



To: All Plan Holders of Record

From: CT Consultants, Inc.  
For the Owner

**Re: *Addendum No. 1***  
***WWTP NFA Improvements***  
***City of Conneaut***

Date: August 16, 2024

This Addendum forms a part of the contract documents and modifies the original bidding documents dated August 2024 and all previous addenda, if any. Acknowledge receipt of this addendum in the space provided in the bid forms. Failure to do so may subject the bidder to disqualification.

### **OPINION OF PROBABLE CONSTRUCTION COSTS**

The Opinion of Probable Construction Costs as published in the Legal Notice shall be changed from \$9,770,000.00 to \$9,060,000.00.

### **BID FORMS**

**Replace** Bid Form, Page BF.8, with enclosed Bid Form, Page BF.8A.

### **PLANS**

**REPLACE** Sheet 39/81 Drawing 70S-01 and Sheet 54/81 Drawing SD-S-01 with the enclosed.

### **SPECIFICATIONS**

**CHANGE** Specification Section 034300 – Circular Precast Post Tensioned Tanks Paragraph 2.1 to read:

#### 2.1 MANUFACTURERS

- A. Source Limitations: Obtain post-tensioning materials and equipment from single source.
- B. Manufacturers:
  - 1. Dutchland LLC
  - 2. DN Tanks
  - 3. Or Approved Equal

**REPLACE** Specification Section 461211 – SHAFTLESS CONVEYOR with Specification Section 461211 – SHAFTLESS CONVEYOR.

**CHANGE** Section 463333 – POLYMER BLENDING AND FEES EQUIPMENT Paragraph 2.1.A to read:

A. Subject to compliance with the specification, the acceptable manufacturers:

1. VeloDyne – Felocity Dynamics of Louisville, Co
2. Dynablend
3. Or Approved Equal

**CHANGE** Section 466656 – OPEN-CHANNEL LOW-PRESSURE/HIGH-INTENSITY ULTRAVIOLET TREATMENT EQUIPMENT Paragraph 2.1.A to read:

A. Manufacturers:

1. Trojan Technologies
2. Calgon Carbon Corporation
3. Ozonia North America LLC
4. Or Approved Equal

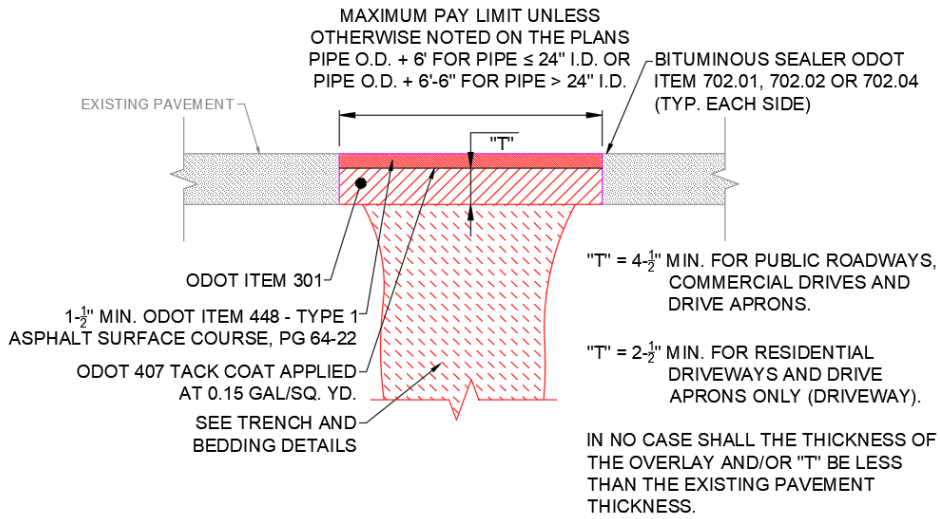
In Specification Section 467627 – MULTI DISC SCREW PRESS Paragraph 1.4 **ADD**:

5. If a different configuration of drums is provided, the total sludge processing capacity, solids capture, and polymer dose shall be met without exceeding the specified maximum drum speed.

## **QUESTIONS AND ANSWERS**

Q1. Where is the location of the asphalt pavement details.

**A1. See details below regarding asphalt pavement on Sheet 01C-04.**



NOTE:

1. EXISTING SUBBASE MATERIAL (IF ANY) SHALL BE REPLACED, AS DIRECTED BY ENGINEER.

**TYPE C PAVEMENT REPLACEMENT**

NOT TO SCALE

TV/MB/TL:mep

Enclosures

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**PROPOSAL TO THE CITY OF CONNEAUT  
FOR WWTP NFA IMPROVEMENTS  
PROJECT NO. 231837**

REF NO.	DESCRIPTION - BASE BID	QTY	MEASURE UNIT	UNIT PRICE LABOR	UNIT PRICE MATERIAL	TOTAL UNIT PRICE	ITEM TOTAL
1.	GENERAL CONSTRUCTION	1.00	LUMP	\$ _____	\$ _____	\$ _____	\$ _____
2.	EXISTING CLARIFIERS MECHANISM REPLACEMENT	1.00	LUMP	\$ _____	\$ _____	\$ _____	\$ _____

Informal Total Base Bid \$ \_\_\_\_\_

REF NO.	DESCRIPTION - ALTERNATE	QTY	MEASURE UNIT	UNIT PRICE LABOR	UNIT PRICE MATERIAL	TOTAL UNIT PRICE	ITEM TOTAL
A1	SLUDGE DEWATERING BUILDING	1.00	LUMP	\$ _____	\$ _____	\$ _____	\$ _____
A2	ALLOWANCE - ENGINEERED FILL FOR SLUDGE DEWATERING BUILDING FOUNDATION	100	CY	\$ _____	\$ _____	\$ _____	\$ _____

Informal Total Alternate \$ \_\_\_\_\_

**Informal Total Base Bid and Alternate \$ \_\_\_\_\_**

## SECTION 461211 – SCREW SHAFTLESS CONVEYOR

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary conditions, Division-1 Specifications sections, and all Specification Sections apply to work of this section.
- B. The following equipment and related work are specified and furnished under other items:
  - 1. Section 030000 – Concrete Work
  - 2. Section 055800 – Metal Fabrications
  - 3. Division 26 – Electrical
  - 4. Section 467331 – Sludge Dewatering, Section

#### 1.2 SUMMARY

- A. The Contractor shall provide three (3) shaftless screw conveyor for the conveyance of dewatered sludge to truck as shown on the plans. The unit will receive dewatered sludge, conveying it to the truck dumpster without spillage or carryback of material. The length of the sections of the conveyor, and the angle of the inclined section, is shown in Schedule 461211 – A. The exact final dimensions to be determined by the Contractor to suit the dewatering equipment and the conveyor system to be used, as well as the plant layout.
- B. Screw Conveyors with shafts and intermediate hanger bearings will not be acceptable for this project.
- C. Furnish equipment complete with all supports for the horizontal and incline conveyors; all mechanical equipment required for proper operation, including complete drive units; control panel, all steel and other metal construction specified herein; and all additional materials or fabrication as required by the supplier's design.
- D. The contractor is responsible for coordination of all mechanical & electrical equipment, and structural interconnecting or otherwise interfacing with the conveyor and any site measurements required for a detailed conveyor submittal.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. The shaftless screw conveyor shall meet the performance and design requirements as listed in Schedule 461211 – A. Conveyor selection design standards to be based on the operational experience of the manufacturer with shaftless screw conveyors.
- B. Conveyor rotational speeds shall not be greater than herein specified unless availability of the reducer ratio requires slight adjustment ( $\pm 3$  rpm) or if shown by the conveyor manufacturer calculations to be required to meet design load. Deviations from specified speed cannot be utilized to reduce the conveyor trough and spiral size. Faster speeds are

utilized to prevent the fluidization or apparent thinning when conveying dewatered sludge.

#### 1.4 SUBMITTALS

- A. General: Submit the following in accordance with conditions of Contract and Division 1 Specification Sections.
- B. Product Data:
  - 1. Submit Manufacturer's literature, warranty technical data and installation instruction complete with accessories, catalog cuts, drawings, specifications, fabrication details and parts identification for all work of this Section.
  - 2. Torque calculations for the gear reducer and reducer motor.
  - 3. Horsepower calculation for the drive motors.
  - 4. Manufacturer's certification, signed by a corporate officer, informing that the proposed equipment fully complies with requirements of this specification.
  - 5. Motor characteristics and performance information.
  - 6. Gear reducer data including service factor, efficiency and materials.
  - 7. Parts list including a list of recommended spare parts.
- C. Shop Drawings:
  - 1. Manufacturer's installation drawings. Dimension drawings depicting all mechanical and electrical equipment dimensions and required clearances.
  - 2. General arrangement drawings for the proposed equipment.
  - 3. Submit support locations and loads to Engineer with shop drawing for review.
  - 4. Submit proposed hanger support locations referenced from the steel columns of the Cake Loading Building and dead and live loads at each point.
  - 5. Cut sheets for electric motors and auxiliary items.
  - 6. Complete schematic diagrams for electrical control panels.
- D. Maintenance and Operating Instructions: Maintenance and Operation manuals shall completely describe operation of the shaftless screw conveyor, start-up, optimization and maintenance operations for the equipment to be furnished under this section.
  - 1. Recommendations for short- and long-term storage.
  - 2. Detailed installation instructions, with clear step-by-step points on the correct mechanical and electrical installation procedures.
  - 3. Explanation of operating safety considerations
  - 4. Trouble shooting instructions.
  - 5. Electrical diagram.
  - 6. Manufacturer's warranty.
  - 7. Repair parts and maintenance material.

#### 1.5 QUALITY ASSURANCE

- A. In addition to requirements of these specifications, comply with Manufacturer's instructions and recommendations for work.
- B. The shaftless screw conveyor shall be manufactured of the best quality material and workmanship.

- C. All equipment included in this section shall be furnished by a single supplier who shall be responsible for the design, coordination, and the satisfactory operation of the system.
- D. Provide evidence of at least fifteen (15) years demonstrable experience in the design and manufacture of shaftless conveyor systems. The Supplier shall have at least ten (10) full-scale shaftless conveyor systems operating successfully for at least three (3) years in North America at municipal wastewater treatment plants.
- E. Any shaftless screw conveyor proposed as an "or equal" design will be subject to the Consulting Engineer's approval. If such approval is granted, the Contractor and conveyor Manufacturer will nonetheless be responsible for the resolution of any technical problems arising from the use of the "or equal" design.

## 1.6 WARRANTY

- A. The manufacturer shall warranty the equipment furnished under this section to be free from defects in material and workmanship for a period of twelve (12) months after the equipment was first placed into operation at the jobsite or eighteen (18) months after the equipment was first delivered to site, whichever date occurs first. Any warranted material defects found to exist shall be corrected (repaired or replaced) at no cost to the Owner.

## 1.7 JOB CONDITIONS

- A. To be delivered in assembled match-marked sections ready for final installation, without the need for field welding.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. The system shall be of the shaftless screw conveyors:
  - 1. Spirac USA, Inc., Newnan, Georgia
  - 2. Keystone Conveyor Corporation
  - 3. MLM Conveying Systems, Inc.
  - 4. Esmil Corporation.
  - 5. Or approved equal.

### 2.2 MATERIALS

- A. Materials used in the fabrication of the equipment under this section shall conform to the Schedule 11312-A:
  - 1. Chutes, Troughs, End Plates: AISI 304 stainless steel Covers, Hoppers & Supports
  - 2. Spiral Flighting: Special Chrome-Alloy Steel w/minimum 225 Brinell Hardness
  - 3. Wear Liner: UHMW Polyethylene, Duraflo® SPX™
  - 4. Hardware: AISI 304 stainless steel

## 2.3 FABRICATION

- A. The shaftless screw conveyor equipment shall include the following:
  - 1. Troughs, Liners & Covers
  - 2. Spiral Flighting
  - 3. Chutes
  - 4. End Shaft
  - 5. Electric Motor & Gear Reducer
  - 6. Mounting and Support Structure
  - 7. Electrical Control Panel
  - 8. Safety Accessories
  - 9. Spare Parts
- B. All welds to be continuous unless otherwise specified.
- C. Sharp corners of all cut and sheared edges shall be made smooth by edge grinding.

## 2.4 POWER SUPPLY

- A. All electrical equipment shall conform to applicable standard of the National Electrical Manufacturers Association (NEMA) and the National Electrical Code (NEC). Both power and control equipment shall be insulated for not less than 600 volts even though operating voltages may be lower.
- B. Power supply to the equipment shall be 460 volts, 60 Hz, 3 ph.
- C. Power supply for electrical controls shall be 24V DC or 120 volts, 60 Hz, single phase.

## 2.5 DRIVE UNITS

- A. Each spiral conveyor shall be driven by a constant-speed gear reducer motor drive unit mounted to a bellhousing adapter flange mounted to the end plate of the conveyor.
- B. The adapter flange shall allow the leakage of any material from the conveyor trough to atmosphere rather than into the gear reducer/ motor drive unit. Direct coupling of the gear reducer/motor drive unit to the end flange of the conveyor will not be acceptable.
- C. The drive unit shall be rigidly supported so there is no visible "wobble" movement under any operating condition. In the event of a prolonged power failure or emergency system shutdown the drive system shall be designed, at a minimum, to start the conveyor from a dead stop with the trough filled at 2 times the design load for loads designed up to 67% fill rate and 1.5 times for loads designed exceeding 67% fill rate.
- D. All motors shall be of energy efficient design meeting or exceeding NEMA MG1- table 12-10 and EP Act guidelines. The motors shall be 460-volt, 60 Hz, 3 phase conforming to the General Equipment specifications, except as modified herein. Each motor shall be 40°C ambient rated, 3300 feet (1000m) altitude or lower operation, with a maximum temperature rise of 80 degree C by resistance at 1.0 service factor (95 degree C rise at 1.15 s.f.). The motors have Class B insulation with Design B speed/torque characteristics in accordance with NEMA MG1-12.35 and 12.38, and be C face type, with NEMA frame sizes.



- E. Motors shall have a 1.15 service factor and a TEFC enclosure.
- F. Gear Reducers
  - 1. All gears shall be AGMA Class II, single or double reduction, parallel shaft with high capacity roller bearings. Bearings shall be designed for the thrust loads from the fully loaded startup condition and shall have an AFBMA B-10 life of 30,000 hours.
  - 2. The reducer will be air-cooled unit with no auxiliary cooling requirement. The gear reducer shall be sized with a torque service factor of 1.5 times the absorbed power or 1.1 times the motor nameplate, at the driven shaft speed, whichever is greater.

## 2.6 LOCAL CONTROL PANEL

- A. All local electrical controls shall be furnished by the manufacturer of the conveyor system and conform to the provisions, National Electric Code.
- B. All enclosures shall be NEMA 4X stainless steel or composite material as per Section 407000 with latches (no screws). All hardware on the enclosures, hinges, pins, clamps, nuts, bolts, washers, etc., shall be stainless steel. Enclosure doors shall be hinged with print pocket.
- C. Local Control Panel shall be equipped with:
  - 1. Hand-Off/Reset-Auto (HOA) selector switch
  - 2. Emergency acknowledgement button; emergency indicator and sound horn.
- D. Motion Failure Alarm Unit: An external conveyor mounted motion failure alarm; (alternately known as “zero speed” or “under-speed” switch) to detect spiral or drive shaft failure shall be utilized in this design. SITRANS WM100 with a NEMA 4 enclosure.
- E. Emergency Shutdown: Each conveyor shall be furnished with an emergency trip cord and safety switch. The cord shall run the full length of each conveyor. The trip switch shall immediately stop all conveyors when the switch is actuated. The switch shall be RS type by Conveyor Components Corporation or approved equal.
- F. Components:
  - 1. Local Control Panel shall be NEMA 4X stainless steel.
  - 2. Enclosure shall house the control devices, relays and terminal blocks.
  - 3. Pilot devices shall be mounted on the enclosure front panel.
  - 4. Conveyor drive motors will be controlled by the VFD to be provided by the equipment supplier.
  - 5. Two contacts shall be provided one for a RUN signal and one for FAIL signal. The contacts shall be rated at 2-AMPS, 120VAC, and resistive load.
  - 6. Interlocks for control by the Screw Press Control panel shall be hardwired to the associated screw conveyor control panel.

## 2.7 SURFACE PREPARATION

- A. All iron and mild steel surfaces to be painted shall be dry abrasive blasted in accordance with SSPC-SP6, and in accordance with the painting Section 09801. Surfaces shall be painted or hot dip galvanized within 24 hours to prevent rusting and surface discoloration.
- B. All carbon steel frame and support members shall be prepared with a commercial sandblast (SSPC-SP6) and be finished with a two-part epoxy paint system.
- C. Stainless steel shall be cleaned with mild abrasive wheels and/or nonferrous blast media to remove heavy scale and welding carbon and/or pickled and passivated with stainless steel cleaner then rinsed.
- D. After surface preparation, ferrous metal surfaces, if any, except for the spiral flighting shall receive a minimum of one (1) coat of epoxy primer. Provide a total minimum dry film thickness of 3 mils prior to shipment to jobsite. Primer shall be compatible with the paint system specified for the equipment under "Painting" section of these specifications. Finish coats shall be applied at the jobsite by the General Contractor, per Specification 09801 requirements.
  - 1. The spiral shall be furnished with one coat of shop primer only.
  - 2. Electric motors, gear reducers, electrical control panels, and other purchased sub-components shall be furnished with the manufacturer's standard finish.
  - 3. Stainless steel surfaces do not require painting.

## 2.8 SPIRAL

- A. Spiral flighting for the shaftless screw conveyors shall be designed to convey material without a center shaft or hanger bearings.
- B. Spiral flights shall be cold-formed high strength chrome alloy steel with a minimum hardness of 225 Brinell. The spiral flights shall be designed with adequate stability to prevent distortion and jumping in the trough. A second, inner spiral, concentric with the outside spiral shall also be provided. The torsional rating of the auger flighting shall exceed the torque rating of the drive motor at 150% of its nameplate horsepower. The "spring effect" of the spiral shall not exceed + 1.0 mm per 100 mm of length at maximum load conditions. The minimum outer spiral thickness shall be 0.75" for spiral diameters up to 9" and 1" for spirals diameters exceeding 9".
- C. The spiral flighting shall be formed in sections from one continuous flat bar and shall be concentric to within  $\pm 2$ mm. Sectional flighting formed from plate shall not be permitted.
- D. Spiral flighting shall have full penetration welds at all splice connections. The flights shall be aligned to assure true alignment when assembled in the field and shall be made in accordance with the supplier's requirements.
- E. Sectional flighting made from flat plates will not be acceptable.
- F. Field welds at the jobsite by the Contractor for installation may be necessary when any overall conveyor length presents shipping or handling constraints.

## 2.9 SPIRAL MOUNTING

- A. A gland packing ring consisting of two Teflon fiber packing rings shall seal the drive shaft at its penetration through the end plate, along with a greased labyrinth sealing system.
- B. Drive shaft mounted to a parallel shaft type gearmotor using a key lock. The connection of the spiral to the drive system shall be through a flanged connection plate that is welded to the spiral forming a smooth and continuous transformation from the flange plate to the spiral. The drive shaft shall have a mating flange and shall be connected to the spiral connection plate. Additionally, a grease lubricated labyrinth seal shall be shaft mounted internally in the conveyor between the back plate and spiral coupling connection.

## 2.10 HORIZONTAL AND INCLINED TROUGHS

- A. Troughs shall be U-shaped and similar to the dimensional standards of CEMA 350 and enclosure classification IIE.
  - 1. A treaded drain outlet shall be provided with each conveyor to facilitate cleaning if required by contract drawings. The drain outlet shall be piped to a drain as shown on the drawings, with adequate cleaning facilities. Drain flushing connections are to be provided if and where specified by the contract drawings. The Contractor shall furnish all labor and materials to connect the conveyor flush water and/or drains with the plant water and drain system.
  - 2. Each trough shall be equipped with inlet and/or discharge openings as shown on the contract drawings. If required, each inlet and discharge opening shall be flanged suitable for interconnection to other devices. Any interconnecting devices such as chutes and hoppers shall be fabricated from the same grade of material as the troughs and with a gauge thickness to suit the application requirements.
- B. Bolted covers shall be furnished for any portion of each trough that is not covered by the filling chute. Covers shall be manufactured in maximum five (5) foot length section to allow for easy access and ease of liner replacement. To prevent unsafe access to the conveyors, quick opening covers will not be allowed unless they are equipped with cover sensor to prevent access during operation. Each conveyor shall be fixed with the appropriate warning labels to call for lock out – tag out of the electrical system before the covers are removed. If required, inspection hatches or sample ports with finger guards will be supplied as indicated on the contract drawings.
- C. In order to avoid excessive wear and increased maintenance the conveyors shall be designed without the use of steel hold down bars. Proprietary hold-down guide liners mounted under the lids will be accepted that do not interfere with the flow of conveyed product.
- D. The conveyor system Manufacturer shall design Conveyor and supports to be self-supporting at the span to supports interior of the Sludge Processing Building and Sludge Loadout Building. The beams or truss-like structure supporting the conveyor at the span between the buildings and shall be designed and mounted to the conveyor to maximize clearance beneath the conveyor and shall not prevent conveyor access for inspection or liner replacement.
- E. The horizontal distributional conveyor shall be provided with bi-directional and provided with two discharge shoots on opposite ends of the conveyor as shown on the drawings.

## 2.11 WEAR LINERS

- A. Liner - The inside trough surfaces of the conveyors shall be lined with a layer of ultra-high molecular weight polyethylene UHMW-PE. The liner shall be a single piece, formed and bonded with two (2) layers of the same material, each of a different color, to provide a visible indication when the liner is nearing the end of its useful life. Liners with a second layer of different material are not acceptable. The liner shall be supplied in maximum 3.3 foot long sections to provide ease of replacement. The liner shall be held in place with stainless steel clips; no fasteners will be allowed. Liner thickness shall be at a minimum 3/8 inch. Liners less than the specified minimum thickness and molecular weight shall not be acceptable.

## 2.12 CONVEYOR SUPPORTS

- A. Each conveyor shall be furnished complete with supports suitable for mounting as shown on the contract drawings and as required by the supplier's design of 304 stainless steel structural angle, minimum 0.12" thick. The supports shall be shop fabricated from stainless steel shapes and plates and shall be assembled and fitted to the conveyor prior to its delivery to the jobsite. In cases where transportation of the assembled supports is not feasible, the supports should be assembled onsite. Supports and conveyor segments shall be match marked and shipped to the jobsite for assembly and installation by the Contractor. The manufacturer shall allow for 1 inch of grout beneath each support foot pad for the Contractor to compensate for uneven floor elevation. At a minimum, each conveyor shall be provided with supports at the inlet and discharge end, with intermediate supports as required.
- B. All shop welding shall conform to the latest standards of the American Welding Society (AWS). The supports shall be designed to avoid interference with other equipment or equipment supports.
- C. All hanging supports furnished by the conveyor manufacturer shall be one (1) foot longer than required for field fit by the Contractor, who shall supply connections approved by the Engineer. The Contractor shall be responsible for all fasteners both for hanging and floor anchors.

## 2.13 HOPPERS, DISCHARGE CHUTES AND GATES

- A. Furnish inlet and discharge hoppers of the same gauge and construction material as the conveyor troughs, at locations as shown on the drawings. Flanges shall be a minimum 0.2 inch thick.
  - 1. A 11-gauge stainless steel chute shall be located at the discharge end of the conveyor to direct the flow of material from the conveyor to the desired destination. The chute shall be designed so as to prevent the build-up of material on its interior surfaces.

## 2.14 SPARE PARTS

- A. Furnish the following spare parts (if applicable to scope of supply) as a minimum:
  - 1. One (1) Packing gland set, for each conveyor supplied.

- B. All spare parts shall be boxed in substantial wooden crates for storage.

## 2.15 LUBRICANTS

- A. Furnish lubricants of the type and quantity as recommended by the conveyor manufacturer for (start-up) operation.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. The conveyor shall be delivered by the Manufacturer in fully assembled and complete with hardware and instructions, with exception to the supports. Assembly shall consist only of joining the sections anchoring the supports, installing the anchors, and electrical hookup.
- B. Install equipment in accordance with reviewed Shop Drawings, and manufacturer's instructions, as specified herein and shown on Contract Drawings.
- C. Initial lubrication required for start-up and field test operation shall be furnished and applied in accordance with the manufacturer's recommendations.

### 3.2 FIELD QUALITY CONTROL

- A. The conveyor system supplier shall furnish the services at site of a factory-trained representative for a period of two (2) days in no more than one (1) trip to the jobsite. Service shall be provided as necessary after the Contractor has installed the equipment. These services shall be furnished for the purposes of:
  - 1. The equipment manufacturer's inspection of the equipment following installation by others, and to certify that the equipment has been properly installed and is ready to operate, to train the Owner's personnel in the operation, maintenance of the equipment, and to observe and supervise the initial operation of the equipment.
  - 2. If additional service is required due to the mechanisms not being fully operational, at the time of service requested by the contractor, the additional service days will be at the contractor's expense.
  - 3. For the purposes of this section, a work-day is defined as an eight hour period at the Site, excluding travel time.
- B. After inspection of the installed equipment the Supplier shall furnish a written report certifying that the equipment has been properly installed and lubricated, is in accurate alignment, is free from any undue stress imposed by connecting piping or anchorage, has been operated under full load conditions and that it operates satisfactorily.

### 3.3 DEMONSTRATION AND INSTRUCTIONS

- A. Provide the services of a qualified factory-trained manufacturer's representative to conduct training covering operation, mechanical maintenance and electrical requirements.

3.4 SHAFTLESS SCREW CONVEYOR SCHEDULE

**SCHEDULE 461211 – A**

Location	Sludge Dewatering Building		
Type	Horizontal	Incline	Horizontal, Bi-directional
Trough length	As shown on the Drawings	As shown on the Drawings	As shown on the Drawings
Inlet QTY	1	1	1
Outlet Qty	1	1	2
Trough Material & Thickness	304 SS, 11 ga	304 SS, 11 ga	304 SS, 11 ga
Lid Material & Thickness	304 SS, 14 ga	304 SS, 14 ga	304 SS, 14 ga
Lid Type / Length	Bolted or equipped with cover sensor/ 5-ft max	Bolted or equipped with cover sensor/ 5-ft max	Bolted or equipped with cover sensor/ 5-ft max
Liner Type	UHMW-PE	UHMW-PE	UHMW-PE
Liner Thickness	3/8 in	3/8 in	3/8 in
Conveyor Length	As shown on the Drawings	As shown on the Drawings	As shown on the Drawings
Angle of Inclination	-	max 35°, as show on the Drawings	As shown on the Drawings'-
Conveyed Material	14-20% dry solids		
Vol. Flowrate (ft <sup>3</sup> /hr) (lbs/hr)	113 7100±	113 7100±	113 7100±
Fill Factor	50	50	50
Spiral Type	AB	AB	AB
Spiral Material	HTMAS	HTMAS	HTMAS
RPM	≤20	≤25	≤20
Drive Type	Parallel Shaft	Parallel Shaft	Parallel Shaft
Max. Motor hp	3	4	3
Power Supply	460V / 3ph / 60 Hz	460V / 3ph / 60 Hz	460V / 3ph / 60 Hz
Transport Direction	Push	Push	Reversible

END OF SECTION 461211







GENERAL:

- 1. THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY...
a. WHERE CONFLICT IS FOUND TO EXIST BETWEEN THE SPECIFICATIONS AND THESE NOTES, THE REQUIREMENTS OF THE SPECIFICATIONS SHALL GOVERN.
b. ALL WORK SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF THE OHIO BUILDING CODE (LATEST EDITION) OR THESE DOCUMENTS - WHICHEVER IS MORE STRINGENT.
2. THESE NOTES ARE GENERAL REQUIREMENTS. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREINAFTER FOR USE ON THIS PROJECT.
4. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE CONTRACTOR SHALL CONTACT THE ARCHITECT/ENGINEER FOR CLARIFICATION.
5. TYPICAL DETAILS MAY NOT NECESSARILY BE CUT ON THE PLANS BUT APPLY UNLESS NOTED OTHERWISE.
6. SHOP DRAWINGS PREPARED BY SUPPLIERS AND SUBCONTRACTORS SHALL BE REVIEWED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION TO THE ENGINEER/ARCHITECT.
7. SHOP DRAWINGS PREPARED BY THE CONTRACTORS, SUPPLIERS, ETC., WILL BE REVIEWED BY THE ENGINEER/ARCHITECT ONLY FOR CONFORMANCE WITH DESIGN CONCEPT. NO WORK AFFECTED BY THE SHOP DRAWINGS SHALL BE STARTED WITHOUT SUCH REVIEW.
8. THE GENERAL CONTRACTOR SHALL COORDINATE ALL REVISIONS, CORRECTIONS, AND COMMENTS INDICATED ON THE SHOP DRAWINGS BY THE ARCHITECT/ENGINEER.
9. ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR AND SHALL CONFORM TO THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS. DIMENSIONS AND ELEVATIONS MARKED "REF" ARE FOR REFERENCE ONLY AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO USING THEM FOR ANY CONSTRUCTION.
10. THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION, THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE ENGINEER SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
11. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS. THESE SERVICES SHALL BE SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
12. ALL REQUIRED MATERIAL TESTING SHALL BE PERFORMED AT THE EXPENSE OF CONTRACTOR AND PERFORMED BY AN APPROVED TESTING AGENCY OR LABORATORY. TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
13. THE OWNER SHALL EMPLOY A TESTING AGENCY TO PERFORM SPECIAL INSPECTIONS. CONTRACTOR SHALL ADHERE TO THE STRUCTURAL QUALITY ASSURANCE PLAN AS PER SECTION 17 OF THE IBC 2018. THE CONTRACTOR SHALL COORDINATE WITH THE SPECIAL INSPECTOR.
14. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY WORK THAT IS DAMAGED OR NON-COMPLIANT IN ACCORDANCE WITH THE GOVERNING CODE OR AS INDICATED IN THE CONTRACT DOCUMENTS OR AS DEMANDED BY THE BUILDING OFFICIAL, ARCHITECT OR ENGINEER OF RECORD.
15. ALL STRUCTURES ARE DESIGNED TO BE STABLE AND SELF-SUPPORTING AT THE COMPLETION OF CONSTRUCTION. CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR THE DESIGN, ADEQUACY, AND SAFETY OF ERECTION BRACING, SHORING, AND TEMPORARY SUPPORTS OF THE STRUCTURE SO THAT IT WILL BE STABLE DURING ALL STAGES OF CONSTRUCTION. THE STRUCTURE IS DESIGNED FOR AND COMPLETED IN ACCORDANCE WITH THE STANDARD DETAILS. UNLESS OTHERWISE SHOWN, SEE STANDARD DETAILS FOR CONSTRUCTION OF OPENINGS IN EXISTING WALLS AND SLABS.
16. ALL MATERIALS AND EQUIPMENT FURNISHED WILL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
18. COORDINATE WITH THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR MISCELLANEOUS STEEL ITEMS, LINTELS, METAL PAN STAIRS, SIZE AND LOCATION OF FLOOR SLOPES, DEPRESSED AREAS, FINISH FILLS, CHAMFERS, GROOVES, RAILING SLEEVES, ROOF EDGES, INSERTS, ETC.
19. COORDINATE WITH CIVIL, MECHANICAL, PROCESS, AND ELECTRICAL DRAWINGS FOR PIPE SLEEVES, FLOOR DRAINS, ROOF DRAINS, INSERTS, HANGERS, TRENCHES, PITS, WALL AND SLAB OPENINGS, CONDUIT RUNS IN WALLS AND SLABS, SIZE AND LOCATION OF MACHINE OR EQUIPMENT SUPPORTS, BASE AND ANCHOR BOLTS, RAILING, ETC. THE CONTRACTOR SHALL PROVIDE THESE OPENINGS IN ACCORDANCE WITH THE OTHER CONTRACT DRAWINGS. REINFORCEMENT AROUND OPENINGS FOR NEW WALLS AND SLABS SHALL BE PER THE STANDARD DETAILS. UNLESS OTHERWISE SHOWN, SEE STANDARD DETAILS FOR CONSTRUCTION OF OPENINGS IN EXISTING WALLS AND SLABS.
20. COORDINATE WITH SITE, ARCHITECTURAL, ELECTRICAL, MECHANICAL, AND CIVIL DRAWINGS FOR RETAINING WALLS, PADS, PAVEMENT AND OTHER SITE STRUCTURES.
21. EARTHWORK, FOUNDATION DRAINS, WATERPROOFING, PERIMETER INSULATION, MASONRY AND OTHER REQUIRED NON-STRUCTURAL ITEMS ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS. COORDINATE WITH CIVIL/SITE AND ARCHITECTURAL DRAWINGS.
22. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE OWNER TO AVOID SYSTEM/OPERATION INTERRUPTIONS.
23. MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHALL BE STORED AT OWNER'S DESIGNATED LOCATIONS.
24. THE CONTRACTOR SHALL AT ALL TIMES KEEP THE WORK AREA AND SURROUNDING PREMISES FREE OF WASTE, SURPLUS MATERIALS, RUBBISH, AND DEBRIS RESULTING FROM THE WORK.
25. ALL CONTRACTORS SHALL CONFORM TO THE SAFETY REQUIREMENTS OF THE OWNER, AIA DOCUMENTS A201, OSHA SAFETY AND HEALTH STANDARDS, OWNERS SAFETY REGULATIONS, AND ANY OTHER LOCAL AUTHORITY IN CONNECTION WITH THE PROJECT. ALL EXCAVATIONS SHALL BE PROPERLY SHORED IN ACCORDANCE WITH OSHA STANDARDS AND REQUIREMENTS. ENGINEER DOES NOT ASSUME ANY RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY.
26. LIVE LOAD SIGNS SHALL BE PROVIDED IN AREAS DESIGNATED BY THE ARCHITECT, ENGINEER OR REQUIRED BY THE BUILDING OFFICIAL. SIGNS SHALL BE AS REQUIRED IN THE SPECIFICATIONS.
27. SLOPE DRAINAGE SURFACES UNIFORMLY TO DRAIN. SLOPE SHALL BE 1/8" TO 1/4" PER FOOT EXCEPT WHERE NOTED OTHERWISE ON THE PLANS.
28. NO SUBSTITUTIONS OF MATERIAL WILL BE ALLOWED WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.

GOVERNING CODES AND STANDARDS:

- 1. THE FOLLOWING CODES AND STANDARDS SHALL BE UTILIZED BY THE CONTRACTOR TO ESTABLISH MINIMUM LEVELS OF QUALITY AND CONSTRUCTION TECHNIQUES.
a. GENERAL
OHIO BUILDING CODE (OBC) AND THE INTERNATIONAL BUILDING CODE, (IBC) 2024 EDITION, LOCALLY AMENDED. THE ABOVE SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR CONTRACT PROVISIONS ARE MORE RESTRICTIVE.
INTERNATIONAL BUILDING CODE, IBC 2018 ED, LOCALLY AMENDED. THE ABOVE SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR CONTRACT PROVISIONS ARE MORE RESTRICTIVE.
INTERNATIONAL EXISTING BUILDING CODE, IEBC 2018 ED.
AMERICAN SOCIETY OF CIVIL ENGINEERS, "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", ASCE 7-16.
AMERICAN SOCIETY OF CIVIL ENGINEERS, "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION", ASCE 37-14.
b. CONCRETE
AMERICAN CONCRETE INSTITUTE, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318-14.
AMERICAN CONCRETE INSTITUTE, "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES", ACI 350-06.
AMERICAN CONCRETE INSTITUTE, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 301.
AMERICAN CONCRETE INSTITUTE, "RECOMMENDED PRACTICE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION", ACI 302.
AMERICAN CONCRETE INSTITUTE, "GUIDE FOR SPECIFYING, PROPORTIONING, MIXING, PLACING, AND FINISHING STEEL FIBER REINFORCED CONCRETE", ACI-544.
AMERICAN CONCRETE INSTITUTE, "GUIDE TO FORMWORK FOR CONCRETE", ACI 347.
AMERICAN CONCRETE INSTITUTE, "HOT WEATHER CONCRETING", ACI-305R.
AMERICAN CONCRETE INSTITUTE, "COLD WEATHER CONCRETING", ACI-306R.
AMERICAN CONCRETE INSTITUTE, "GUIDE TO MASS CONCRETE", ACI 207.
AMERICAN CONCRETE INSTITUTE, "SELECTING PROPORTIONS FOR NORMAL, HEAVY WEIGHT AND MASS CONCRETE", ACI 211.1.
AMERICAN CONCRETE INSTITUTE, "COOLING AND INSULATING SYSTEMS FOR MASS", ACI 207.4R.
PORTLAND CEMENT ASSOCIATION, "DESIGN AND CONTROL OF CONCRETE MIXTURES"
AMERICAN CONCRETE INSTITUTE, "ACI DETAILING MANUAL", ACI SP-68.
CONCRETE REINFORCING STEEL INSTITUTE, "MANUAL OF STANDARD PRACTICE", MSP-2.
PRECAST/PRESTRESSED CONCRETE INSTITUTE, "PCI DESIGN HANDBOOK, 7TH EDITION", MNL 120-10.
c. MASONRY
THE MASONRY SOCIETY, "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", TMS 402-16.
THE MASONRY SOCIETY, "SPECIFICATIONS FOR MASONRY STRUCTURES", TMS 602-16.
NATIONAL CONCRETE MASONRY ASSOCIATION, "NCMA TEK NOTES".
THE BRICK INDUSTRY ASSOCIATION, "TECHNICAL NOTES ON BRICK CONSTRUCTION".
d. STRUCTURAL METALS
AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS", 16TH ED.
AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE", AWS D 1.1, 2020 ED.
AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - ALUMINUM", AWS D1.2, 2014 ED.
AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - SHEET STEEL", AWS D1.3, 2018 ED.
AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - REINFORCING STEEL", AWS D1.4, 2014 ED.
AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - STAINLESS STEEL", AWS D1.6, 2017 ED.
AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "AISC STEEL DESIGN GUIDE 27, STRUCTURAL STAINLESS STEEL".
THE ALUMINUM ASSOCIATION, "ALUMINUM DESIGN MANUAL, 2015 ED", ADM1.
NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS, "METAL BAR GRATING MANUAL", NAAMM MBG 531-17.
NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS, "HEAVY DUTY METAL BAR GRATING MANUAL", NAAMM MBG 532-19.

DESIGN LOADS:

Table with 4 columns: Load Type, Description, Uniform (PSF), Concentrated (LBS). Includes live loads (first floor, process platforms, roof), snow loads (ground, flat roof, exposure, wind), wind loads (ultimate design wind speed, risk category, wind exposure, design wind pressure), earthquake design data (occupancy risk, seismic importance, mapped spectral response), and frost depth (42").

SUBMITTALS:

- 1. SHOP DRAWINGS AND SUBMITTALS
a. REPRODUCTION OF STRUCTURAL DRAWINGS FOR SHOP DRAWINGS IS NOT PERMITTED.
b. ELECTRONIC DRAWING FILES WILL NOT BE PROVIDED TO THE CONTRACTOR.
c. REVIEW OF SHOP DRAWINGS WILL BE FOR CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS REGARDING ARRANGEMENT AND SIZES OF MEMBERS AND THE CONTRACTOR'S INTERPRETATION OF THE DESIGN LOADS, IF APPLICABLE, AND CONSTRUCTION DOCUMENT DETAILS. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THE FULL RESPONSIBILITY TO COMPLY WITH THE CONSTRUCTION DOCUMENTS.
2. SUBMITTALS
a. THE STRUCTURAL QUALITY ASSURANCE PLAN AND SPECIFICATIONS IDENTIFY THE REQUIRED SUBMITTALS. PRIOR TO (OR WITH) THE FIRST SUBMITTAL, CONTRACTOR SHALL SUBMIT A LIST OF ALL REQUIRED SUBMITTALS FOR ENGINEER'S REVIEW.
3. DEFERRED SUBMITTALS
a. DEFERRED SUBMITTALS INCLUDE THOSE PORTIONS OF THE PROJECT THAT ARE FURNISHED BY THE CONTRACTOR AND DESIGNED BY SOMEONE OTHER THAN THE ENGINEER OF RECORD AND ARE SUBMITTED AT THE TIME OF THE APPLICATION.
b. DEFERRED SUBMITTALS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL PRIOR TO

- c. SUBMITTAL DOCUMENTS FOR DEFERRED SUBMITTALS:
SHALL BE INCLUDED IN THE CONTRACTOR'S SCOPE OF SERVICES AND SHALL BE SEALED BY AN ENGINEER LICENSED IN THE PROJECT STATE.
DESIGN OF DEFERRED SUBMITTALS SHALL BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE INDICATED ABOVE.
SHALL BE SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE WHO SHALL REVIEW AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING.
DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.
SUBMITTAL DOCUMENTS MAY ALSO INCLUDE SUBSTANTIATING CALCULATIONS, WHEN REQUIRED.
d. THE FOLLOWING SHALL BE CONSIDERED DEFERRED SUBMITTALS:
TEMPORARY/PERMANENT SHORING AND UNDERPINNING
GROUND IMPROVEMENT METHODS
STRUCTURAL PRECAST CONCRETE
ENGINEERED BRICK LINTELS
STAIRS, HANDRAILS, AND GUARDRAILS
SLOTTED CHANNEL STRUT FRAMING (E.G. UNISTRUT)

FOUNDATIONS:

- 1. FOUNDATION DESIGN IS BASED ON RECOMMENDATIONS IN THE GEOTECHNICAL SUBSURFACE INVESTIGATION PROJECT NO. 231837, PREPARED BY CT CONSULTANTS, INC., DATED 08/05/2024. CONTRACTOR SHALL REVIEW THE REPORT PRIOR TO CONSTRUCTION. NOTIFY THE CONSTRUCTION MANAGER OF CONFLICTS BETWEEN SPECIFICATIONS AND THE REPORT RECOMMENDATIONS FOR RESOLUTION.
a. SHALLOW FOUNDATIONS BEARING ON VIRGIN OR STABILIZED SOIL. PROPOSED SLUDGE DEWATERING BUILDING'S SHALLOW FOUNDATIONS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 1,500 PSF. CONTRACTOR SHALL. EXISTING FILL SOILS IN THE AREA AROUND THE PROPOSED SLUDGE DEWATERING BUILDING'S EXTEND DOWN FROM THE SURFACE TO, APPROXIMATELY, SIXTY INCHES. EXISTING FILL SOILS ARE NOT A SUITABLE BEARING MATERIAL FOR DEWATERING BUILDING'S SHALLOW FOUNDATIONS.
2. COORDINATE W/CLARIFIER MFG FOR CLARIFIER BEARING CONDITIONS AND BACKFILL REQUIREMENTS.
3. REFERENCE GEOTECHNICAL REPORT FOR FROST DEPTH. ALL EXTERIOR FOOTINGS SHALL BEAR ON FIRM AND STABLE NATURAL SOILS OR COMPACTED FILL AT PER THE GEOTECHNICAL ENGINEERS RECOMMENDATIONS. EXTERIOR FOOTINGS SHALL BEAR AT FROST DEPTH, 18-INCH MINIMUM BELOW GRADE, OR DOWN TO ACCEPTABLE SOILS, WHICHEVER IS DEEPER.
a. REMOVE ALL EXISTING PAVEMENT, STRUCTURES, FOUNDATIONS, UNSUITABLE FILLS, ORGANIC SOILS AND/OR OTHER DELETERIOUS MATERIALS DURING SITE PREPARATION AND/OR ENCOUNTERED WITHIN OR BELOW THE AREA TO BE OCCUPIED BY SLABS ON GRADE, EQUIPMENT PADS, AND FOUNDATIONS. THESE MATERIALS SHALL NOT BE USED FOR FILL WITHIN OR ADJACENT TO THE BUILDING. AFTER EXCAVATING THE EXPOSED NATURAL SOIL SHALL BE THOROUGHLY REWORKED PRIOR TO PLACEMENT OF FILL OR AS DIRECTED BY THE GEOTECHNICAL REPORT.
b. BACKFILL SHALL BE CLEAN, CRUSHED STONE (#57 STONE) OR SELECT ENGINEERED FILL APPROVED BY THE GEOTECHNICAL ENGINEER. ALL BACKFILL SHALL BE PLACED IN MAXIMUM 8" LIFTS AND COMPACT AS PER THE GEOTECHNICAL.
c. EXCAVATIONS FOR FOUNDATIONS SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE. UNDERCUT UNSUITABLE SOILS AND BACKFILL AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
d. CONTRACTOR SHALL KEEP ALL FREE-STANDING WATER OUT OF EXCAVATIONS. CONTRACTOR SHALL PROVIDE DEWATERING MEASURES AS NECESSARY PRIOR TO PLACING CONCRETE. WATER SHOULD BE REMOVED FROM THE FOUNDATION BOTTOMS BEFORE CONCRETE OR REINFORCING STEEL IS PLACED.
e. OWNER SHALL EMPLOY A SOILS TESTING LABORATORY APPROVED BY THE ENGINEER TO PERFORM TESTING SERVICES AS REQUIRED BY THE SPECIFICATIONS AND TO INSPECT ALL BEARING SURFACES OF SLABS AND FOUNDATIONS.
4. CONTRACTOR SHALL EMPLOY A SOILS TESTING LABORATORY APPROVED BY THE ENGINEER TO PERFORM TESTING SERVICES AS REQUIRED BY THE SPECIFICATIONS AND TO INSPECT ALL BEARING SURFACES OF SLABS AND FOUNDATIONS.
5. NOTIFY ENGINEER IF FOUNDATION CONDITIONS ENCOUNTERED DIFFER FROM SOILS EXPLORATION INFORMATION MADE AVAILABLE TO THE CONTRACTOR.
6. THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL PROVIDE TEMPORARY SHORING, BRACING, UNDERPINNING, AND OTHER MEASURES NECESSARY TO ENSURE STABILITY AND SAFETY DURING ERECTION AND CONSTRUCTION AND TO PREVENT MOVEMENT OF SOIL THAT COULD DAMAGE EXISTING STRUCTURES, PAVEMENT, UTILITIES, ETC.
7. AFTER EXCAVATING FOR SLABS ON GRADE, THE EXPOSED NATURAL SOIL SHALL BE THOROUGHLY COMPACTED PRIOR TO PLACING THE GRANULAR MATERIAL.
8. CENTER FOOTINGS UNDER COLUMNS AND WALLS UNLESS NOTED.
9. THE DIFFERENCE IN ELEVATION OF THE BACKFILL ON THE INSIDE AND OUTSIDE OF WALLS SHALL NOT EXCEED TWO FEET UNTIL THE FIRST FLOOR STRUCTURE SUPPORTING THE WALLS IS IN PLACE, UNLESS THE WALL IS BRACED TO PREVENT MOVEMENT.
10. UNLESS NOTED OTHERWISE ON THE CIVIL/SITE DRAWINGS, PROVIDE A MINIMUM 2% GRADE WITHIN 10-FEET OF THE PERIMETER OF THE FOUNDATION SYSTEM TO ALLOW SURFACE WATER TO DRAIN AWAY.
11. DO NOT PLACE FILL OR CONCRETE ON FROZEN GROUND.
12. BUILDING SLABS, SUMP BASE SLAB AND EQUIP BASE SLAB SHALL BEAR ON 6", MIN COMPACTED GRANULAR FILL.

REINFORCEMENT

- 1. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED SHALL BE IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI-315, LATEST EDITION) AND MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (CRSI, LATEST EDITION). REINFORCING STEEL SHALL NOT BE HEATED OR WELDED AND MUST BE DRY AND FREE OF CONTAMINANTS SUCH AS RUST, DIRT, GREASE, AND PROTECTIVE COATINGS.
2. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60. ALL REINFORCING USED IN SEISMIC DESIGN CATEGORY (SDC) D AND HIGHER OR REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706 GRADE 60.
3. REINFORCING STEEL SHALL NOT BE HEATED OR WELDED AND MUST BE DRY AND FREE OF CONTAMINANTS SUCH AS RUST, DIRT, GREASE, AND PROTECTIVE COATINGS.
4. WHERE GRADE BEAMS OR STRIP FOOTINGS INTERSECT COLUMN FOUNDATIONS, EXTEND GRADE BEAM OR STRIP FOOTING REINFORCEMENT CONTINUOUSLY THROUGH THE COLUMN FOUNDATION.
5. ALL WELDED WIRE REINFORCING SHALL CONFORM TO ASTM A185, A1064 PROVIDED IN FLAT SHEETS OR ROLLS.
6. PROVIDE DOWELS FROM FOUNDATIONS TO MATCH COLUMN, PIER AND WALL VERTICAL REINFORCING. WHERE SHOWN, PROVIDE DOWELS OUT OF WALLS TO MATCH SLAB REINFORCING.
7. PROVIDE ADEQUATE BOLSTERS, HI-CHAIRS, SUPPORT BARS, ETC., TO MAINTAIN SPECIFIED CLEARANCES FOR THE ENTIRE LENGTH OF ALL REINFORCING BARS. SUPPORTS THAT BEAR DIRECTLY ON EXPOSED SURFACES SHALL BE A CRSI CLASS 1 AND 3.
8. ALL DEVELOPMENT AND SPLICE LENGTHS SHALL BE PER ACI 318 WITH CLEAR SPACING GREATER OR EQUAL TO 3 BAR DIAMETER. PROVIDE CLASS "B" TENSION LAP SPLICE OR FULL MECHANICAL SPLICE (ACI 318, SECT. 25.4.2) FOR ALL STEEL IN WALLS, COLUMNS, AND SLABS. SEE LAP SCHEDULE ON SHEET SD-S-04 FOR LAP LENGTHS, UNO.
9. LAP SPLICES SHALL NOT BE MADE AT POINTS OF MAXIMUM STRESS AS DETERMINED BY THE ENGINEER. LAP SPLICES FOR CONTINUOUS SLAB OR LONGITUDINAL BEAM BARS, WITH DOUBLE MAT OF REINFORCING, SHALL BE LOCATED IN THE MIDDLE 1/2 OF THE SPAN FOR TOP BARS AND CENTERED OVER THE SUPPORT FOR THE BOTTOM BARS. LAP SPLICE IN BEAMS, CONTINUOUS SLABS AND WALLS SHALL BE STAGGERED. CENTERLINE OF STAGGERS SHALL BE A MINIMUM OF A SPLICE LENGTH APART.

- 10. A TOP BAR IS A HORIZONTAL BAR WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST DIRECTLY BELOW THE BAR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS. FOR EPOXY-COATED REINFORCEMENT, MULTIPLY THE TABULATED VALUES BY 1.5 FOR 'REGULAR BARS' AND 1.3 FOR 'TOP BARS'.
11. CONCRETE CONSTRUCTION SHALL BE REINFORCED CONCRETE EXCEPT WHERE PLAIN CONCRETE IS INDICATED ON THE DRAWINGS. UNLESS OTHERWISE NOTED, MINIMUM REINFORCING STEEL SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING SCHEDULES:

Table with 4 columns: Slab Thickness, Size, Spacing, Location. Lists specifications for slabs and walls, including centering and edge placement.

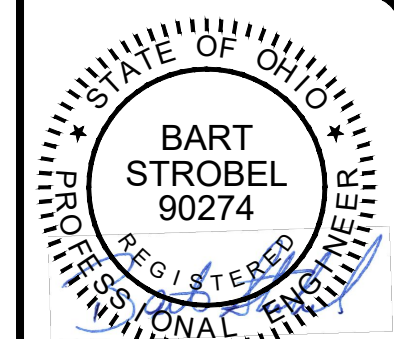
- a. MASS CONCRETE SHALL BE REINFORCED WITH #6 @ 12" E.W. MINIMUM IN ALL FACES. HIGHER MINIMUM STEEL IS PROVIDED IN WATER CONTAINING STRUCTURES.
12. SUBMIT REINFORCING SHOP DRAWINGS FOR REVIEW. AT A MINIMUM, THESE DRAWINGS SHALL SHOW THE GENERAL PLACEMENT OF REINFORCING, CONSTRUCTION JOINTS, CONTROL JOINTS, EXPANSION JOINTS, CONCRETE MEMBER DIMENSIONS, DOWELS, BAR LENGTHS, SPLICE LENGTH, AND REINFORCING BEND TABLES.
13. IN ADDITION TO NORMAL ACCESSORIES USED TO HOLD REINFORCING STEEL FIRMLY IN POSITION, EXTRA ACCESSORY BARS SHALL BE USED AS FOLLOWS:
a. IN SLABS, #5 RAISER BARS AT 36" ON CENTER MAXIMUM TO SUPPORT TOP REINFORCING STEEL. b. IN WALLS WITH T/O CURTAINS, #3 U OR Z-SHAPE SPACERS AT 6'-0" ON CENTER EACH WAY.
14. TACK WELDING OR TWELDING OF REBAR SHALL NOT BE PERMITTED UNLESS OTHERWISE CALLED FOR OR APPROVED BY THE ENGINEER. IF APPROVED, REINFORCING MAY BE WELDED IN ACCORDANCE WITH AWS SPECIFICATION D1.4. ALL REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706.
15. BARS SHOWN WITH 90° HOOKS SHALL HAVE A STANDARD 90° HOOK, UNO. BARS SHOWN WITH 180° HOOKS SHALL HAVE A STANDARD 180° HOOK, UNO. ALL HOOKS SHALL BE ACI STANDARD HOOKS UNLESS DIMENSIONED OTHERWISE. BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, SECT. 25.3. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS REQUIRED TO PROVIDE SPECIFIED DEVELOPMENT LENGTH DUE TO AN ADJACENT STRUCTURE, EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.
16. LAP SPLICE WELDED WIRE FABRIC ONE SPACE PLUS 2 INCHES AT EDGES AND ENDS AND PROVIDE ADDITIONAL REINFORCING WHERE SHOWN ON DRAWINGS. PLACE MESH 2 INCHES FROM TOP OF SLAB FOR SLABS ON GROUND AND 1 INCH FROM TOP OF SUPPORTED SLABS UNLESS NOTED OTHERWISE.

CAST-IN-PLACE CONCRETE AND REINFORCEMENT:

- 1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 318 AND ACI 350.
2. CONCRETE SHALL HAVE THE FOLLOWING 28-DAY COMPRESSIVE STRENGTHS:
CAST-IN-PLACE CONCRETE: 4500 PSI
FILL CONCRETE: (CLSM) 100 PSI
3. USE 6% ±1.5%, ENTRAINED AIR PER ASTM C260 FOR ALL CONCRETE EXPOSED TO WEATHER.
4. ADMIXTURES SHALL CONTAIN NO MORE THAN 0.05% CHLORIDE IONS BY WEIGHT OF CEMENT WHEN TESTED IN ACCORDANCE WITH AASHTO T260.
5. CONCRETE SHALL BE PROPORTIONED, BATCHED, MIXED, PLACED, CONSOLIDATED, AND CURED IN ACCORDANCE WITH ACI 301,304,308,309 AND 318. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED IN ACCORDANCE WITH ACI 304 AND ACI 309.
6. CONTRACTOR SHALL KEEP A COPY OF "FIELD REFERENCE MANUAL: STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE ACI 301 WITH SELECTED ACI REFERENCES", (ACI PUBLICATION SP-15) AT THE PROJECT FIELD OFFICE.
7. ALL REINFORCING DETAILS SHALL CONFORM TO THE ACI DETAILING MANUAL, SP-66, UNLESS DETAILED OTHERWISE ON THE STRUCTURAL DRAWINGS.
8. SUBMIT FOR APPROVAL CONCRETE MIX DESIGN AND CERTIFICATION OF CONCRETE MATERIALS CONFORMING TO THE FOLLOWING EXPOSURE CATEGORIES:

Table with 4 columns: Category, Footings, Interior Slab-On-Grade, Piers, Walls, Exterior Slabs. Lists exposure categories like freeze/thaw, sulfate, contact with water, corrosion protection.

- 9. THE CONTRACTOR SHALL EMPLOY A TESTING LABORATORY APPROVED BY THE ENGINEER/ARCHITECT TO PERFORM THE TESTING SPECIFIED PER PARAGRAPH 1.6.4 OF ACI 301. THE TESTING LABORATORY SHALL MEET THE REQUIREMENTS OF ASTM E329. TESTING SHALL BE MADE BY AN ACI CONCRETE FIELD-TESTING TECHNICIAN GRADE 1 OR APPROVED EQUIVALENT. A TECHNICIAN GRADE 1 SHALL BE PRESENT DURING ALL CONCRETE PLACEMENT.
10. ALL SLABS SHALL BE POURED MONOLITHICALLY, EXCEPT FOR THE REQUIRED CONSTRUCTION JOINTS, CONTROL JOINTS, AND/OR EXPANSION JOINTS.
11. PROVIDE PERIMETER INSULATION AGAINST EXTERIOR FOUNDATION WALLS AND GRADE BEAMS AND UNDER THE SLAB ADJACENT TO THE EXTERIOR OF THE BUILDING AS SHOWN ON THE ARCHITECTURAL DRAWINGS.
12. PROVIDE 3/4 INCH CHAMFER ON ALL EXPOSED CORNERS OF SLABS UNLESS OTHERWISE INDICATED ON THE ARCHITECTURAL DRAWINGS. MINIMUM CLEARANCES FOR REINFORCING STEEL SHALL BE MAINTAINED. CHAMFERS SHALL EXTEND 2'-0", MINIMUM, BELOW GRADE.
13. CURE ALL CONCRETE FOR A MINIMUM 7-DAYS. APPLY CURING COMPOUND AT THE MAXIMUM COVERAGE RATE OF 300 SQUARE FEET PER GALLON. USE PRODUCT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SEE SPECIFICATIONS.
14. CONTRACTOR SHALL PROVIDE BONDING AGENT TO ALL SURFACES BETWEEN EXISTING AND FRESH CONCRETE. BONDING AGENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. PRIOR TO APPLICATION OF BONDING AGENT, THE EXISTING CONCRETE BASE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE ANY GREASE, OIL OR OTHER CONTAMINANTS THAT MAY PREVENT ADEQUATE BOND TO THE EXISTING CONCRETE. REMOVE WEAK OR DETERIORATED CONCRETE.
15. THE CONCRETE INTERFACE OF ALL CONSTRUCTION JOINTS SHALL BE ROUGHEN TO 1/4", MINIMUM, AMPLITUDE. PRIOR TO CASTING AGAINST THE GREEN CONCRETE, APPLY BONDING AGENT (OR GREEN CONCRETE SHALL BE SATURATED SURFACE DRY. WET GREEN CONCRETE FOR A MINIMUM OF 4HOURS, REMOVE ANY STANDING WATER).
16. CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS OF CONSTRUCTION JOINTS NOT INDICATED ON THE DRAWINGS FOR REVIEW BY THE ENGINEER/ARCHITECT.
17. ALUMINUM OR DISSIMILAR METALS IN CONTACT WITH CONCRETE SHALL BE COATED WITH GRAY EPOXY PRIMER, EPOXY PRIMER SHALL BE PRE-APPROVED BY THE ENGINEER.
18. FORMWORK, FOR ALL CONCRETE THAT WILL BE EXPOSED IN THE COMPLETED STRUCTURE, SHALL BE CONSTRUCTED FROM A METAL OR SUITABLE SURFACE PLYWOOD THAT WILL PRODUCE AN ACCEPTABLY SMOOTH SURFACE. SEE SPECIFICATIONS.



Revision and Notes Table with columns: No., Scale, As Noted, Date, Revised Notes, Revision, Date. Includes a note about the project location: THE CITY OF CONNEAUT, WASTEWATER TREATMENT PLANT, NFA IMPROVEMENTS, ASHTABULA COUNTY, CONNEAUT, OHIO.

Project Information Table with columns: Project No., Drawing Name, Sheet, Of. Includes project number 231837 and drawing name SD-S-01.