.
 - 1. Drawings showing plan, elevation, and appropriate cross sections of the equipment being provided.
 - 2. Complete engineering data including, but not limited to, descriptive data, material specifications, motor performance data, piping diagrams, and wiring diagrams, as appropriate, to support the design of the equipment being provided.
 - 3. Submit control panel schematics and layout drawings and submit manufacturer's catalog information for all components used.
 - 4. Printed warranty

1.3 OPERATION AND MAINTENANCE DATA

- A. The Contractor shall provide operation and maintenance data in accordance with the requirements of Section 01730, Operating and Maintenance Data.

1.4 STORAGE AND PROTECTION

- A. Equipment shall be stored and protected in accordance with the requirements of the manufacturer and Section 01620, Storage and Protection.

1.5 WARRANTIES AND BONDS

- A. The Contractor shall provide a warranty against defective or deficient materials and workmanship in accordance with the requirements of Section 01740, Warranties and Bonds.
- B. The equipment manufacturer shall provide a warranty against defective or deficient equipment, workmanship and materials under normal use, operation and service. The warranty shall be for one (1) year from the date of Engineer's acceptance of the work. The warranty shall be in printed form and apply to all similar units.

2 PRODUCTS

2.1 MANUFACTURERS

- A. Approved manufacturers include:
 - 1. Smith and Loveless
 - 2. WesTech Engineering, Inc.
 - 3. Lakeside Equipment Corporation

2.2 DESIGN CRITERIA

- A. Provide two (2) vortex type grit removal systems (GRIT-401 and GRIT-402) that will fit in the existing 360-degree Smith and Loveless 4.0 vortex grit chambers and meet the following design criteria.

Peak Design Flow Rate	4 MGD
Grit Chamber Inside Diameter	8-feet
Removal Efficiency at Peak Flow Rate:	
Grit Greater Than 50 Mesh in Size	95%
Grit Greater Than 70 Mesh in Size	85%
Grit Greater Than 100 Mesh in Size	65%

- B. Provide two (2) grit classifiers that meet the following design criteria.

Minimum Grit Slurry Feed Rate	60 GPM
Minimum Grit Conveying Capacity	14 cubic feet per hour

- C. Contractor and manufacturer shall verify the actual dimensions of the existing grit chambers and provide equipment that is designed to fit in the existing structures.

2.3 CONSTRUCTION

A. General

1. Each grit removal system shall include drive unit, drive tube, paddle assembly, grit pump, grit concentrator/cyclone, grit classifier, control panel, and appurtenances for two (2) complete and independent systems.
2. Grit systems shall be designed to fit in the existing grit chambers. One grit chamber has a counter-clockwise flow pattern and one grit chamber has a clockwise flow pattern.
3. All grit equipment shall be Type 316 stainless steel construction.

B. Grit Chamber

1. Drive Unit

- a. The drive unit shall consist of an electric motor and a helical gear reduction unit that turns the drive tube and paddle assembly.
- b. The drive unit housing shall be constructed out of cast iron or Type 316 stainless steel plate.
- c. The drive unit motor shall be TEFC, 460 V, 3-phase, 60 Hz, with a 1.15 service factor. Motor shall also be suitable for Class 1, Division 2, Group D conditions. Motor shall be non-overloading during all normal operating conditions.

2. Drive Tube

- a. The drive tube shall be constructed out of 10-inch diameter, Type 316 stainless steel pipe with a minimum thickness of ¼-inches.

3. Paddle Assembly

- a. The paddle assembly shall consist of four (4) fixed blades attached to the drive tube by means of a collar. The collar shall allow the blades to be adjusted up or down as required.

- b. The paddle assembly and collar shall be constructed out of Type 316 stainless steel.
 - 4. Floor Plate
 - a. The grit chamber shall have a steel floor plate to minimize organic capture.
 - b. The floor plate shall consist of two (2) removable sections and shall be constructed out of ½" thick, Type 316 stainless steel.
 - 5. Flow Control Baffles
 - a. If required to meet the performance requirements described above or for proper operation, the grit chamber shall be provided with any inlet and/or outlet baffles or weir plates.
 - b. The inlet/outlet baffles shall be constructed out of Type 316 stainless steel.
 - 6. Shop Painting
 - a. All cast iron components shall be solvent cleaned, near-white blast cleaned per SSPC-SP10, and primed with minimum 4-mil DFT Tnemec Series 66 Hi-Build Epoxoline Primer.
- C. Grit Pump
 - 1. Grit pumps shall be a vacuum-primed centrifugal pump or self-priming centrifugal pump (Gorman Rupp) designed to transfer grit from the grit chamber to the grit classifier.
 - 2. Grit pumps shall be sized to remove grit from the grit chamber at a rate of 250 GPM. Grit pumps shall be sized by the grit system manufacturer and approved by the Engineer.
 - 3. Grit pump components in contact with grit shall be manufactured using Ni-Hard materials or Austempered ductile iron.
 - 4. Grit pump motor shall be TEFC, 460 V, 3-phase, 60 Hz, with a service factor of 1.15. Motor shall also be suitable for Class 1, Division 2, Group D conditions. Motor shall be non-overloading during all normal operating conditions.
- D. Grit Concentrator/Cyclone
 - 1. A grit concentrator/cyclone shall be provided with each grit system for secondary treatment of the grit slurry.
 - 2. Grit concentrator/cyclone shall operate on a constant rate vortex principle and shall be designed to receive a minimum of 250 GPM of flow. A minimum of 90 percent of the water and organic material shall be returned to the inlet channel upstream of the grit chamber through a 6-inch drain line.
 - 3. Grit concentrator/cyclone shall be constructed out of Ni-Hard, or similar material that is resistant to abrasion by the pumped grit media.
- E. Grit Classifier
 - 1. Grit classifiers shall be provided to dewater the grit slurry removed from the grit chambers and discharge the dewatered grit into a dumpster as shown on the Drawings.
 - 2. The grit classifier settling tank, cover, dewatering trough, inlet and out flanges, etc. shall be constructed out of type 316 stainless steel.
 - 3. The grit classifier dewatering screw shall be constructed out of high strength carbon steel.
 - 4. The grit classifier shall have a 2-inch drain with fitted with a 2-inch stainless steel ball valve.
 - 5. Drive Unit
 - a. The drive unit shall consist of an electric motor and a helical gear reduction unit.

- b. The drive unit motor shall be TEFC, 460 V, 3-phase, 60 Hz, with a 1.15 service factor. Motor shall also be suitable for Class 1, Division 2, Group D conditions. Motor shall be non-overloading during all normal operating conditions.

2.4 HAZARD CLASSIFICATION

- A. Grit systems and grit classifiers shall be provided with motors, control switches, and devices that meet the NEC requirements for Class I, Division 2, Group D hazardous classification.

2.5 INSTRUMENTATION AND CONTROL

A. Control Panel

1. Two (2) control panels shall be provided, one (1) for each grit system.
2. Each control panel shall meet the following general requirements.
 - a. Control Panel Enclosure
 - 1) Control panel enclosure shall be constructed out of type 304 stainless steel and shall be rated NEMA 4X.
 - b. Main Circuit Breaker
 - 1) The main circuit breaker shall have a minimum interrupting capacity of 42,000 RMS symmetrical amperes.
 - 2) The main circuit breaker shall be interlocked with a lockable control panel door opening mechanism.
 - c. Control Power Transformer
 - 1) Provide a control power transformer for control voltage as required.
 - d. Safety Interlocks
 - 1) Provide safety interlocks to stop the grit system or prevent it from starting upon motor fail or other alarm conditions.
 - e. Provide a LOCAL/OFF/REMOTE switch.
 - 1) In LOCAL, the grit system shall be controlled via the grit system control panel.
 - 2) In REMOTE, the grit system shall be controlled via the plant SCADA system.
 - f. Provide START/STOP push-buttons for the grit chamber drive.
 - 1) The grit chamber drive shall start and run when the START push-button is pressed and stop when the STOP push-button is pressed.
 - g. Provide a HAND/OFF/AUTO (H/O/A) switch and START/STOP push-buttons for the grit pump.
 - 1) In the HAND position, the grit pump shall start and run when the START push-button is pressed and stop when the STOP push-button is pressed.
 - 2) In the OFF position, the grit pump shall stop.
 - 3) In the AUTO position, the grit pump shall start and stop based on a 24-hour, 96-position time clock, 0-30 minute pump timer, and 0-30 minute priming timer.
 - h. Provide a HAND/OFF/AUTO (H/O/A) switch and START/STOP push-buttons for grit classifier.
 - 1) In the HAND position, the grit classifier shall start and run when the START push-button is pressed and stop when the STOP push-button is pressed.
 - 2) In the OFF position, the grit classifier shall stop.
 - 3) In the AUTO position, the grit classifier shall start and stop when the grit pump starts and stops. A 0-30 minute "off delay" timer shall be provided to allow the grit classifier to run for a set period of time after the grit pump turns off.

- i. Timers
 - 1) Provide a 24-hour time clock to cycle grit system starts.
 - 2) Provide adjustable timers for grit pump and grit classifier.
- j. Indicator Lights
 - 1) Provide local indicator lights that indicate the ON, OFF, or FAIL status of the grit chamber drive, blower, and grit classifier.
 - 2) Provide an indicator light that indicates power is supplied to the control panel.
- k. Emergency Stop Button
 - 1) Provide an emergency stop button on the control panel that will stop all pieces of equipment when pressed.
- l. Run Time Meter
 - 1) Provide run time meters for grit chamber drive, grit pump, and grit classifier.
- m. Terminal Block
 - 1) Provide 25-percent spare terminals.
- n. Ground Bus
 - 1) Provide an internal copper ground bus for grounding connections.
- o. Panel Nameplate
 - 1) Provide name plates for all items on the control panel.
- p. I/O Contacts
 - 1) Provide 5 Amp, 120VAC rated output contacts for the following:
 - a) Remote indication of grit systems LOCAL/REMOTE status
 - b) Grit system paddle drive ON/OFF and Common Alarm status
 - c) Grit pump ON/OFF status and AUTO mode
 - d) Grit pump common alarm
 - e) Grit system prime failure
 - f) Grit classifier ON/OFF status and AUTO mode
 - g) Grit classifier common alarm.
 - 2) Provide input contacts for the following:
 - a) Grit system START command.
- q. Motor Starters
 - 1) Provide Combination Full-Voltage Motor Starters with circuit breakers in the control panel for grit system paddle drive, grit pump, and grit classifier.
 - 2) The circuit breakers shall have a minimum interrupting capacity of 42,000 RMS symmetrical amperes.
- r. Current Monitor
 - 1) Provide a current monitor for overload protection for grit system paddle drive, grit pump, and grit classifier.
- s. Surge Suppression Unit
 - 1) Provide a surge suppressor in the control panel to protect against lightning and other surges. Connect surge suppressor to the incoming feeder terminals.

3 EXECUTION

3.1 INSTALLATION

- A. Grit removal equipment and appurtenances shall be installed in accordance with the Manufacturers requirements to produce a finished product that is clean and demonstrates true craftsmanship.
- B. Manufacturer shall allow for a minimum of one (1) trip to the project site to assist the contractor with the installation of the equipment. If additional trips are required, they shall be the responsibility of the Contractor and there shall be no additional cost to the Owner.

3.2 STARTUP AND TESTING

- A. Grit removal equipment and appurtenances shall be field tested after installation to demonstrate proper operation to the satisfaction of the Engineer. Field tests shall be conducted by the Manufacturer or his Authorized Representative. All tests shall be performed in the presence of the Engineer. Test results shall be in printed form and signed by the Manufacturer or his Representative and supplied to the Owner.
- B. Manufacturer shall allow for a minimum of one (1) trip to the project site for startup and testing of the equipment. If additional trips are required, they shall be the responsibility of the Contractor and there shall be no additional cost to the Owner.

3.3 CERTIFICATION

- A. A manufacturer's representative that is qualified in the particular equipment requirements shall fully inspect and certify the equipment installation. Written certifications shall be provided that state the equipment is installed properly, is operating within the design parameters, and will be warranted as required by the specifications.

3.4 TRAINING

- A. Training shall be conducted in accordance with Section 01790, Demonstration and Training.
- B. The manufacturer shall conduct two (2) training classes for the Owner's personnel. The training classes shall be conducted on two consecutive days.
- C. Training classes shall not be conducted concurrently with startup and testing; therefore, manufacturer shall allow for one (1) additional trip to the project site.
- D. Training classes shall not be conducted until the manufacturer has certified that the equipment is properly installed and operational.
- E. Training classes shall be scheduled with the Owner a minimum of one (1) week prior to conducting the class.

3.5 ACCEPTANCE

- A. Acceptance of equipment will not be made until all equipment has been installed and tested, the manufacturer has certified the installation, the manufacturer has conducted the required training classes, final operation and maintenance manuals have been submitted to the engineer, and all spare parts have been turned over to the Owner.

**** END OF SECTION ****

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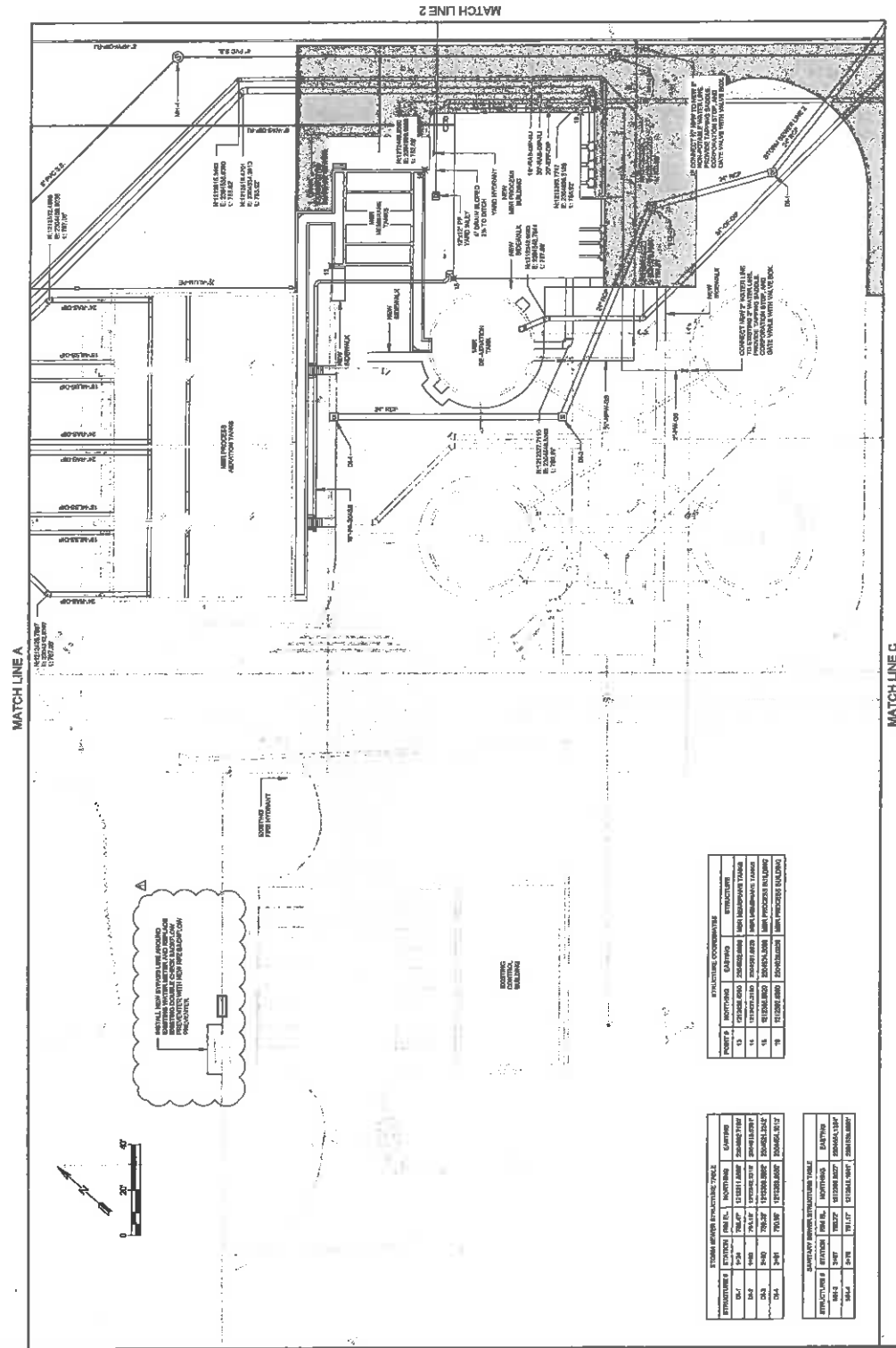


ESI
 ENGINEERING STRATEGIES, INC.
 3435 SHILOH ROAD, SUITE 202
 MARIETTA, GA 30066
 (770) 429-0011

PROJECT NUMBER:
 DATE: AUGUST 2018
 DATE: 8/22/2018
 REVISION: 1
 ADOPTION NO. 1

OWNER:
 CHECK:
 DRAWN BY:
 PROJECT NAME:
 TREATMENT PLANT 3
 STAKING PLAN 3

SHEET NO.
 00-C-13



PORT #	DESCRIPTION	GAUGE	STRUCTURE
13	STORAGE AND TREATMENT	2500000000	SMALL RECTANGULAR TANK
14	STORAGE AND TREATMENT	2500000000	SMALL RECTANGULAR TANK
15	STORAGE AND TREATMENT	2500000000	SMALL RECTANGULAR TANK
16	STORAGE AND TREATMENT	2500000000	SMALL RECTANGULAR TANK

STRUCTURE	STATION	DATE	DESCRIPTION	STATUS
13	2500000000	12/31/2018	SMALL RECTANGULAR TANK	EXISTING
14	2500000000	12/31/2018	SMALL RECTANGULAR TANK	EXISTING
15	2500000000	12/31/2018	SMALL RECTANGULAR TANK	EXISTING
16	2500000000	12/31/2018	SMALL RECTANGULAR TANK	EXISTING

STRUCTURE	STATION	DATE	DESCRIPTION	STATUS
13	2500000000	12/31/2018	SMALL RECTANGULAR TANK	EXISTING
14	2500000000	12/31/2018	SMALL RECTANGULAR TANK	EXISTING
15	2500000000	12/31/2018	SMALL RECTANGULAR TANK	EXISTING
16	2500000000	12/31/2018	SMALL RECTANGULAR TANK	EXISTING

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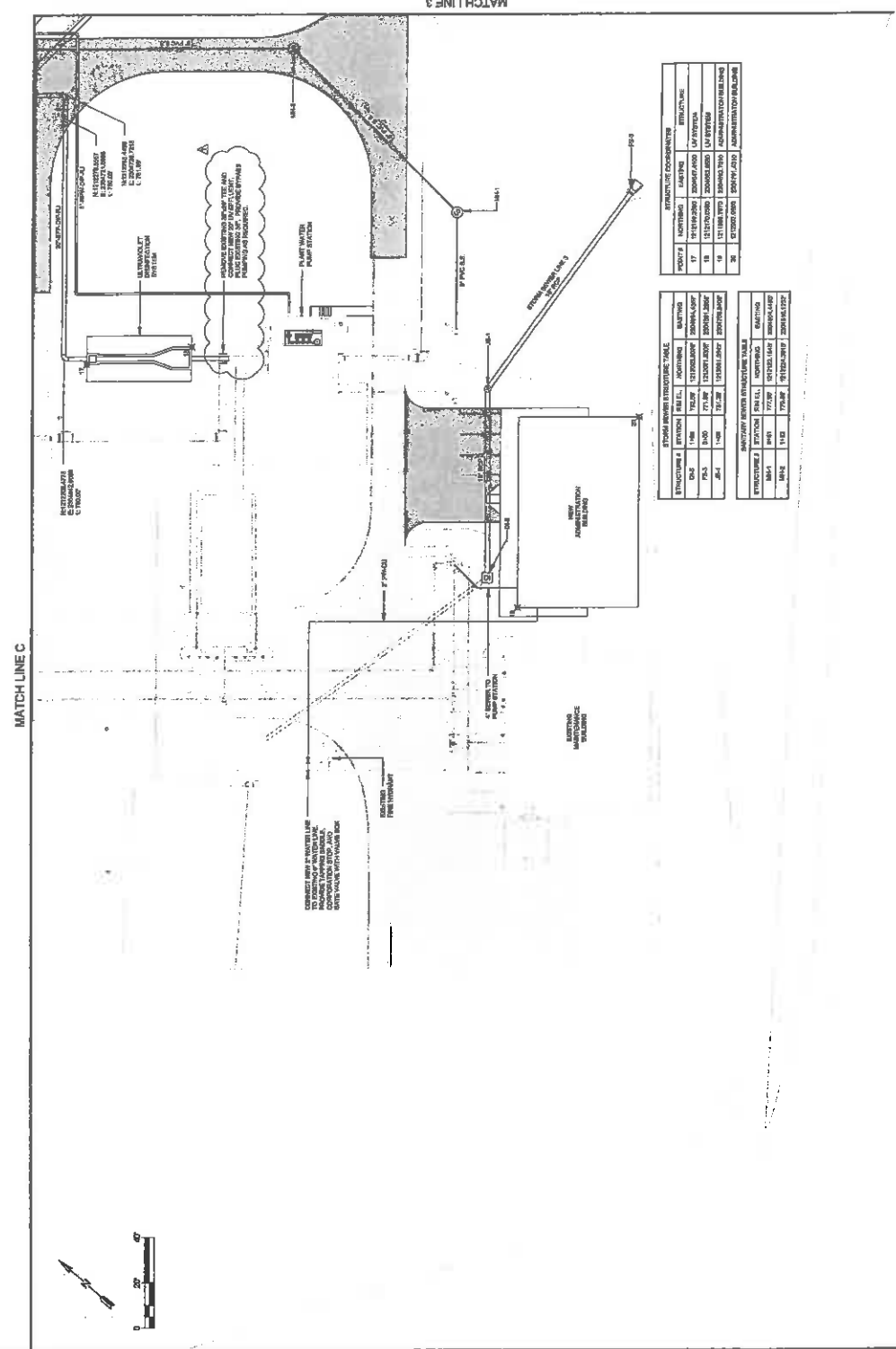


ESI
 ENGINEERING STRATEGISTS, INC.
 2455 SHALYWOOD BOULEVARD, SUITE 100
 INDIANAPOLIS, IN 46226
 (317) 953-0001

DATE:	APRIL 2018
PROJECT NUMBER:	
REVISION:	
REVISION NO. 1	
DATE:	
DESIGNER:	
CHECK:	
DATE:	
PROJECT NUMBER:	

TREATMENT PLANT 5
STAKING PLAN 5
HENRY COUNTY WATER AUTHORITY
INDIAN CREEK WRF EXPANSION TO 3 MGD

SHEET NO.
00-C-15



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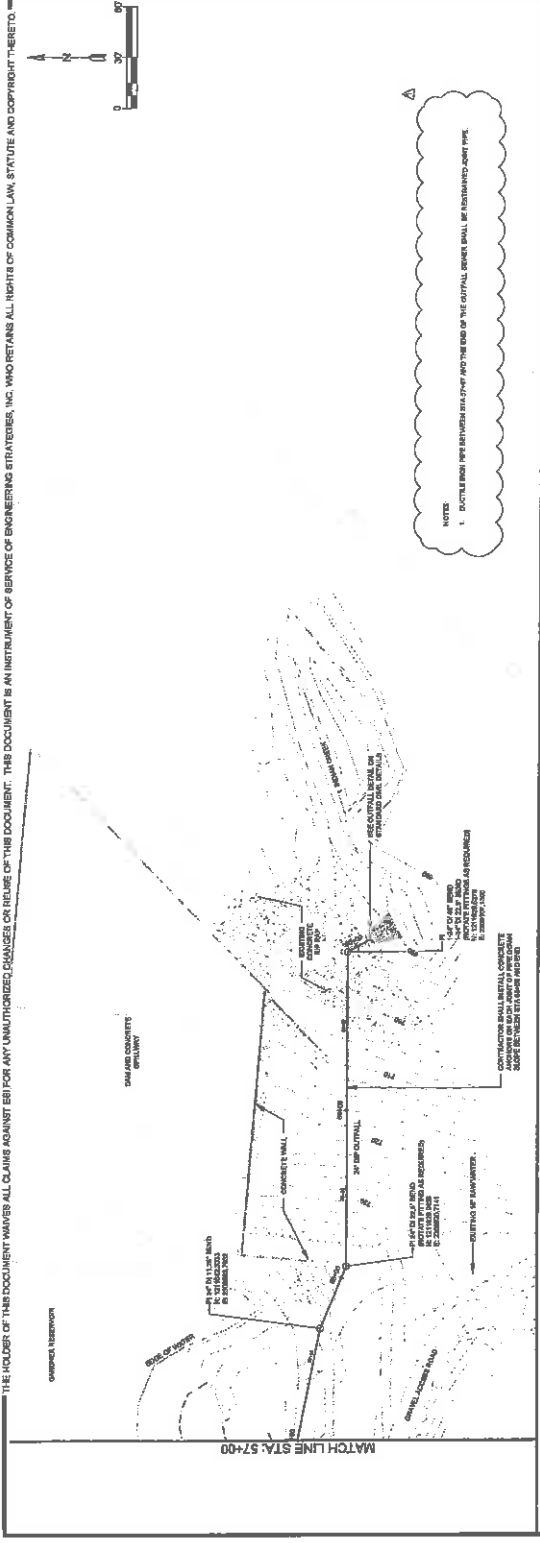
ESI
 ENGINEERING STRATEGIES, INC.
 2465 S. BARKER ROAD, SUITE 210
 MOBILE, MO 64150
 PHONE: 816.433.1100
 FAX: 816.433.1101
 WWW.ESI-ENGINEERS.COM

DATE:	AUGUST 2019
PROJECT NUMBER:	
ACADEMIC NO. 1	
REVISION	
DATE	09/20/19

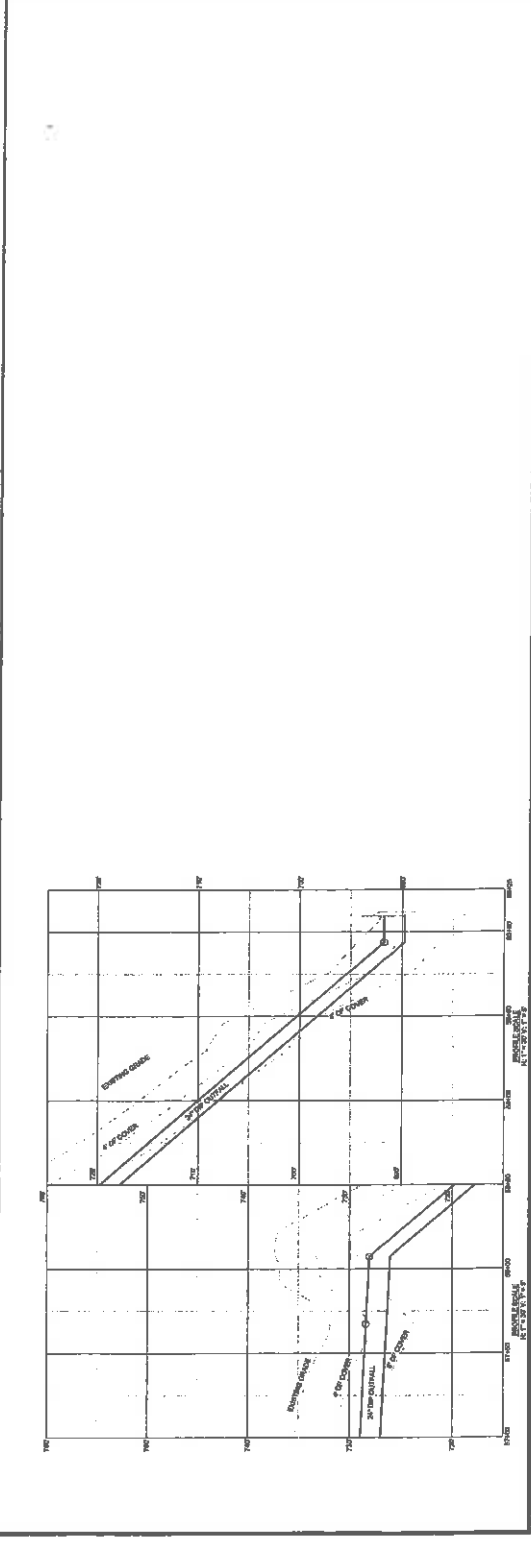
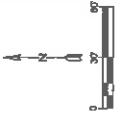
SCALE:	DE
DRAWN BY:	
CHECK BY:	
DATE:	

INDIAN CREEK WRF EXPANSION TO 3 MGD
 HENRY COUNTY WATER AUTHORITY
 STA: 57+00-END
 OUTFALL PLAN AND PROFILE

SHEET NO.
 00-C-38



NOTES:
 1. DUCTILES SHALL BE INSTALLED BETWEEN STRUCTURE AND THE END OF THE OUTFALL PIPE SHALL BE INSTALLED TO MEET THE



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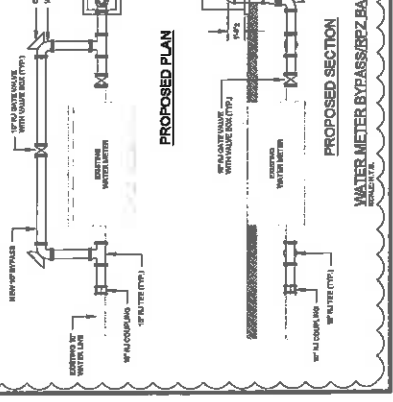
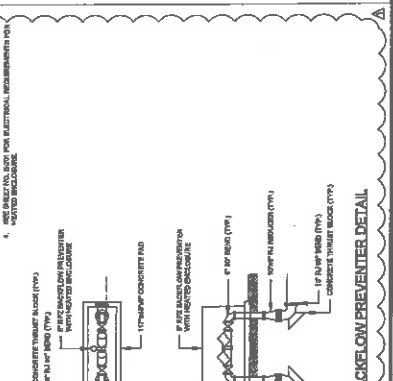
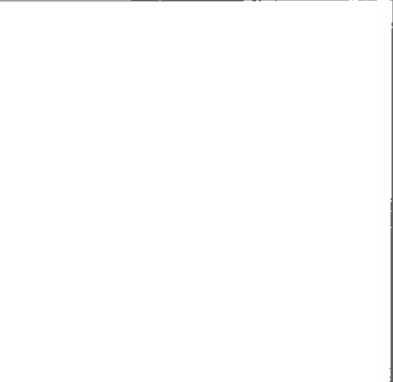
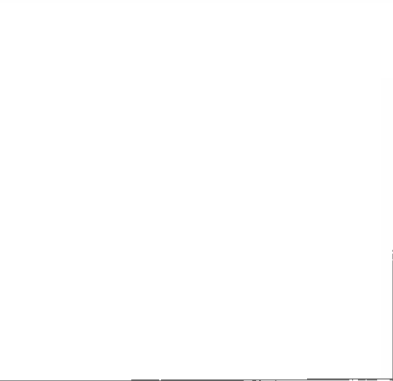
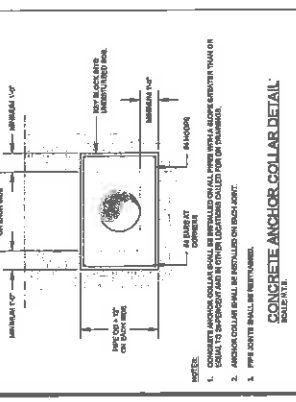
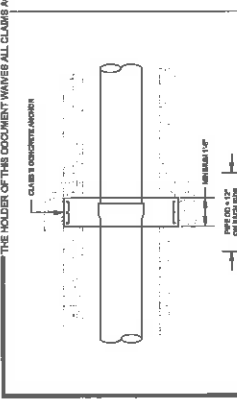
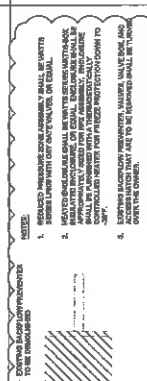
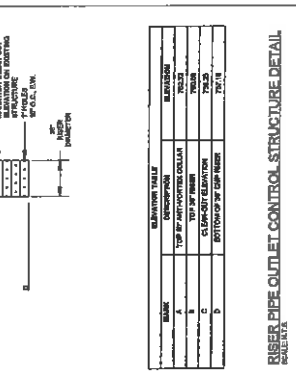
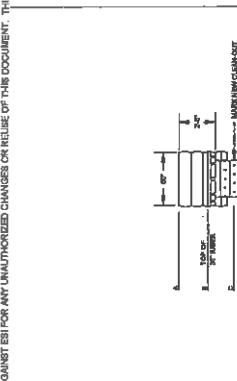
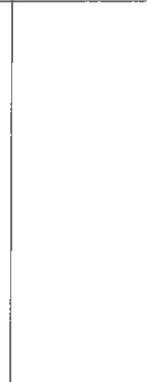
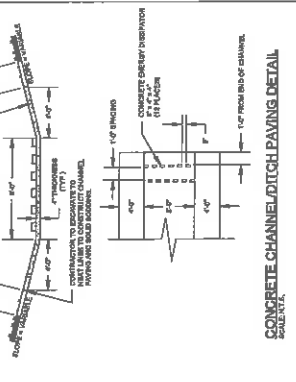
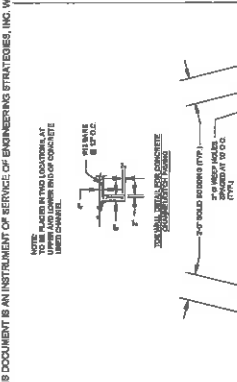
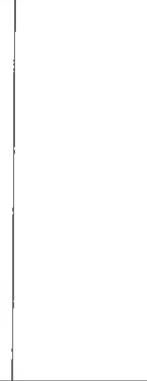
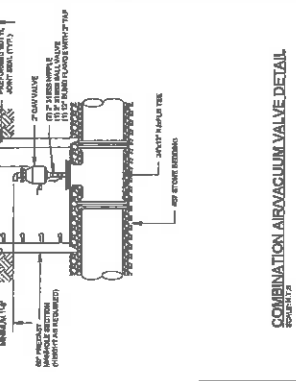
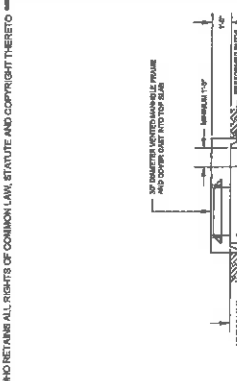


ESI
 ENGINEERING STRATEGIES, INC.
 2465 BILKLEY AVENUE, SUITE 100
 SAN JOSE, CA 95128
 (408) 435-0001

DATE	AUGUST 2015
PROJECT NUMBER	
REVISION	
ADDENDUM NO. 1	
DATE	5/23/2018

INDIAN CREEK WRF EXPANSION TO 3 MGD
 HENRY COUNTY WATER AUTHORITY
 STANDARD CIVIL
 DETAILS 3

SHEET NO.
 00-C-41




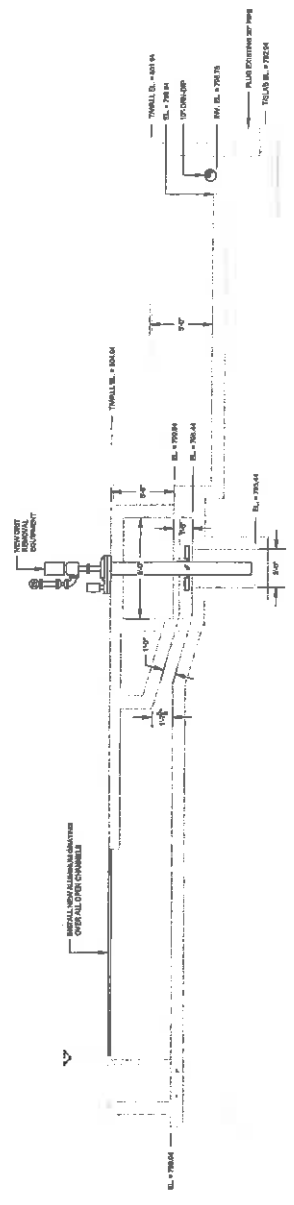
NOTES:
 1. CONCRETE ANCHOR COLLAR SHALL BE CAST WITH AN ANCHOR BOLT GREATER THAN OR EQUAL TO SUPPORT OF JOINT IN OTHER LOCATION CALLED FOR BY STANDARD.
 2. ANCHOR COLLAR SHALL BE INSTALLED ON EACH JOINT.
 3. PIPE JOINTS SHALL BE REINFORCED.

EXISTING PLAN
 PROPOSED PLAN
 PROPOSED SECTION

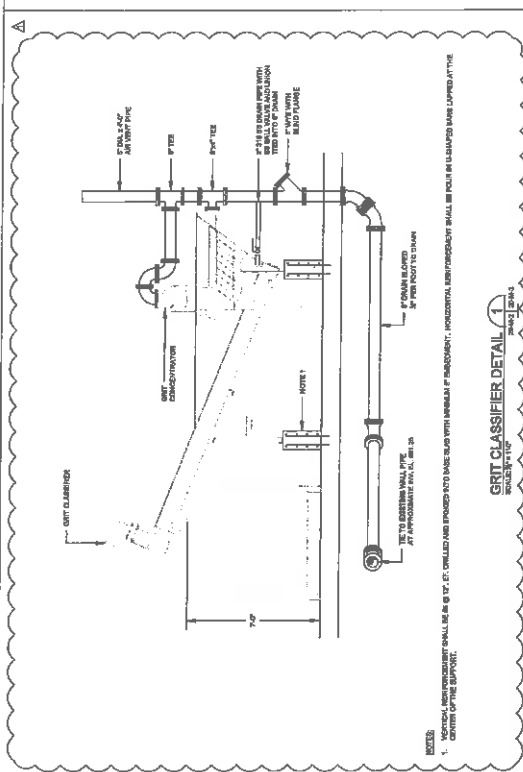
WATER METER BYPASS/BEZEL BACKFLOW PREVENTER DETAIL

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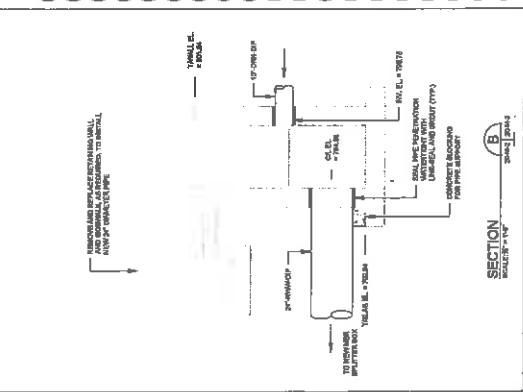
 <p>ESI ENGINEERING STRATEGIES, INC. 3555 SHILOH ROAD, SUITE 202 MARTIN, TN 37050 (773) 439-0011</p>	<p>PROJECT NUMBER: _____</p> <p>DATE: AUGUST 2018</p>	<p>REVISION NO. 1</p> <p>DATE: 5/22/2018</p>	<p>DATE: _____</p> <p>BY: _____</p> <p>FOR: _____</p>
	<p>INDIAN CREEK WRF EXPANSION TO 3 MGD</p> <p>HENRY COUNTY WATER AUTHORITY</p> <p>HEADWORKS</p> <p>SECTIONS AND DETAILS</p>	<p>PROJECT NO. 20-M-3</p> <p>SHEET NO. 1</p>	<p>DATE: _____</p> <p>BY: _____</p> <p>FOR: _____</p>



SECTION
SCALE: 1" = 1'-0"



SECTION
SCALE: 1" = 1'-0"



SECTION
SCALE: 1" = 1'-0"

NOTES:
1. ALL MATERIALS SHALL BE AS SHOWN UNLESS OTHERWISE SPECIFIED. ALL DIMENSIONS SHALL BE IN UNITS AS SHOWN UNLESS OTHERWISE SPECIFIED.

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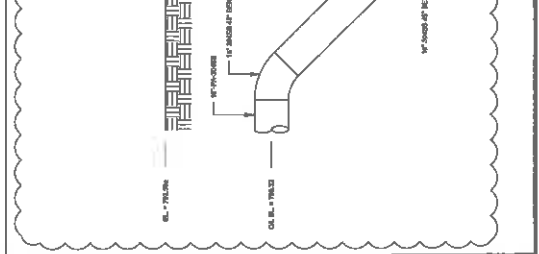
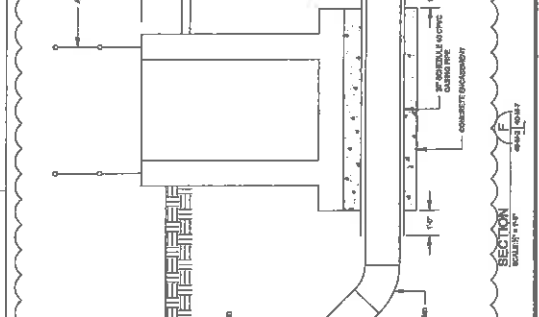
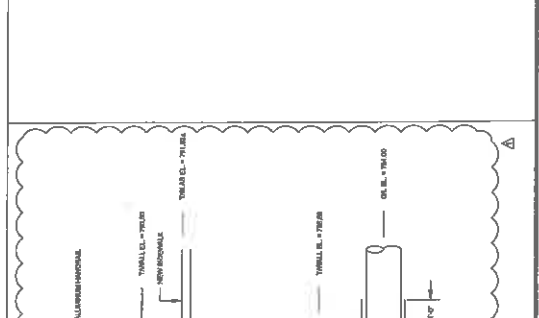
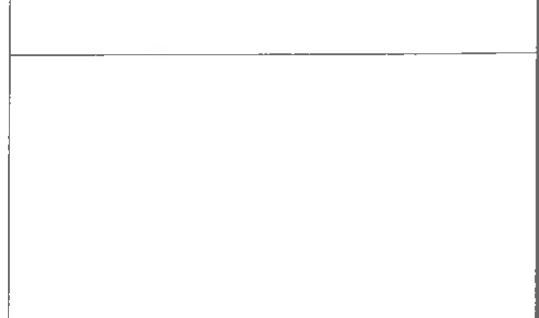
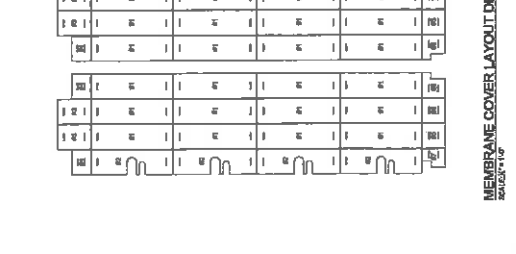
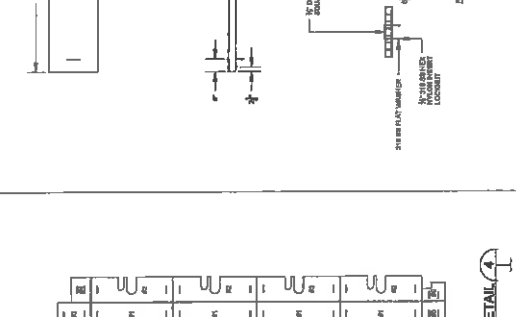
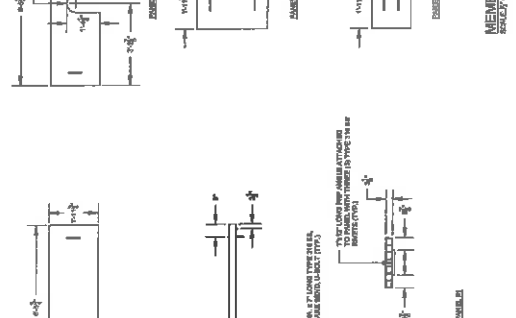
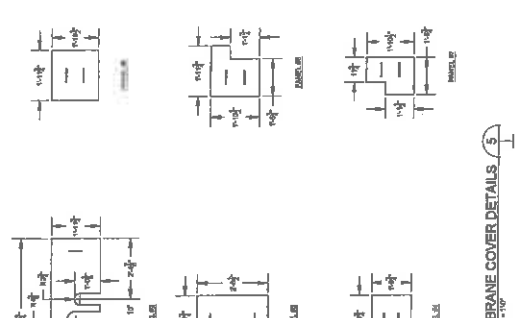
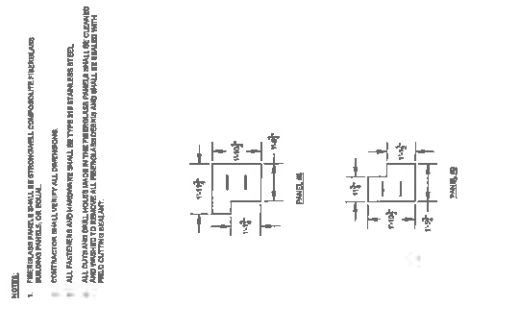


ESI
 ENGINEERING STRATEGIES, INC.
 3635 SHELTON BLVD., SUITE 200
 SAN JOSE, CA 95128
 (408) 434-1100
 LICENSE NO. 50818

DATE:	APRIL 2018
PROJECT NUMBER:	
REVISION:	1
DATE:	02/22/18
APPROVED BY:	
CHECKED BY:	
DATE:	

INDIAN CREEK WRF EXPANSION TO 3 MGD
 HENRY COUNTY WATER AUTHORITY
 MBR MEMBRANE TANK
 SECTIONS AND DETAILS 4

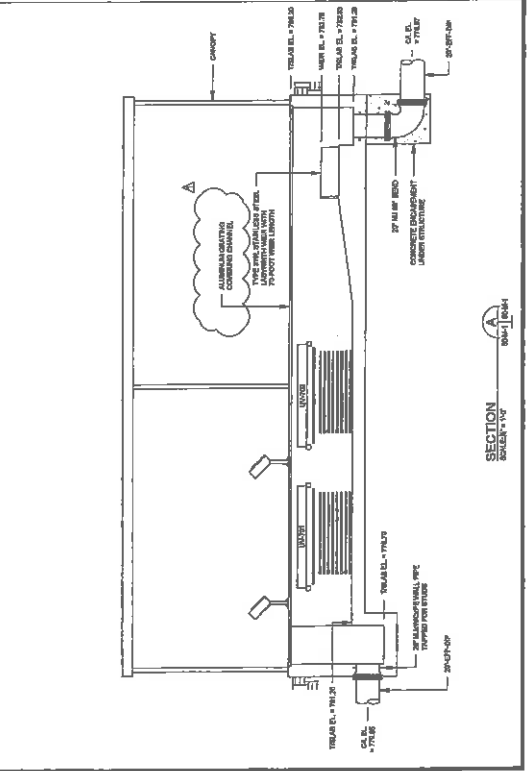
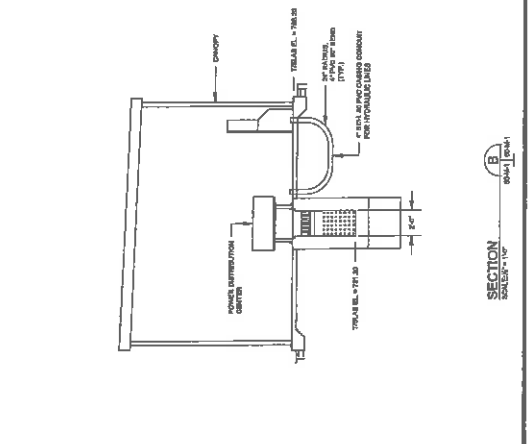
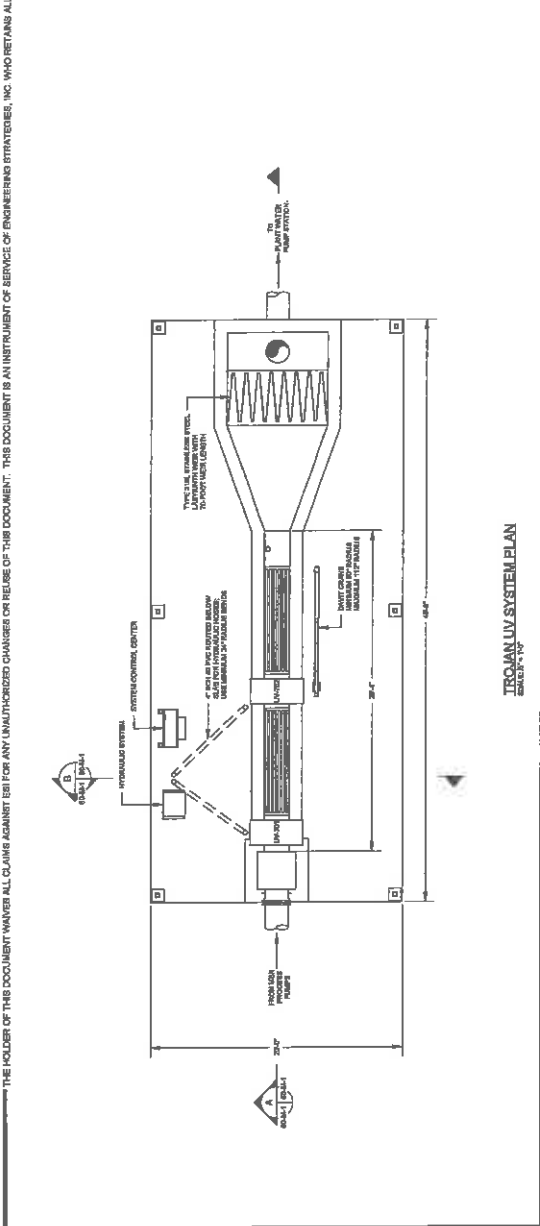
SHEET NO.
 35-M-7




INDIAN CREEK WRF EXPANSION TO 3 MGD		HENRY COUNTY WATER AUTHORITY		ULTRAVIOLET DISINFECTION SYSTEM		PLAN AND SECTIONS (TROJAN)	
DATE	REVISION	PROJECT NUMBER	DATE	REVISION	PROJECT NUMBER	DATE	REVISION
11/19/2016			02/23/2016				
DATE	REVISION	PROJECT NUMBER	DATE	REVISION	PROJECT NUMBER	DATE	REVISION
11/19/2016			02/23/2016				
DATE	REVISION	PROJECT NUMBER	DATE	REVISION	PROJECT NUMBER	DATE	REVISION
11/19/2016			02/23/2016				

NOTES

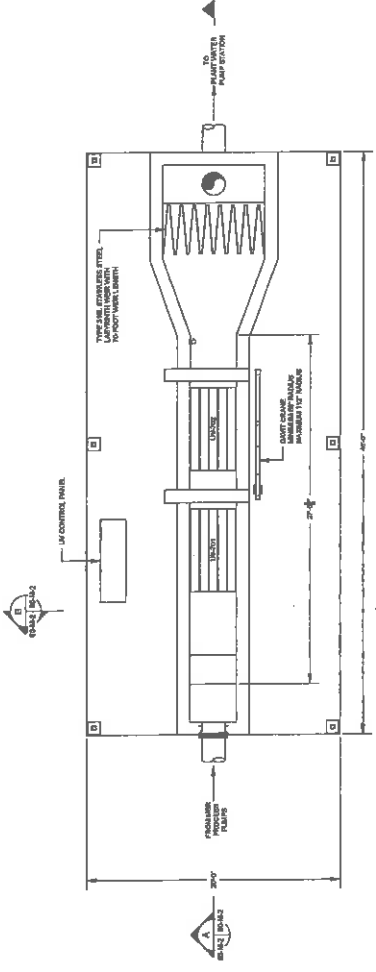
1. THE HOLDER OF THIS DOCUMENT WAIVES ALL CLAIMS AGAINST ESI FOR ANY UNAUTHORIZED CHANGES OR REUSE OF THIS DOCUMENT. THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF ENGINEERING STRATEGIES, INC. WHO RETAINS ALL RIGHTS OF COMMON LAW, STATUTE AND COPYRIGHT THEREIN.
2. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.
3. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.
4. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.
5. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.
6. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.
7. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.
8. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.
9. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.
10. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED MAIN OUTDOOR ENCLOSURE.



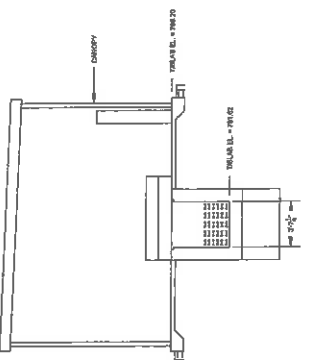
THE HOLDER OF THIS DOCUMENT WAIVES ALL CLAIMS ADMINIT BEI FOR ANY UNAUTHORIZED CHANGES OR REUSE OF THIS DOCUMENT. THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF ENGINEERING STRATEGIES, INC. WHO RETAINS ALL RIGHTS OF COMMON LAW, STATUTE AND COPYRIGHT THERE TO

 ESI ENGINEERING STRATEGIES, INC. 2685 BAYLORWOOD ROAD, SUITE 202 MARTINEZ, CA 94553 (925) 952-0001	PROJECT NUMBER: _____	CHECKED: HSMH DATE: _____	SHEET NO. 6-M-2
	REVISION NO. 1 DATE: 02/20/16	PROJECT NUMBER: _____	CHECKED: HSMH DATE: _____

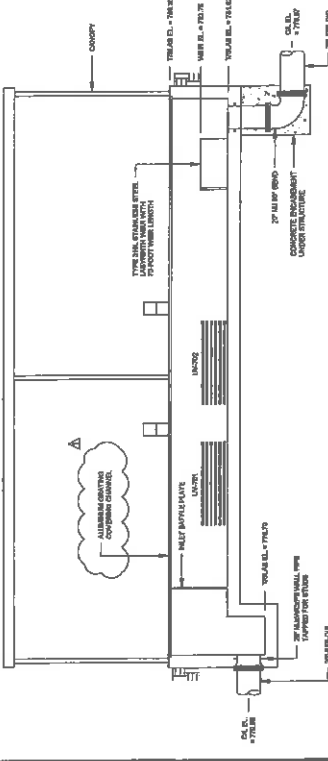
- NOTES:**
1. THIS ULTRAVIOLET DISINFECTION SYSTEM WILL BE LOCATED IN AN OUTDOOR ENVIRONMENT. ALL ELECTRICAL EQUIPMENT WILL BE LOCATED IN AN OUTDOOR ENVIRONMENT. ALL ELECTRICAL EQUIPMENT SHALL BE PROTECTED BY AN OVERCURRENT PROTECTIVE DEVICE (OCPD) AND SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE ELECTRICAL CODES AND REGULATIONS.
 2. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE ELECTRICAL CODES AND REGULATIONS.



WEDECO UV SYSTEM PLAN
SCALE: 1/4" = 1'-0"




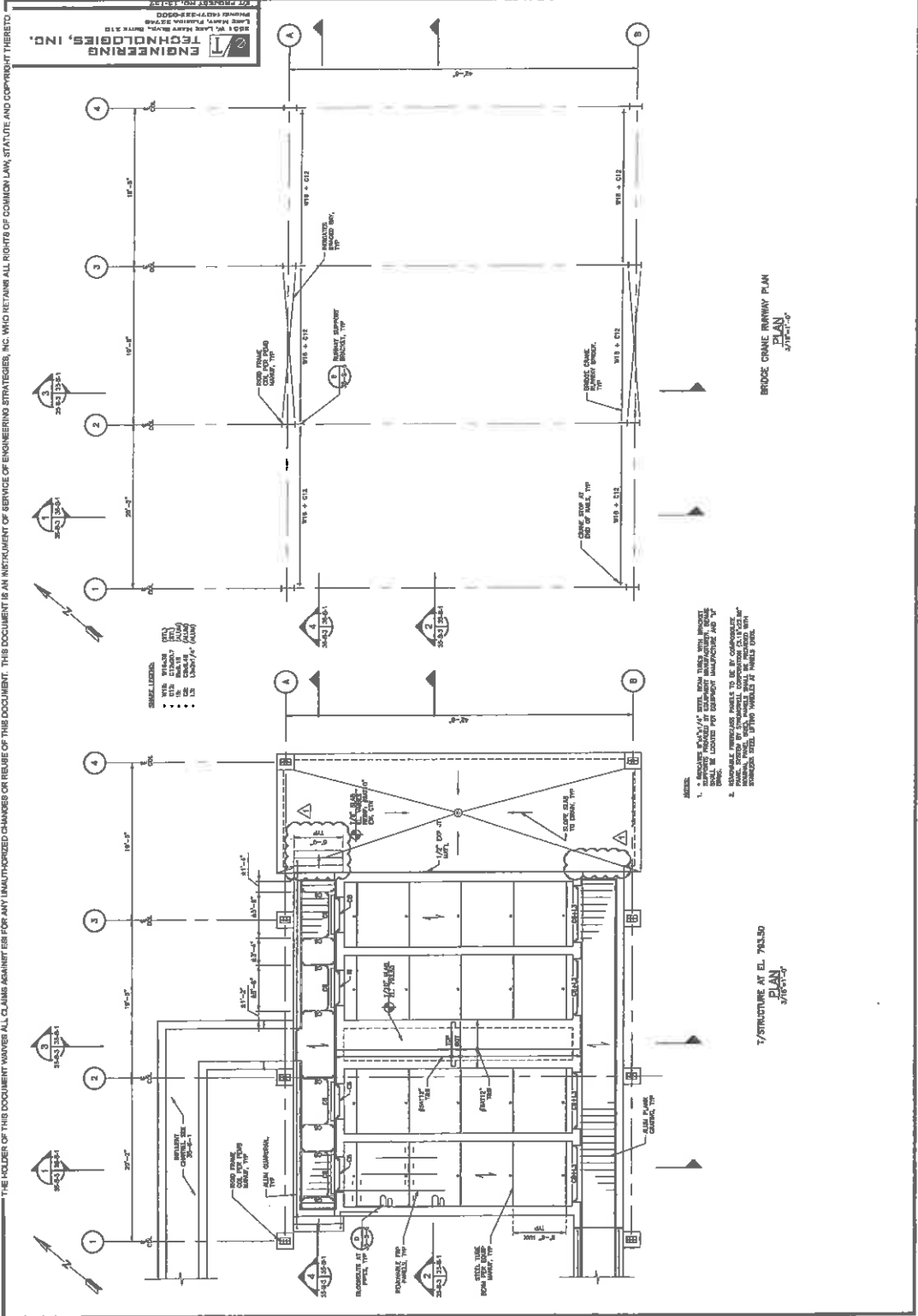
SECTION A-A
SCALE: 1/4" = 1'-0"



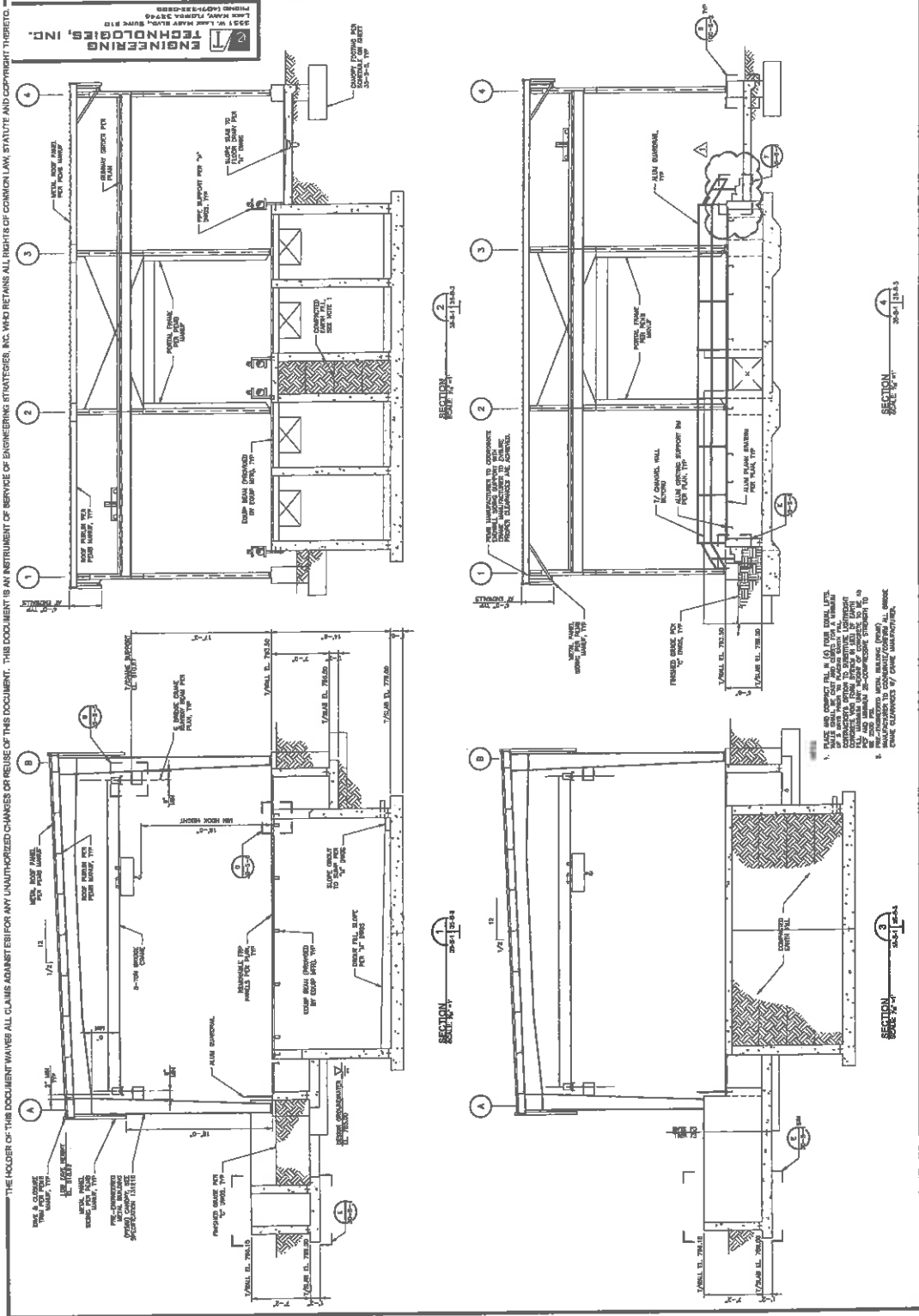
SECTION B-B
SCALE: 1/4" = 1'-0"

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 ENGINEERING STRATEGIES, INC. 3855 BALDWIN ROAD, SUITE 110 WASHINGTON, DC 20008 (703) 439-0001	PROJECT NUMBER: DATE: AUGUST 2018	CLIENT: DATE:	DESIGNER: DATE:
	ADDRESS NO. 1: REVISION:	DATE:	DATE:



- NOTES:**
1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
 2. DIMENSIONS TO FACE OF MEMBERS UNLESS OTHERWISE NOTED.
 3. DIMENSIONS TO FACE OF MEMBERS UNLESS OTHERWISE NOTED.
 4. DIMENSIONS TO FACE OF MEMBERS UNLESS OTHERWISE NOTED.



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		ESI ENGINEERING STRATEGIES, INC. 3521 W. LAMAR AVENUE, SUITE 310 MERRILL, CA 94563 (916) 433-0001	
PROJECT NO. 13-127 PHASE 04-23-2016	DATE AUGUST 2016	PROJECT NUMBER 13-127	REVISION 04/18/16
ADJOURN NO. 1	DATE 04/18/16	CHECK LRS	DATE 04/18/16
DESIGNER DATE 04/18/16		CHECKED DATE 04/18/16	

INDIAN CREEK WRF EXPANSION TO 3 MGD
 HENRY COUNTY WATER AUTHORITY
 SECTIONS
 MBR MEMBRANE TANK
 SHEET NO. 35-3-C

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

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

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

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

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

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

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

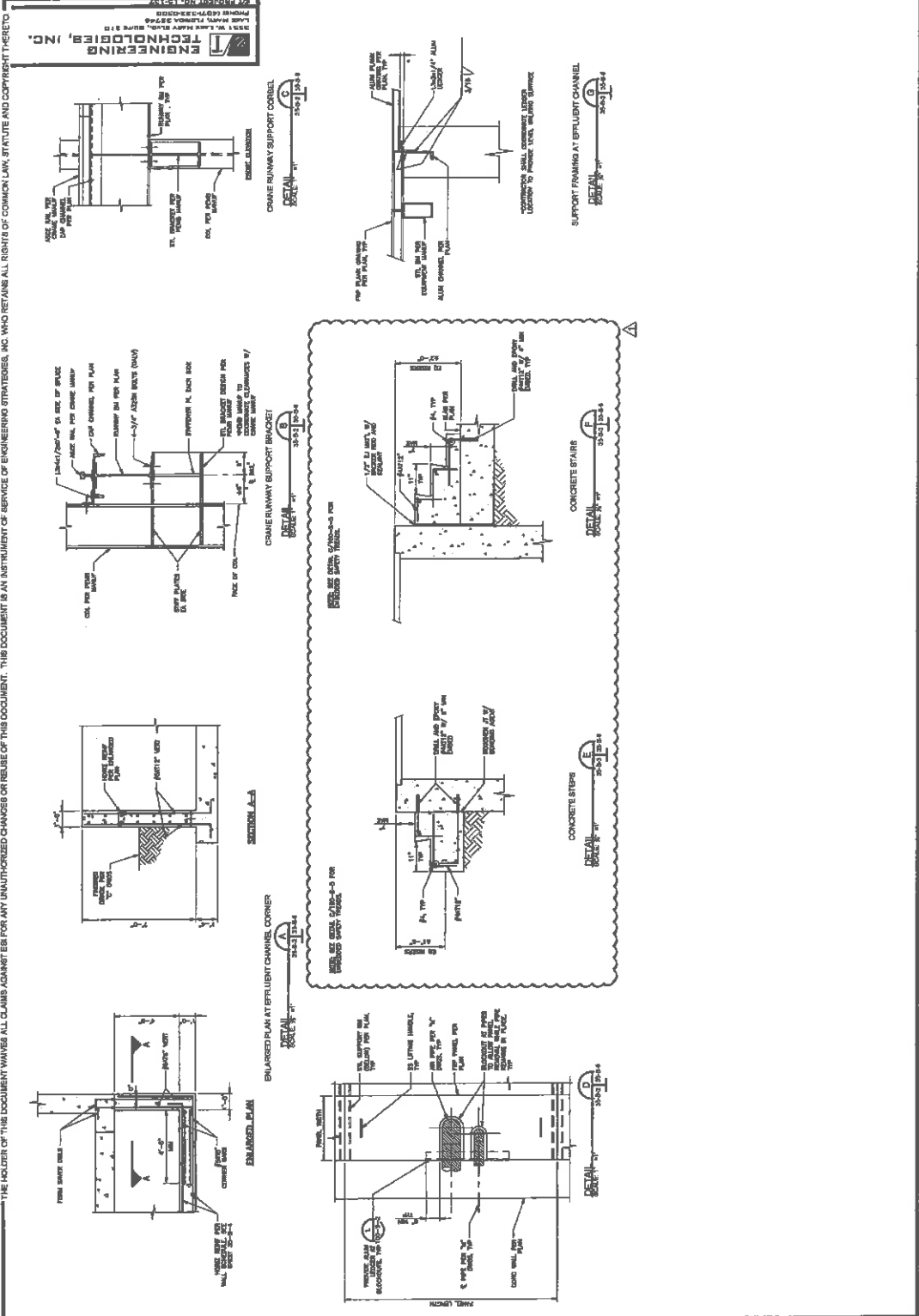
SECTION SCALE 1/4" = 1'-0"

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

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

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 ESI ENGINEERING STRATEGIES, INC. 2525 W. LAKE HAVAS BLVD., SUITE 210 LAS VEGAS, NEVADA 89119 (702) 499-0001	PROJECT NUMBER: REGION: ADDRESS NO. 1: DATE:	SHEET NO.: 9-S-36
	DATE: AUGUST 2016	DRAWING NO.: DATE:



2525 W. LAKE HAVAS BLVD., SUITE 210
 LAS VEGAS, NEVADA 89119
 (702) 499-0001
ESI
 ENGINEERING STRATEGIES, INC.

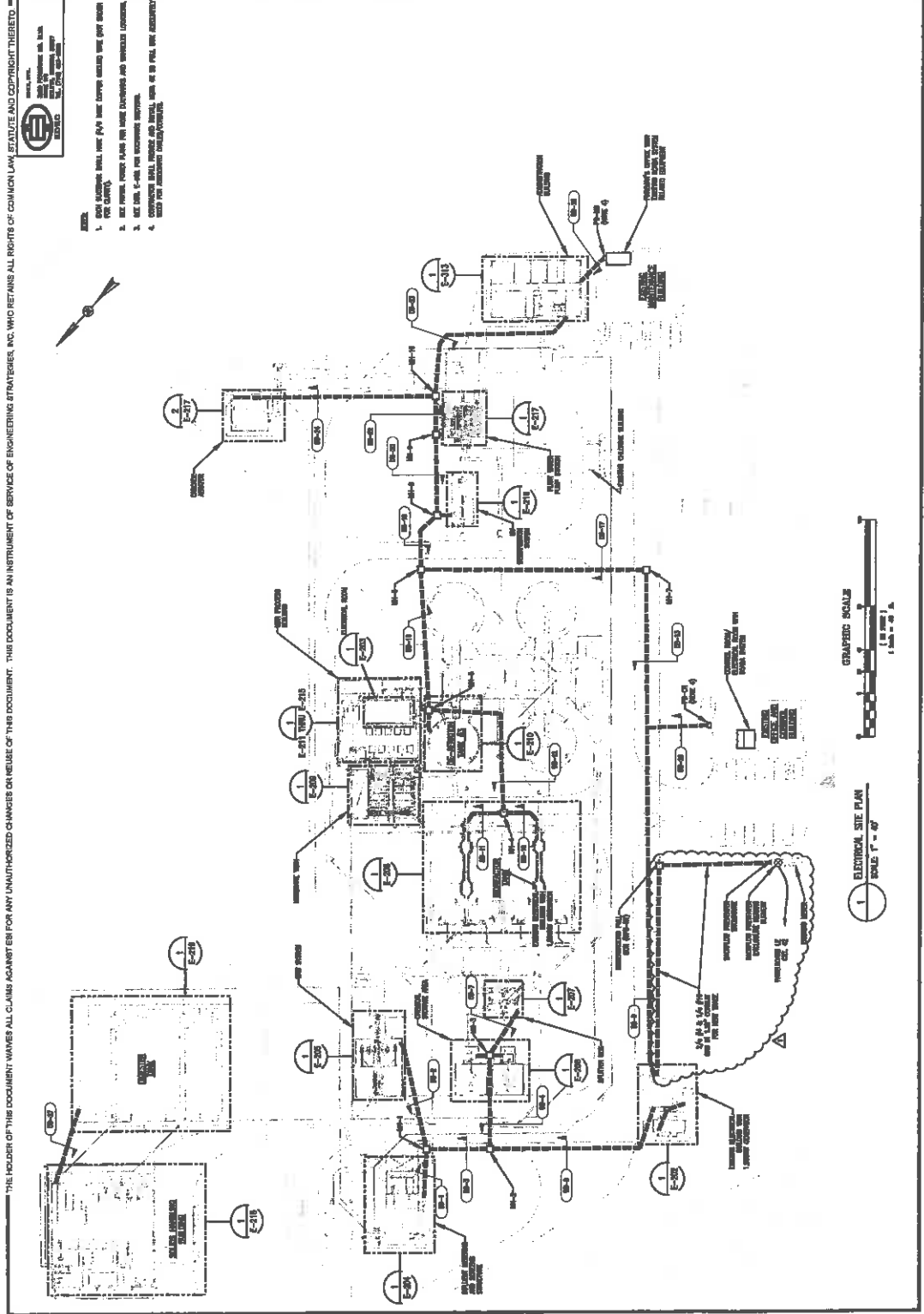
E-201

SHEET NO

INDIAN CREEK WRF HENRY COUNTY WATER AUTHORITY ELECTRICAL SITE PLAN

DATE	AUGUST 2016
PROJECT NUMBER	
REVISION	1
DATE	7/29/16
DESIGNER	AV
CHECKER	AK
SCALE	AS SHOWN

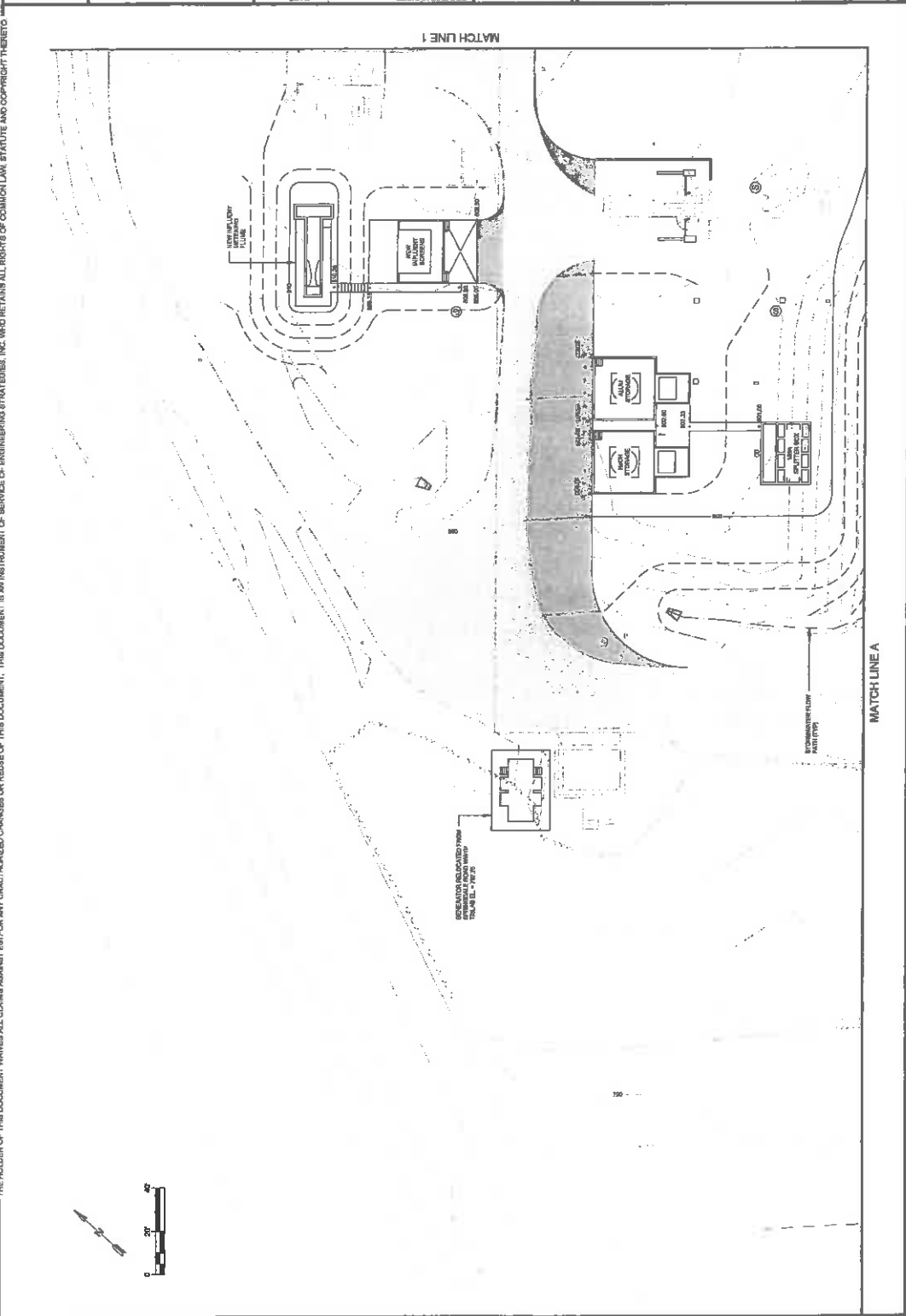
ESI
ENGINEERING STRATEGIES, INC.
3605 HALLMARK ROAD, SUITE 605
MARIETTA, GA 30067
770 493-0008




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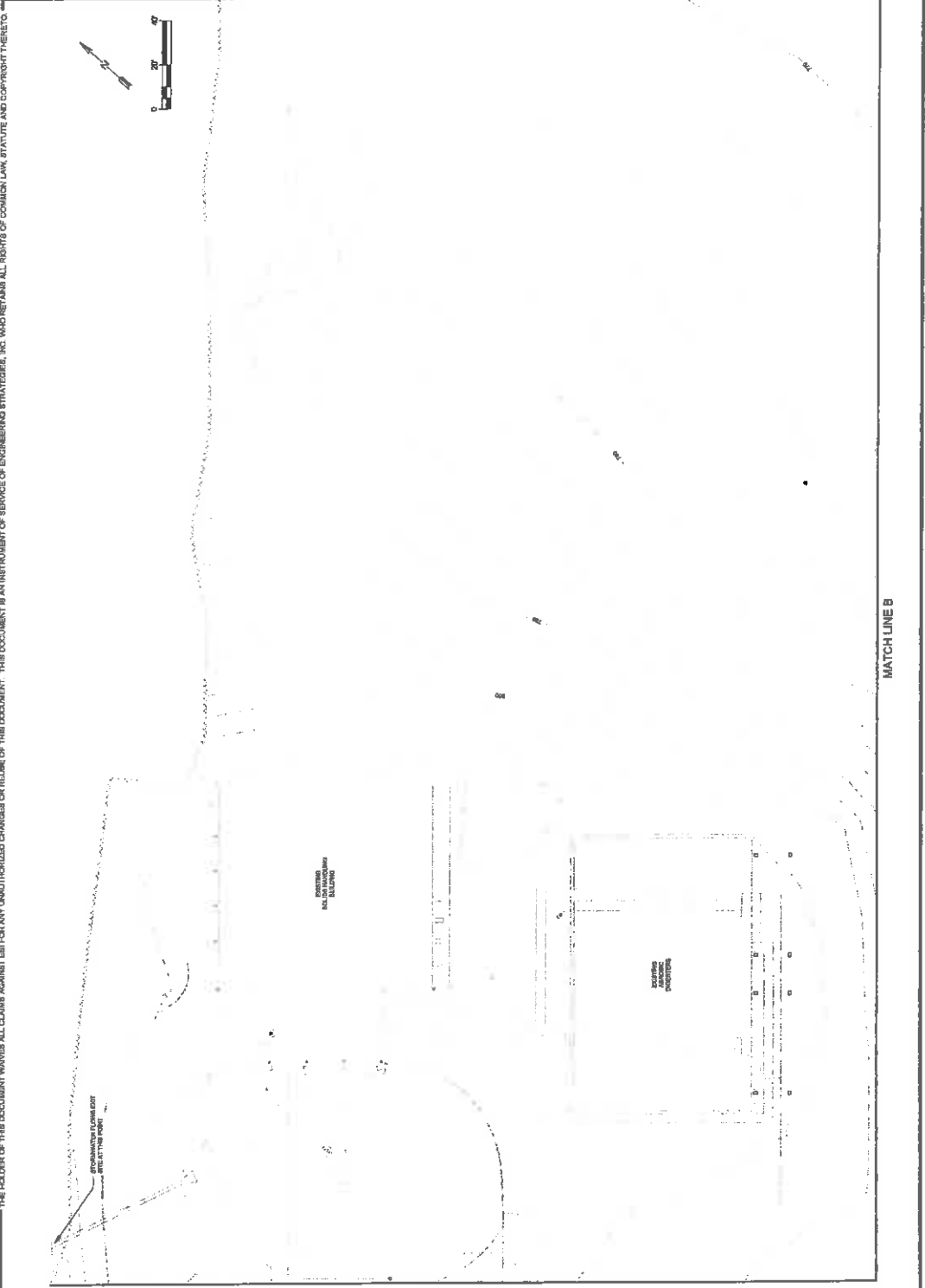
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 <p>ESI ENGINEERING STRATEGIES, INC. 3535 MARINELLA, SUITE 200 MAYFIELD, CA 94541 TEL: 925-481-1111</p>	PROJECT NUMBER: DATE: AUGUST 2018	REVISION: DATE:	CHECK: DRAWN: DATE:	INDIAN CREEK WRF EXPANSION TO 3 MGD HENRY COUNTY WATER AUTHORITY TREATMENT PLANT GRADING PLAN 1	SHEET NO. 00-C-17
	PROJECT NUMBER: DATE:			CHECK: DRAWN: DATE:	SHEET NO. 00-C-17



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	FROM THE STATE OF MISSOURI I HEREBY CERTIFY THAT THE ABOVE NAMED ENGINEER IS A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI.		PROJECT NUMBER: DATE:	DESIGNER: CHECKER: DATE:	SHEET NO. 00-C-11

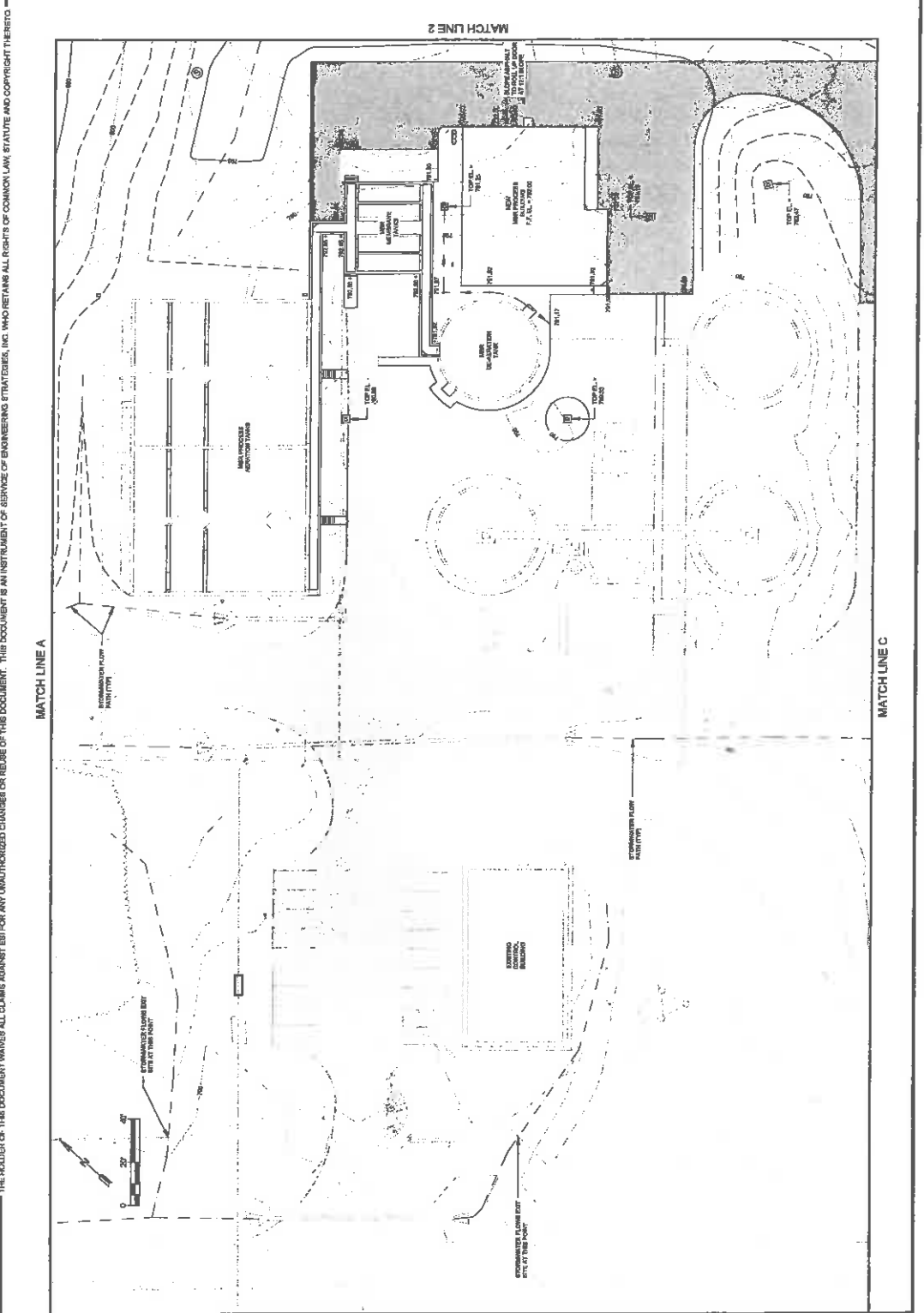


MATCH LINE 1

MATCH LINE B

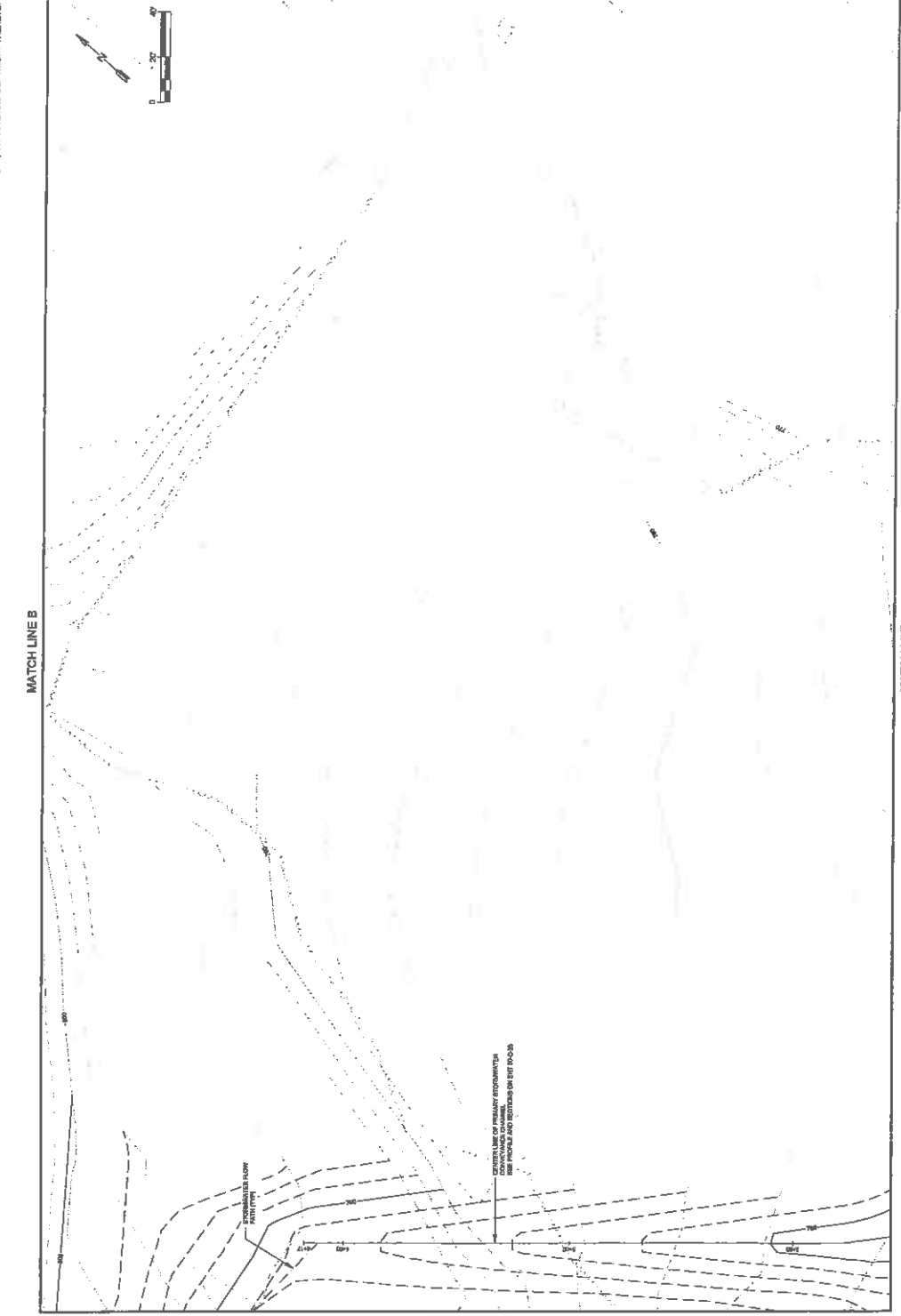
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 <p>ESI ENGINEERING STRATEGIES, INC. 3000 BAYVIEW BLVD., SUITE 200 MARTIN, LA 70055 504-833-8888</p>	<p>PROJECT NUMBER: _____</p> <p>DATE: AUGUST 2016</p>	<p>DATE: _____</p> <p>REVISION: _____</p>	<p>DATE: _____</p> <p>REVISION: _____</p>
	<p>INDIAN CREEK WRF EXPANSION TO 3 MGD HENRY COUNTY WATER AUTHORITY TREATMENT PLANT GRADING PLAN 3</p>		



81-C-11
SHEET NO

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 ENGINEERING STRATEGIES, INC.
 3835 MULLENBURN ROAD, SUITE 218
 MARIETTA, OHIO 45750
 (773) 433-0311

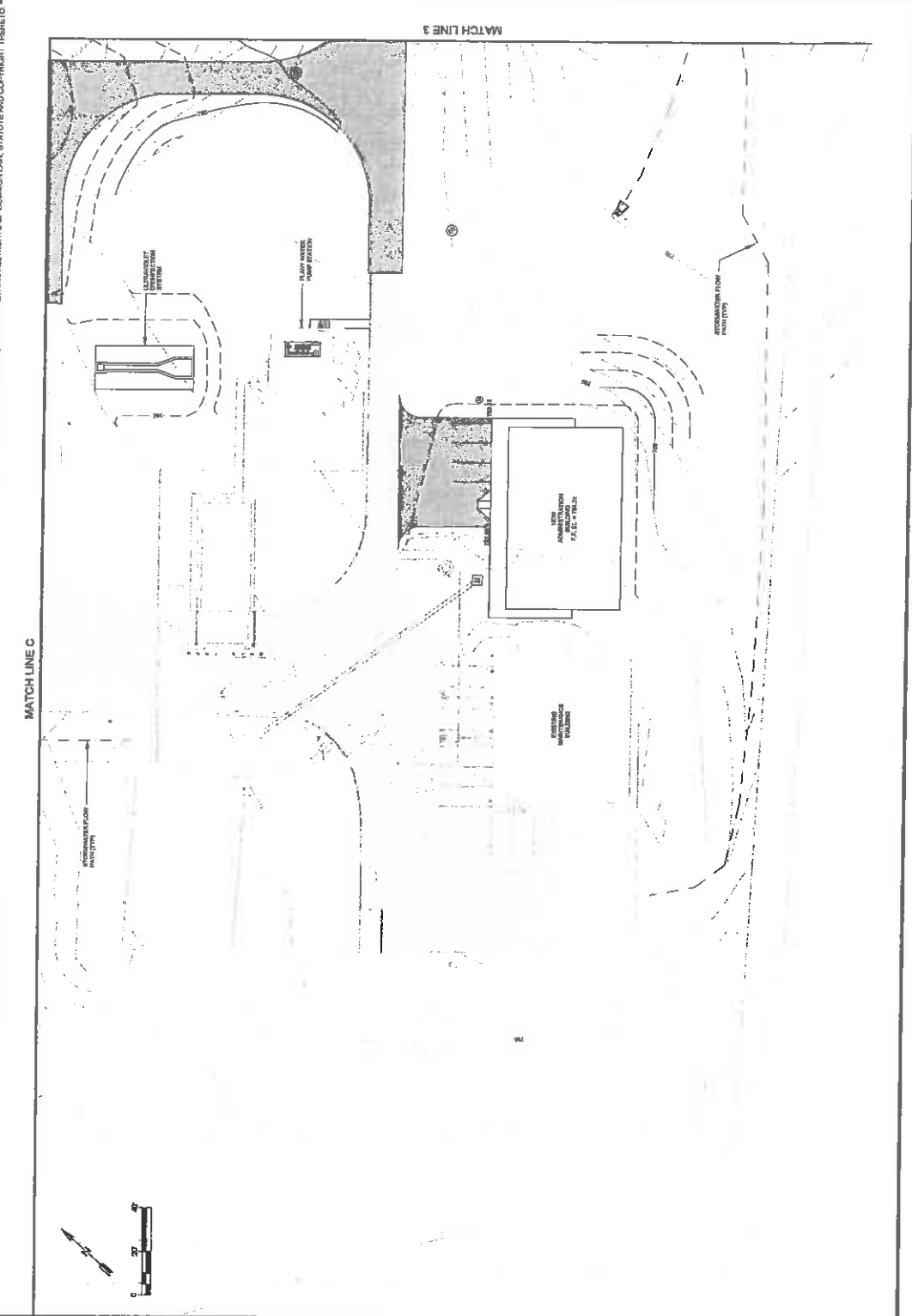
PROJECT NUMBER	DATE	REVISION	DATE
	APRIL 2018		

DESIGN: _____
 CHECKED: _____
 DATE: _____
 PROJECT NUMBER: _____

INDIAN CREEK WRF EXPANSION TO 3 MGD
 TREATMENT PLANT 4
 GRADING PLAN 4

SHEET NO.
 00-C-20

	ESI ENGINEERING STRATEGIES, INC. 255 S. ALVARADO BLVD., SUITE 500 HOUSTON, TX 77002 (713) 481-0001	PROJECT NUMBER: _____ DATE: _____ REVISION: _____ DATE: _____	CHECK: _____ DRAWN: _____ DATE: _____	INDIAN CREEK WRF EXPANSION TO 3 MGD HENRY COUNTY WATER AUTHORITY TREATMENT PLANT GRADING PLAN 5	SHEET NO. 00-C-21
		PROJECT NUMBER: _____ DATE: _____ REVISION: _____ DATE: _____	CHECK: _____ DRAWN: _____ DATE: _____	INDIAN CREEK WRF EXPANSION TO 3 MGD HENRY COUNTY WATER AUTHORITY TREATMENT PLANT GRADING PLAN 5	SHEET NO. 00-C-21



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