REQUEST FOR PROPOSAL

TO: **Prospective Biosolids Dryer Suppliers**
DATE: May 16, 2022
RE: Request for Proposals for a Biosolids Drying System for the Shenandoah Wastewater Treatment Plant (WWTF)
FOR: Coweta County Water and Sewerage Authority (CCWSA) Newnan, Georgia

INTRODUCTION

The Shenandoah WWTF has a permitted treatment capacity of 2 million gallons per day (MGD) and an average flow of approximately 1.5 MGD. WWTF improvements are currently in the design phase, and construction is anticipated to begin in the first quarter of 2023. Proposed improvements to the facility include improvements to the existing influent pump station, new headworks, new aeration basin, improvements to the existing aeration basin (fine bubble diffusers, mixers, and BNR), new final clarifiers, new RAS/WAS pump station, additional (new) tertiary filters, new UV disinfection, new cascade (post) aeration, conversion of the existing final clarifiers to aerobic digesters, new (screw press) solids dewatering facilities and a new biosolids drying facility.

CCWSA is requesting proposals to furnish a new biosolids drying system for the project. The equipment will be preselected by CCWSA but purchased and installed by a contractor as part of the construction contract. This project is a Georgia Environmental Finance Authority (GEFA) Clean Water State Revolving Fund (CWSRF) funded project, and the equipment manufacturer shall meet the requirements identified in the SRF Supplemental General conditions.

SCOPE OF SUPPLY

The biosolids drying system furnished by the Supplier shall include the following components at a minimum:

- 40 cy (min.) dewatered solids storage hopper (with live bottom)
- Dewatered solids cake pump from storage hopper to dryer
- Biosolids dryer
- Conveying/pumping system to move dried solids from dryer to covered storage area
- Self-contained control panel(s) to control all of the above-listed components and all ancillary components required for a complete system. The panel(s) shall contain a PLC, HMI, I/O, and all motor starters/VFDs required for the system equipment.

Additional information is provided in the following attachments, which are included in the Appendix to this document:

- Appendix A – Preliminary Drawings (Site Plan, Solids Dewatering Building Plan and Section)
- Appendix B – Specification Section 415213.13 - Fixed Bins & Hoppers
- Appendix C - Specification Section 444256 - Progressive Cavity Pumps
- Appendix D - Specification Section 262900 - Manufactured Control Panels
- Appendix E – GEFA Supplemental General Conditions

The Basis of Design for the biosolids drying system is summarized in Table 1.

Table 1: Basis of Design for Biosolids Drying System Shenandoah WWTF	
Current Conditions	
WWTF influent flow, monthly average	1.5 MGD
Influent BOD_5, monthly average	300 mg/l
Influent TSS, monthly average	300 mg/l
WAS production (before digestion)	28,000 gpd @ 0.8% solids
WAS production after digestion (to dewatering)	11,300 gpd @1.5% solids
Annual solids production	270 dry U.S. Tons Per Year
Design Conditions	
WWTF influent flow, monthly average	6 MGD
Influent BOD_5, monthly average	300 mg/l
Influent TSS, monthly average	300 mg/l
WAS production (before digestion)	129,000 gpd @0.8% solids.
WAS production after digestion (to dewatering)	52,000 gpd @1.5% solids
Annual solids production	1,234 dry U.S. tons per year
% Solids in feed to dryer	18% - 20% solids concentration
Hours of operation per week	CCWSA desires to operate the dryer a max. of 60 hours/week (5 days, 12 hours per day) at the 6 MGD design capacity.
Performance Guarantee and Warranty Requirements	
Max./min/avg. drying capacity (and assumed conditions for ambient air temp., feed solids temp., feed solids conc., dried solids conc.)	Proposed by manufacturer
Hours of run time (excluding start-up/shutdown) required at current (1.5 MGD) solids production	Proposed by manufacturer
Max. natural gas usage at current (1.5 MGD) solids production	Proposed by manufacturer
Max. power usage at current (1.5 MGD) solids production	Proposed by manufacturer
Hours of run time (excluding start-up/shutdown) required at design (6 MGD) solids production	Proposed by manufacturer
Max. natural gas usage at design (6 MGD) solids production	Proposed by manufacturer
Max. power usage at design (6 MGD) solids production	Proposed by manufacturer
Noise levels from dryer system (decibals)	Proposed by manufacturer
Required time for start-up	Proposed by manufacturer
Required time for shut-down	Proposed by manufacturer

Warranty	Proposed by manufacturer

PROPOSALS

The Supplier shall submit a proposal for a complete biosolids drying system based on the information provided above, and on the information included in the Appendix. Proposals must include the following information at a minimum:

1. Lump-sum cost to furnish a complete, new biosolids drying system, including equipment, controls programming, startup and training, taxes, and delivery.
2. Detailed scope of supply, including all alternates, exclusions, and items to be furnished by others. Alternates, exclusions, and exceptions shall be considered, provided they neither alter the design and operating parameters nor impact the performance of the system. All alternates, exclusions, and exceptions shall be clearly stated in an itemized format.
3. Time required to develop and submit shop drawings/equipment submittals, and time required for fabrication/delivery of equipment.
4. Dimensional drawings of the equipment.
5. List of recommended spare/wear parts and annual cost for each.
6. Guaranteed performance data described in Table 1, and any other performance data and/or supporting information as needed/as applicable.
7. Manufacturers shall provide a performance guarantee with complete terms and conditions.
8. List of Owner references for installations of similar size and application in the United States. References will include the following:

a. Installation location, actual input and output capacity, and date installed.
b. Owner name, phone number, and email address.
c. Design engineer name, phone number, and email address.

9. Location of manufacture for all system equipment.
10. Manufacturers may choose (optional) to offer a five (5) year extended warranty on the equipment listed below. Manufacturers that choose to offer an extended warranty shall list the cost of the warranty separately from the cost of the system.

    a. Solids storage hopper
    b. Solids cake pump (to dryer)
    c. Biosolids dryer
    d. Dried solids conveyance/pumping system.

TENTATIVE SCHEDULE:

Proposals Due – 5 p.m. (Eastern) – Wednesday, June 15, 2022
Advertise for Construction Bids – Thursday, August 25, 2022
Open Construction Bids – Thursday, September 29, 2022
Contract Award/Construction – October 2022

Questions should be emailed to Jarred Jackson (Jarred.Jackson@krebseng.com). All sealed proposals must be received no later than Wednesday, June 15, 2022 at 5:00 pm (Eastern Time). Proposals shall be submitted to Krebs Engineering, Inc. to the attention of Jarred Jackson (see contact information below).

EVALUATION OF PROPOSALS
Proposals will be evaluated based on the following criteria provided in the proposal:

1. Biosolids drying system equipment cost.
2. Construction cost for equipment infrastructure. (building, piping, valves, miscellaneous concrete, hoisting equipment, etc.) as estimated by the Engineer.
3. Performance guarantee including terms and conditions.
4. Information obtained from references.
5. Any factors CCWSA considers to be relevant.

Engineer Evaluation – The evaluation will include analysis of the system design and operational parameters provided by the Supplier. A fifteen (15) year net present worth analysis including capital costs, estimated annual operation and maintenance costs (parts and labor), power consumption, chemical consumption and other factors deemed to be important to CCWSA.

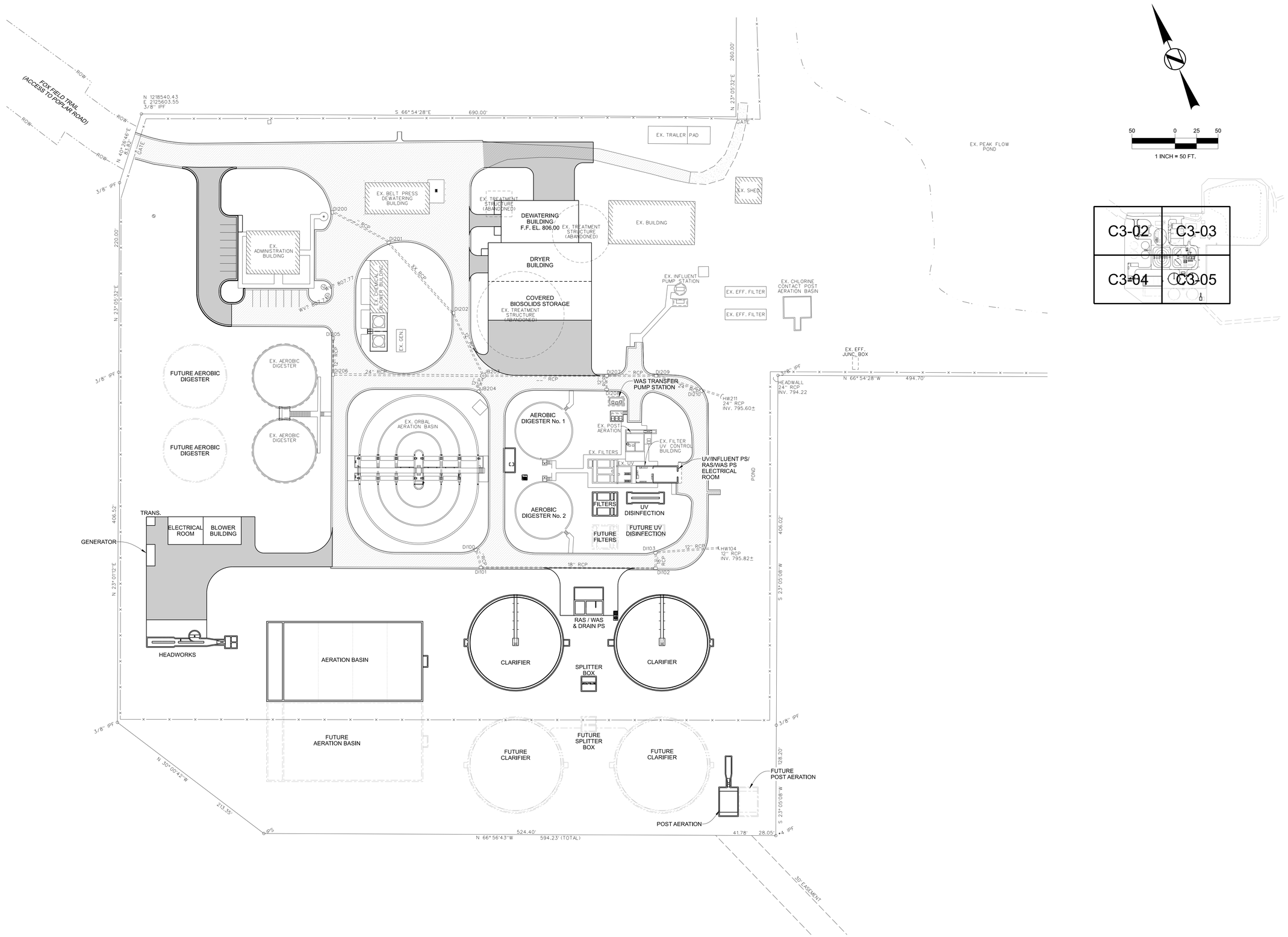
SELECTION AND AWARD
CCWSA recognizes individual systems/proposals may differ in equipment supplied and/or configuration; consequently, CCWSA reserves the right to reject all Proposals or any Proposal that in CCWSA's sole judgment, does not conform to the intent and requirements of the Request for Proposals and system requirements; and the right to delay, cancel, or postpone the proposal selection. CCWSA also reserves the right to accept the proposal that, in its sole judgment, is best suited to its needs and to waive any informality or technicality it deems in its best interest.

Please direct all questions related to this proposal to the Engineer (Jarred Jackson).
Selection will be based on the evaluation of the criteria for each responsive proposal. Only responsive proposals shall be evaluated. Alternate proposals or value engineering alternatives based on design and operating parameters different from those specified will not be considered in the selection process. Alternate proposals or value engineering alternatives from the selected Supplier will be considered following selection of the Supplier.

Krebs and CCWSA personnel will review each proposal, and Krebs will issue a recommendation to CCWSA based on the selection criteria. Upon approval of a recommendation by CCWSA, CCWSA will issue a Purchase Order Agreement to the selected Supplier. The Purchase Order Agreement shall be signed by CCWSA and the Supplier and shall serve as a binding document that guarantees the equipment will be furnished and paid for in accordance with the pricing and terms of the submitted proposal. The executed Purchase Order Agreement will be transferred to the successful bidder for construction of the WWTF improvements and as such, shall be included in the construction contract for the WWTF improvements. No direct payment will be made by CCWSA to the Supplier. All payments for the biosolids drying system will be made by the successful construction bidder/contractor. If delays or other changes in schedule occur prior to award and execution of the construction contract, and the Supplier desires to negotiate a price increase, then CCWSA reserves the right to negotiate with other suppliers at no cost to CCWSA.

KREBS ENGINEERING CONTACT
Jarred Jackson, P.E., Senior Associate
Krebs & Engineering, Inc.
15 LaGrange Street
Newnan, GA 30263
(O) - (470) 724-5050 (M) – (404) 431-9525
jarred.jackson@krebseng.com

Appendix A – Preliminary Drawings (Site Plan, Solids Dewatering Building Plan and Section)



KREBS ENGINEERING

PRELIMINARY
NOT FOR
CONSTRUCTION

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

COWETA COUNTY
WATER & SEWERAGE
AUTHORITY

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

Revisions

No.	Date	Description

Sheet Title: OVERALL SITE PLAN

Issue Date	Sheet No.
MAY, 2022	C3-01
Sequence: -- of --	

A1 | PLAN | 1" = 50'

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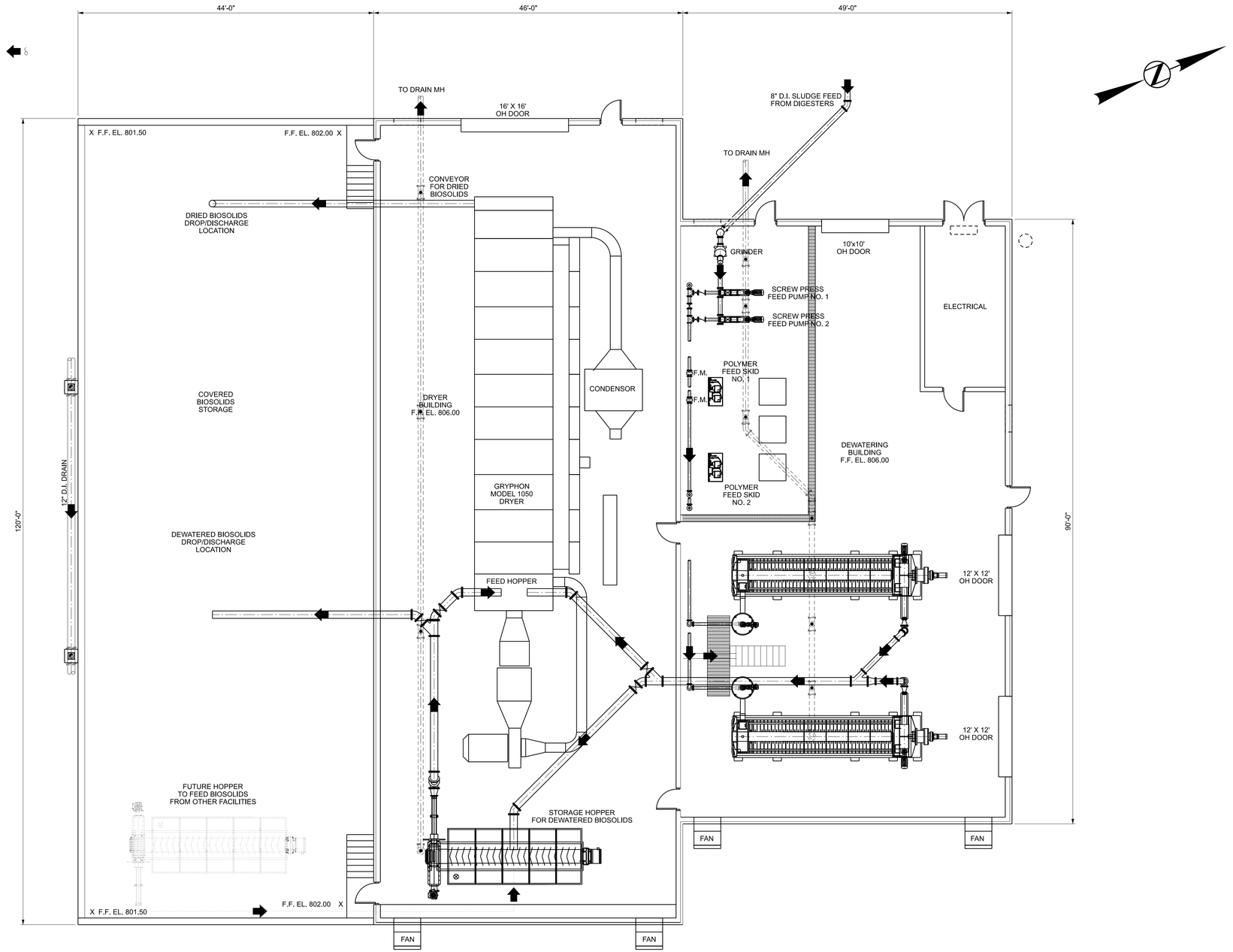

PRELIMINARY
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COWETA COUNTY
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WATER & SEWERAGE
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Designed: XXX	Project No.: 20518
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Checked: XXX	

Revisions

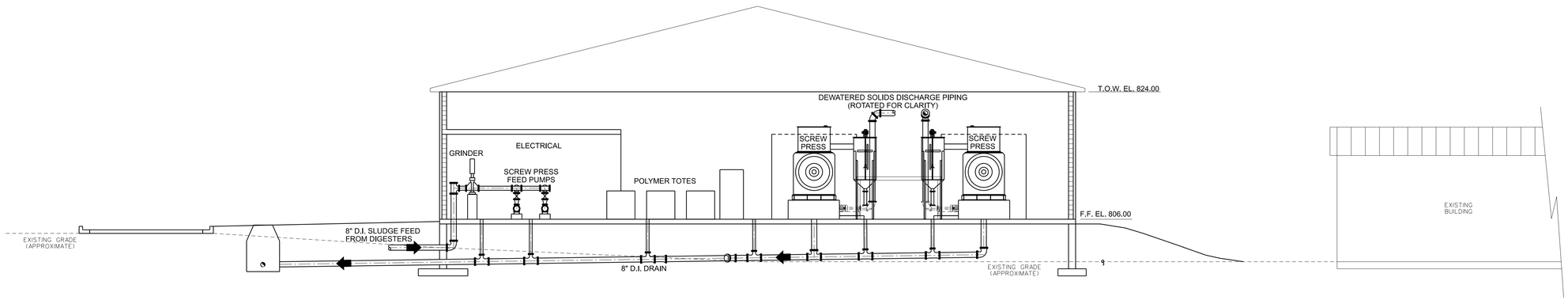
No.	Date	Description

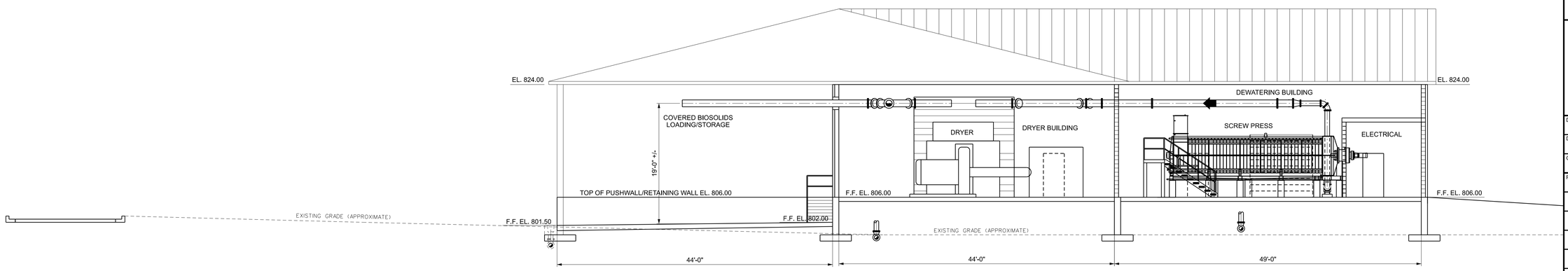
Sheet Title

SOLIDS HANDLING
BUILDING PLAN

Issue Date	Sheet No.
MAY, 2022	C15-05
Sequence -- of --	

A1 PLAN 1/8" = 1'-0"





A1 PLAN 1/8" = 1'-0"

PRELIMINARY
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CONSTRUCTION

COWETA COUNTY
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COWETA COUNTY, GEORGIA

COWETA COUNTY
WATER & SEWERAGE
AUTHORITY

Designed: XXX	Project No.: 20518
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Revisions

No.	Date	Description

Sheet Title

SOLIDS HANDLING
BUILDING SECTIONS

Issue Date: MAY, 2022
Sheet No.: C15-06
Sequence: -- of --

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Appendix B – Specification Section 415213.13 - Fixed Bins & Hoppers

SECTION 41 52 13.13 – FIXED BINS & HOPPERS

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install all labor, materials, equipment and incidentals and install complete and ready for operation of a twin shaftless live bottom screw and storage bin for the storage and out-loading of sludge.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Descriptive literature regarding the conveying equipment to be supplied.
2. Reference information and certifications as required under subsection 1.5.
3. Detailed specifications for the equipment proposed.
4. Manufacturer's certification, signed by a corporate officer of the Manufacturer, confirming that the proposed equipment fully complies with these specifications.
5. General arrangement drawing(s) for the proposed equipment.
6. Cut sheets for electric motors and ancillary items manufactured by others.
7. Live bottom conveyor torque requirement calculations.
8. Torque calculations for the gear reducer and reducer motor.
9. Horsepower calculations for the drive motor(s).
10. Spiral strength calculations using Mark's Handbook calculation for spring (spiral) compression and elongation showing the supplied spiral meets or exceeds spring effect intent specified herein.
11. Complete schematic diagrams for electrical control panel(s) if applicable.
12. Operations & Maintenance Manual

B. Shop Drawings: For each installation and for special components not dimensioned or detailed in Manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For Sludge Storage Hoppers to include in operation and maintenance manuals.

1.4 GENERAL REQUIREMENTS

A. Fabricate and assemble all equipment under this section in full conformity with this specification and as shown in the contract drawings.
B. Furnish equipment complete with all supports; all mechanical equipment required for proper operation, including complete drive units; all steel and other metal construction specified herein; and all additional materials or fabrication as required by the Manufacturer’s design.
C. Unless otherwise noted:

1. All equipment included in this section shall be furnished by a single Manufacturer who shall be responsible for the design, coordination, and the satisfactory operation of the system.
2. For optimum quality control, spirals furnished with the shaftless spiral live bottoms shall be produced from spiral manufacturing equipment actually owned by the hopper Manufacturer. Submittals shall include the Conveyor Manufacturer's certification, signed by a corporate officer of the Manufacturer, confirming that the proposed equipment fully complies with these specifications, including this requirement.

D. Manufacturer must be able to demonstrate understanding of unique characteristics of sludge handling requirements by listing at least 5 sludge hoppers designed and fabricated by the Manufacturer in the past 5 years. In addition to listing the hoppers, provide contact information for the Owner of the hoppers.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acceptable manufacturers for fixed bins and hoppers shall be as follows:

1. SPIRAC, Inc.
2. A & A Machine & Welding, Inc.
3. Or Equal.

B. Any costs for redesign or additional materials required due to the specific features of the hoppers provided shall be the responsibility of the hopper Manufacturer.

2.2 MECHANICAL SCOPE OF SUPPLY

A. The hopper and equipment supplied shall include the following:

1. W Troughs, & Liners
2. Spiral Flighting
3. Chutes
4. End Shaft
5. Leveling Augers
6. Electric Motors & Gear Reducers
7. Storage Bin Container
8. Mounting and Support Structure
9. Load Cells for Weighing Hopper Contents
10. Rectangular Port Valves (Where Applicable)
11. Motor Control Centers for each Hopper System (2 total)
12. Safety Accessories
13. Spare Parts

B. Power supply to the equipment will be 230/460 volts, 60 Hz, 3 ph. Power supply for electrical controls shall be 120 volts, 60 Hz, single phase.

C. Fabrication:

1. All welds to be continuous unless otherwise specified. Facing surfaces of field-welded components shall be beveled and match marked.
2. Sharp corners of all cut and sheared edges shall be made smooth.

D. All bolts, nuts, washers, and other fasteners shall be 316 stainless steel.

E. Surface Preparation

1. All iron and mild steel surfaces to be painted shall be dry abrasive blasted in accordance with SSPC-SP6 for external surfaces and SSPC-SP10 for internal surfaces, and in accordance with the painting section of these specifications. Surfaces shall be painted or hot dip galvanized within 24 hours to prevent rusting and surface discoloration.
2. Stainless steel shall be cleaned with mild abrasive wheels and/or nonferrous blast media to remove heavy scale and welding carbon and/or passivated with stainless steel cleaner then rinsed.

F. Painting - 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 Division 9 "High Performance Coatings" section of these specifications.

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.

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

A. Design the shaftless screw live bottom system to meet the performance and design requirements listed below. Live bottom selection design standards to be based on the operational experience of the Manufacturer with shaftless screw conveyors and live bottoms, and not shafted screw conveyors. Shafted screw live bottoms will not be accepted due to blockage and bridging issues inherited with the shaft and the ability for the shaftless screw to handle the high torque required at start-up with a full bin.

B. Complete System Properties:

1. Required Dimensions:

a. Dryer Feed Hopper (1 Required):

Capacity: 40 Cubic Yards
Maximum Structure Height: 14 feet
Maximum Length (Including Discharge & Drives): 26 feet
Maximum Width (2 Units Combined): 18 feet
Discharge Min. Height: 30 Inches (From Finished Floor)
Cover Requirements: 200 psf loading, gasketed manway

2. Performance and Design Load:

a. Material Conveyed = Dewatered sludge
b. Density, average = 60 lbs/cu.ft.
c. Trough filling rate @ Design load = 100%

3. Live Bottom Design Requirements shall be as follows:

Live Bottom Hopper-Basis of Design	
Live Bottom Conveyor Position	**Feed Hopper 1**
Performance	
Material Conveyed	Sludge
Density, Average, lbs/cu. ft.	60
Cu. Yds/hr discharge rate	7.5
Max. Screw Speed, rpm	5
Trough Fill Rate @ Design Load	100
System Design	
Degrees Incline. Approx.	0
Feed Inlet From	See Drawing
Discharge Outlet to:	Pump
No. of Discharges	1
Discharge Type (axial or vertical)	Vertical
Conveyor Size (U or OK trough)	U500
Trough Width, I.D. Inches, min.	20
Trough Thickness, Inches, min.	3/16
Chute Thickness, Inches, min.	3/16
Port Shut-Off Valve Required?	Yes
Spiral O.D., Inches, min.	16
Spiral, Outer Thickness, Inches, min.	2.0
Spiral Pitch (full or 2/3)	Full
Spiral Insert	Yes
Liner Type	SPX
Liner Length, Ft, max	4
Liner Thickness, Inches, min.	9/16
Location of Drives	Push
Drive Hp, min.	3

C. MATERIALS

1. Materials used in the fabrication of the equipment under this section shall conform to the following:

HOPPER MATERIALS OF CONSTRUCTION	
Live Bottom Conveyor Toughs & End Plates:	AISI 304 Stainless Steel
Spiral Flighting:	Special Chrome-Alloy Steel w/ Minimum 225 Brinnell Hardness
Wear Liner:	UHMW Polyethylene, Duraflo SPX two color
Storage Bins & Tops:	A36 Carbon Steel, Plates and Structural Shapes
Supports, Storage Bin:	A36 Carbon Steel & Structural Shapes
Hardware, Conveyer (SS to SS):	AISI 304 Stainless Steel
Hardware Conveyor (CS to SS):	Carbon Steel, Grade 8 Bolts, Plated
Hardware, Bin & Supports (CS to CS):	Carbon Steel, Grade 8 Bolts, Plated
Structural Steel Frame and Supports:	A 36 Carbon Steel

LIVE BOTTOM MATERIALS OF CONSTRUCTION			
MATERIALS OF CONSTRUCTION			
U Trough, lids, end plates & flanges	304 S.S.	304 S.S.	304 S.S.
Hardware	304 S.S.	304 S.S.	304 S.S.
Supports, vertical	A36 Carbon Stl.	A36 Carbon Stl.	A36 Carbon Stl.
Drive Shafts	1045	1045	1045
Bell-Housings	HDG	HDG	HDG
Liners	UHMW	UHMW	UHMW
Spiral	HTMAS	HTMAS	HTMAS

2.4 SHAFTLESS SCREW LIVEBOTTOM CONSTRUCTION

A. Spiral Flighting

1. Spiral flighting for the shaftless screw conveyors shall be designed to convey material without a center shaft or hanger bearings.
2. Spiral flights shall be cold-formed high strength chrome alloy steel with a minimum hardness of 225 Brinnell. 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 2.0" to allow high torque start up with bins full and to withstand loads from the truck dumps.

3. The spiral flighting shall be formed in sections from one continuous flat bar and shall be concentric to within ±2mm. Sectional flighting formed from plate shall not be permitted.
4. 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 Manufacturer's requirements. The spiral flights shall be coupled to the end shaft by a flanged, bolted connection.
5. Field welds of live bottom spirals will not be allowed.

B. A gland packing ring consisting of two aramid fiber packing rings shall seal the drive shaft at its penetration through the endplate, along with a greased labyrinth sealing system.

C. 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 bolted to the spiral connection plate. Additionally, a grease-lubricated labyrinth seal shall be shaft mounted internally in the conveyor between the backplate and spiral coupling connection.

D. Hold Down Provisions: The live bottom conveyors shall be designed with the use of steel hold-down bars to positively hold the spirals in the trough section under high torque. The hold-downs shall be integral to the storage bin, but shall be of a replaceable design.

E. Horizontal Live Bottom Troughs: Troughs shall be W (Twin U) shaped and be similar to the dimensional standards of CEMA 350 and enclosure classification IIE.

1. Each trough shall be equipped with an open top inlet and discharge openings as shown on the contract drawings. The open trough inlet shall be flanged and bolted to the bin. The discharge openings shall be flanged suitable for interconnection to automatic gates.
2. The W troughs shall be similar to a double design of the Manufacturer's standard U trough, so that all spirals and liners are interchangeable with the standard U design. The twin U design troughs will connected as closely as possible to the troughs' radius horizontal centerline as the layout permits. The bin sides shall sufficient slope to allow sludge to fall into the live bottoms. The slope shall be 60° from horizontal or as shown in the contract drawings.

F. Wear Liner: The inside trough surfaces of shaftless live bottoms shall be lined with a min. 9/16" thick (minimum) layer of two-color ultra-high molecular weight polyethylene UHMW-PE. The wear liner shall be SPIRAC Duraflo type SPX or Xylethon by Durawear. The liner shall be a single piece, formed and bonded with two (2) layers, each of a different color, to provide a visible indication when the liner is nearing the end of its useful life. 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. Liners less than the specified minimum thickness shall not be acceptable. The liner material shall have the following physical properties, as a minimum:

Property	Value/Unit	Testing Method
Density	61.2 lbs/ft^3	DIN53479
Molecular Weight	9.2x10^6 g/mol	Margolies
Ball Indentation Hardness	5,946 lbs/in^2	DIN53456
Shore Hardness D	64	DIN53505
Crystalline Melting Range	278º F	
Dynamic Coefficient of friction	0.1-0.12 ratio of tension/load	Plastic to steel

2.5 LEVELING SCREWS

A. For each bin/hopper one (1) nominal 14" U-shaped trough shall be integral portion of the bin top used to support the shaftless spiral leveling screw. The trough shall be provide five openings to allow even distribution of sludge in the storage bin. A bolted lid for the spiral trough shall be incorporated into the bin lid.
B. The spiral shall be shaftless designed minimum of 1" thick with nominal 12" pitch and the liner shall be ½" thick and of two-color design the same as the live bottom spiral and liner.
C. Each leveling spiral shall be driven at a nominal speed of 16 RPM with a 3 Hp integral reducer of the same design as the live bottom spirals.
D. The leveling spirals shall be activated when the feed pumps are activated.

2.6 DRIVE UNITS

A. Each spiral live bottom conveyor shall be driven by a variable-speed integral gear reducer/motor drive unit mounted to an adapter flange mounted to the endplate 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. Due to the nature of bins to become fully loaded the drive system shall be designed, at a minimum, to start the conveyor from a dead stop with the trough filled at 100% plus added torque for the overhead load. It is the responsibility of the live bottom Manufacturer to show by calculation the drive system is of adequate design.
D. Each drive motor shall be 230/460 volt, 60 Hz, 3 phase conforming to the General Equipment specifications, except as modified herein. Each motor shall be high efficiency, 40ºC ambient rated, 1.15 service factor and shall have Class F insulation. Motor shall have a TEFC enclosure with Design B speed/torque characteristics. The motor is located in a 4 environment.
E. Gear Reducers:

    1. All gears shall be AGMA Class II, single or double reduction, helical gear units 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.

2.7 STORAGE BINS & GATES

A. Furnish storage bins and hoppers with a minimum ¼" A36 HR carbon steel plate and reinforced with structural steel shapes as required to hold the specified material without bulging the tank sides. Bolts at the live bottom conveyor connection shall be easily accessible. Supply inspection, sampling or access ports as shown on the contract drawings (if applicable).

B. Covers for storage bins shall be provided to withstand a minimum load of 200 lbs/ square foot. Support beams for cover are allowed provided they do not reduce capacity beyond amount specified. Flanged connections shall be provided as indicated in the contract documents. Vents may be provided as flange connection or welded to cover. Each cover shall be provided with a 24" x 24" access hatch for cleaning and maintenance.

C. The storage bin manufacturer shall ship the bin to the fullest extent practical without incurring addition shipping costs. The bin may be a bolted or site welded design. The contractor is responsible for field erection of the bin and final assembly of the live bottom conveyors to the bin. The contractor is responsible for coordinating with the bin manufacturer on the required supports to be furnished by the contractor.

D. Discharge chute gates shall be provided as follows:

HOPPER	REQUIRED DISCHARGE GATE
Feed Hopper No. 1	Rectangular Port Gate, Electrically Actuated

E. Electro-Mechanically Operated Slide Gates:

1. The slide gates shall be designed with a maximum vertical dimension of 4" excluding the electric motor operator. The slide gate shall be designed so that in the full, open position at least one pitch rotation of the spiral is exposed to the opening in the direction of transport and where layout permits 1.5 x spiral pitch opening. The slide gates shall have an opening at least the full width of the conveyor trough. The slide gates shall be fabricated entirely of AISI 304 (316 option) stainless steel and suitable nonmetallic (UHMW PE) components, all minimum 3/16" thickness. The UHMW PE shall have a machined groove to accept the gate blade and give a positive seal. Roller gates are not allowed due to increased and difficult maintenance requirements.
2. The conveyor manufacturer shall provide electric motor operated gate operator by Rotork model IQ 10, Limitorque model MX 05, AMUA or equal approved equal. The actuator shall be NEMA 4 rated, have internal adjustable limit switches, and a manual override handwheel. The actuator shall be supported underneath the conveyor trough by supports designed and supplied by the conveyor manufacturer. Actuator BUS cards (if applicable) shall be furnished by the controls Manufacturer.

F. Furnish single-ply flanged discharge boots at locations as shown on the drawings. The flexible boots shall be EPDM rubber hose, neoprene, Linatrile by Linatex Corporation, or approved equal.

2.8 ELECTRICAL EQUIPMENT

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. All motors shall be totally enclosed, fan-cooled (TEFC), designed in accordance with the detailed motor specifications and suitable for operation with a 480 volt, 3 phase, 60 Hz. Power supply.

C. Emergency Shutdown. Each live bottom bin shall be furnished with an emergency stop push button station to be installed accessible to personnel at base of hopper.

D. Load Cell System - Each hopper shall be designed for measurement of weight utilizing a load cell under each support leg and weight transmitter. The hopper shall include provisions to replace and remove the load cell via a jacking and leveling element. The weigh elements shall be suitable for installation in an outside humid, corrosive environment. The design and construction of the weigh element shall satisfy seismic design loading requirements.

1. Weigh element sensors shall be strain type and shall produce an output voltage which is proportional to the weight weigh elements provide continuous operation throughout a temperature of 40 to 110 to degrees F. The elements shall provide full temperature compensation through same range of40 to 110 F and have an accuracy of 0.25 percent of rated capacity with a repeatability of 0.10 percent of rated capacity.
2. The weigh elements shall be designed and installed so that the elements can be maintained or replaced. Element shall be shipped with restraints installed for protection during shipping and erection.
3. The weight indicating transmitter (required for each feed hopper) shall have a digital display that indicates net, gross and tare weight shall have six digits, 3/8 -i nch characters with range of 0 to 999,999 with two fixed zeros.
4. The weight indicating transmitter shall have an isolated 4 to 20 mA DC signal proportional to the weight of the load capable and driving an impedance load of 0 to 500 ohms load without adjustments.

E. Electronic Motor Overload/Trip. Each conveyor motor starter shall incorporate a solid state electronic motor overload/trip relay. The overload relay shall be self-powered and shall trip in 2 seconds or less under phase loss conditions when applied to a fully-loaded motor. The relay shall include a visual trip indicator and shall be equipped with a test button that operates the normally closed contact.

1. In addition to overload protection, the electronic relay shall also trip upon sensing either a ground fault, nominally at 50% of FLA setting or when sensing a jam, when the motor current exceeds 400% of the FLA setting. Jam protection shall be disabled for 30 seconds during startup.
2. Relay shall be Allen Bradley model SMP-2 or equal.

F. Instrumentation

1. Load Cells shall be incorporated into hopper design where indicated.

   a. Load cells shall be provided with programming and local display of volume for each hopper.
   b. A minimum of four load cells shall be provided with each hopper.
   c. Load cells shall have accuracy of +/- 100 lbs.

d. Load cells shall have a safe load limit of 200% Emax.
e. Load cells shall have an ultimate load limit of 300% Emax.
f. Load cell system shall be designed for approximate sludge load of 57,000 lbs in addition to the weight of the hopper itself.
g. Load cells shall be Advantage Weigh Module – LPRA as manufactured by Hardy Process Solutions or equivalent.
h. Weight controller system shall be model HI 4050 as manufactured by Hardy Process Solutions or equivalent.

G. Control Panels/MCCs

1. Control panels shall be of the wall-mounted type with NEMA 12 Stainless Steel enclosure.
2. Provide Control Panels as follows for each hopper system as follows:

a. Main Circuit Breaker 3-Pole, molded case, UL-489
b. Power Distribution Block, Finger-Safe, Tin-Plated Aluminum, IP20, UL-508A/-94V0/-1953
c. Enclosure Air Conditioning (AC) unit shall be ISC, NEMA 12 (Stainless Steel), UL, 4800 BTUH,, AC unit size shall be able to dissipate the thermal heating load generated inside enclosure 3700 BTU under the worse external temperature 105°F, and maintain an enclosure inside nominal temperature not higher than 95 °F or the lowest upper limit of any panel mounted equipment, whichever temperature is lower. Enclosure shall be sized and equipped to adequately dissipate heat generated by equipment mounted inside or in the panel face.
d. VFD's - Powerflex 40 w/ Ethernet IP Comm Cards, Allen Bradley 22-COMM-E, Panel mount IP20, NEMA/UL Type Open
e. Motor Circuit Protection - Allen Bradley high break, fixed magnetic only, UL-508A Type-E
f. Ethernet Switch - Industrial Ethernet Switch, Unmanaged, 16Ports Copper, 10-35VDC @ 0.4A, UL-508 Class1 Div2, ATEX Zone 2, -40 to 75 degrees C, Alarm Relay Contact, DIN-Rail, 24VDC @ 0.27A Reversed Polarity Protection, Warrant 5 years, shall be Moxa EDS-316-T.
g. Control transformer for Power Distribution and Air Conditioner, UL Listed shall be Hammond PH1000MGJ. 1000 VA, Primary 208/277/380VAC, 1Ø, Secondary 120/240VAC, 1Ø at 4.17Amps. Secondary fuse mounting kit included. Primary fuse kit optional, Part # PFK3. Primary and secondary fuses, and fuse covers not included.
h. 24VDC Power Supply shall be SOLA SDN4-24-100LP. Input 85-264VAC @ 2/1A, 47-63Hz, Output 24VDC @ 3.8A. ATEX, UL-508, Meets NEC Class 2 no secondary fusing required, -10 °C to 60 °C no derating. 60 °C to 70 °C derating to ½ power. Class 1, Division 2, DC OK Signal, Indefinite short-circuit, over-voltage and over-temperature protection, Inrush current <20A, DIR-Rail. Input fuse 10A slow.
i. IO Communication – All Instrumentation should be landed and communicated to the Dryer Control Panel thru FLEX IO. Digital and analog Signals for the following:

1) Shutoff Rectangular Port Valves (supply and feedback signals for each feed hopper)
2) Analog from Load Cells for weight of Hopper
3) Analog Level Sensor at Pump Inlet

4) Analog In and Out for Livebottom VFD's and Positive Displacement Pumps

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances, clearances, service rough-ins, and other conditions affecting performance of Installation.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install each hopper according to Manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:

1. Perform installation and startup checks according to Manufacturer's written instructions.
2. Test and adjust controls, alarms, and safeties. Replace damaged and malfunctioning controls and equipment.

C. Prepare test and inspection reports.

3.4 MANUFACTURER'S FIELD SERVICES

A. The conveyor system Manufacturer shall furnish the services at site of a factory-trained representative for a period of three days in no more than two trips 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.

B. After inspection of the installed equipment the Manufacturer 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.

3.5 MANUFACTUER'S 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.

END OF SECTION 41 52 13.13

Appendix C - Specification Section 444256 - Progressive Cavity Pumps

SECTION 44 42 56 - PROGRESSIVE CAVITY CAKE PUMP FOR DRYER FEED

PART 1 - GENERAL

1.1 SUMMARY

A. The equipment specified in this section will be pre-selected by the Owner through a request for proposal (RFP) process.

B. This section includes the progressive cavity cake pump that will supply dewatered biosolids (from the hopper) to the biosolids dryer.

C. The biosolids dryer manufacturer (Manufacturer) shall furnish and/or coordinate all components and accessories as necessary to place the equipment in operation in conformance with the specified performance, features and functions indicated herein.

D. The Contractor shall be responsible for furnishing and installing the system as specified herein and as recommended by the Manufacturer.

E. The Manufacturer, Contractor, all other equipment manufacturers and/or suppliers, and representatives shall be responsible for reviewing the specified equipment/systems during the bid period, and confirming that the specified equipment and appurtenances are suitable for use in this application and that they are compatible. The Contractor shall notify the Engineer immediately upon discovery of any issues with the equipment or appurtenances.

1.2 SCOPE OF SUPPLY

A. Progressive cavity cake pump

B. Starter and Control panel.

C. Technical assistance to the Contractor during construction.

D. Commissioning, start-up, testing, and training of the Owner's operation staff.

1.3 SUBMITTALS

A. The Contractor shall provide the following:

1. Submit required copies of Manufacturer's literature, dimensional drawings, , pump curves, wiring diagrams, motor data, performance data, materials of construction, a description of the process design (Operational Description), a description of the control system software logic (Functional Design Specification), Alarm and I/O List, and any other information necessary to determine compliance of the equipment to the specification and project requirements.
2. Highlight project-specific model numbers and options in equipment datasheets.
3. Submittal drawings showing plan, elevation and cross-sections of the equipment. Include setting drawings with templates, conduit locations, directions for installing foundation and anchor bolts, and other anchorages.
4. Component details of the equipment.
5. Maintenance requirements.
6. Materials and Manufacturing specifications.
7. Operation and maintenance manual with installation instructions. Submit after approval of equipment and prior to shipment.
8. Process Performance Guarantee and Warranty

1.4 DELIVERY, STORAGE, AND HANDLING

A. Equipment shall be delivered in unopened, undamaged crates designed for handling and storage.
B. Delivery, Storage, and Handling
C. Equipment shall be stored and protected in accordance with the Manufacturer's recommendations.

1. Retain shipping flange protective covers and protective coatings during storage.
2. Protect bearings and couplings against damage.
3. Comply with Manufacturer's rigging instructions for handling.

PART 2 - PRODUCTS

2.1 DEWATERED SOLIDS (CAKE) PUMP

A. Performance and Design Requirements

1. The pump shall be of the self-priming, positive displacement, progressing cavity-type specifically designed for pumping the specified wastewater solids from the storage hopper to the biosolids dryer, and/or solids loading area as shown on the Drawings, and as specified herein.
2. Solids handling pumps shall be specifically designed and selected for continuous duty pumping of liquids with a solids concentration of up to 28% and a pH of 5.0 - 6.5.
3. The pump shall be of the compact, close-coupled design. The gear reducer shall be sized for a minimum service factor of 1.5 and designed with a thrust load capability of 150 percent of the actual thrust load.
4. The pump, along with associated drive appurtenances, shall be mounted on commonly fabricated steel baseplates.
5. Manufacturers must currently have installations for the same liquids and of the same size pump unit, in service for a minimum of three years.
1. Operating Conditions: The Manufacturer shall provide one (1) dewatered soilds (cake) pump at the screw/volute press. The pump shall have a variable speed drive and shall be specifically sized/designed/selected by the Manufacturer to work with the biosolids hopper and biosolids dryer system. It is anticipated that the pump will have a capacity of approximately 30 gpm at a differential pressure of 280 psi and 80 rpm (max).

B. Equipment

1. Rotor and Stator: The pump shall be a minimum two-stage design employing a convoluted rotor operating in a similarly convoluted stator. The convolutions shall be configured to form a cavity between the rotor and stator, which shall progress from the pump's inlet to discharge port with the operation of the rotor. The fit between the rotor and stator at the point of contact shall compress the stator material sufficiently to form a seal and to prevent leakage from the discharge back to the inlet end of the pumping chamber. The stator shall be molded with a seal integral to the stator elastomer preventing the metal stator tube and the bonding agent from the elastomer from contacting the pumped liquid. Gaskets or "O" rings may not be used to form this seal. Stators for solids pumps shall have Buna

elastomer. The solids pump rotors shall be constructed of tool steel. Additionally, the solids pump rotors shall have a chromium nitride coating (Duktil) with a minimum thickness of 0.010". Hard chrome plating or ceramic coatings are not acceptable due to the ease at which this coating will crack and the lack of diffusion into the rotor base metal.

2. Rotor and Drive Train: The rotor drive train shall consist of the following:

    a. The pump rotor shall be driven through a positively sealed and lubricated pin joint. The pin joint shall have replaceable bushings, constructed of air-hardened tool steel of 57-60 HRc, in the rotor head and coupling rod. The pin shall be constructed of high-speed steel, air-hardened to 60-65 HRc. The joint shall be grease lubricated with a high temperature (450 F), PTFE-filled synthetic grease, covered with Buna N sleeve, and positively sealed with hose clamps constructed of 304 stainless steel. A stainless steel shell shall cover the rotor side universal joint assembly to protect the elastomer sleeve from being damaged by tramp metals or glass. The universal joints shall carry a separate warranty of 10,000 operating hours. This warranty shall be unconditional in regards to damage or wear.

3. Casing: A 150 (300,600) - pound (ANSI B16.5) flanged connection shall be provided at the discharge port. The discharge casings shall each be provided with a 3/8-inch (or larger) tap to permit the installation of pressure instruments. The suction casing shall be fabricated from a corrosion-resistant steel plate and designed with a rectangular opening. The suction casing shall incorporate a conical "extension tube" between the hopper opening and the rotor and stator. A single helix ribbon auger shall run the entire length of the suction casing. The ribbon auger shall turn concentrically in the hopper. The auger shall be driven by the main pump drive gear motor. The ribbon auger and extension tube work in concert to apply additional shearing forces against the thixotropic solids to reduce the apparent viscosity of the material, minimize air entrainment and improve the volumetric efficiency of the pumping elements. The walls of the hopper shall be vertical to minimize bridging.
4. Shaft Seals and Bearings: The pump shall be provided with oil-lubricated thrust and radial bearings, located in the gear motor, designed for all loads imposed by the specified service. The shaft shall be sealed with a minimum of 5 rings of packing. The packing gland shall have a grease fitting when required.
5. Motor and Drive Unit:

    a. Gear motors or gear reducers shall be designed per AGMA 6019-E (Class II). Unless otherwise noted, motors shall be energy-efficient, TEFC.
    b. For ASD-driven units, the pump supplier shall be responsible for the provision of the fixed reduction between the motor and pump. The reduction ratio shall be that required to operate the pump at its maximum operating speed when the motor is operating at its nominal rated full speed. ASD-driven units may be operated at up to 80 Hz at the maximum speed.

C. Accessories:

1. Run Dry Protection: The stator shall be fitted with a sensor sleeve and thermistor sensor. A compatible controller shall also be provided by the pump supplier and shall be installed by the Contractor in a j-box adjacent to the motor as shown on

plans, and interconnected to the starter for pump shutdown controls. The controller shall monitor the stator temperature and activate a shutdown and alarm sequence if the stator temperature reaches the adjustable limit on the controller. The controller shall include a manual local and remote reset function. Input to the controller shall be 1x115VAC/60 Hz.

2. Over Pressure Protection:

    a. The pump unit shall be supplied with a silicone-filled isolation ring with a dual-mounted gauge and single-point pressure switch.
    b. The pressure ranges for the switch and gauge shall be selected specifically for each specified service.
    c. The isolation ring shall be mounted between ANSI flanges, be sized according to the discharge pipe as shown on the plans, and be constructed with a carbon steel body and fittings with a Buna sleeve.
    d. The switch shall be SPDT, NEMA 4.

3. Hopper Extension with Laser Mounting Brackets: The pump shall be supplied with a hopper extension that is pre-installed and flange mounted to the pump. The hopper extension shall include the following as a minimum:

    a. A maximum overall height of no more than 5-1/4". Contractor shall coordinate with Manufacturer regarding the size, dimensions, and height/clearances required to avoid equipment conflicts.
    b. Shall include an open hopper flange for the integration of the pump with a customer-supplied transition hopper that will extend from the hopper to the extension flange.
    c. The integral flanged hopper extension shall integrate a window on the drive end of the hopper extension. This window will be used for level measurement and presence/absence detection of cake.
    d. The integral hopper extension shall include a metal fabricated sloped canopy internal to the hopper extension and covering the window. This canopy will eliminate any cake from falling out of the hopper and obstructing the level measurement and presence/absence detectors.
    e. The hopper extension shall incorporate a flexible polycarbonate shield that will divert falling cake away from the level measurement equipment signal. This shield will be clear polycarbonate and will be between 1/8" and ¼" thick depending on the application. It will be flexible to prevent cake build-up and eliminate the possibility of bridging.
    f. The hopper extension shall include all adjustable brackets to mount all of the presence/absence and level control transmitters and receivers.

4. Laser Level Transmitter: The pump will be supplied/installed with three (3) pre-programmed laser measurement devices that incorporate the following characteristics:

    a. Each laser shall be self-contained and have an IP67 rating for being capable of being fully submerged.
    b. Must be able to measure distances ranging from 8"-390" with an overall accuracy of not more ¾" where extraneous light is less than 40klx.
    c. The laser level transmitter shall project a dot no larger than 5/8" diameter at

the maximum measuring length.

d. The laser measurement system shall be able to operate in environmental temperatures ranging from 15-140° F
e. Each laser transmitter shall utilize sealed M12 connections to prevent any contamination, but easy period maintenance or removal and replacement.
f. Each laser transmitter shall incorporate a discrete output to represent the laser line being broken by falling cake. Additionally, the laser transmitter shall include an analog process signal indicating the proximity of cake from the sensor.
g. Each of the three laser transmitters shall be programmed identically to permit them to measure level or indicate the presence of cake. The operator shall be able to switch the function of each transmitter only by swapping the M12 quick connector.

5. Level Controller: The system shall include a level controller to analyze all of the level signals and provide on-the-fly filtering to determine the proper operation and speed of the pump to keep the process operating continuously. The controller shall be manufactured by the pump manufacturer and include the following features:

a. Minimum of 5 previous installations that incorporate the controller and hardened control algorithms.
b. The controller shall be housed in a non-metallic enclosure that carries a minimum rating of NEMA 4X.
c. The controller shall feature a 5.7" color touch screen, capable of producing a 64,000 color gamut, which will permit operators of selecting or changing parameters of operation. The display shall incorporate a resistive touch display that will permit operation with gloved hands.
d. The control system shall permit the control of boundary layer injection pumps to reduce frictional piping losses pressure in the application that may convey for longer distances.
e. The controller shall be capable of accepting/transmitting a minimum of the following control signals:

1) Qty four (4) analog process inputs.
2) Qty four (4) analog process outputs.
3) Qty sixteen (16) discrete inputs that are 24 VDC tolerant
4) Qty fifteen (15) dry contact relay outputs that are each rated for 10 Amps resistive.

f. The level controller shall be the Seepex Touch controller as manufactured by Seepex, Inc., or equal.

D. Standby Components: The following components shall be furnished:

1. One set of special tools shall be provided to service the pumps.
2. One (1) stator assembly with TSE sensor sleeve
3. One (1) rotor
4. One (1) set universal joint assemblies
5. One (2) set packing

PART 3 - EXECUTION

3.1 INSTALLATION – GENERAL REQUIREMENTS

A. The equipment, instrumentation, and appurtenances shall be installed in strict accordance with Manufacturer's written instructions and recommendations and with the Contract Documents provided at time of bid to General Contractor.
B. The grades of oil and grease for all equipment shall be in accordance with the recommendations of the Manufacturer.
C. Anchor bolts shall supplied by the Manufacturer and shall be set in accordance with the Manufacturer's approved shop drawings.

3.2 QUALITY ASSURANCE

A. Manufacturers shall provide skilled supervision and start-up services as specified.
B. Equipment shall not be energized, or "bumped" to check the electrical connection for motor rotation unless the Manufacturer's service/start-up technician is present.
C. Contractor shall schedule training with the Owner with at least seven days advance written notice.
D. The Contractor shall provide the services of the Manufacturer service/start-up technician to supervise and inspect and certify the equipment is operating as designed. The Manufacturers shall provide a factory-trained service/start-up technician on site for installation, to assist the Contractor in start-up, and for performance testing.
E. The Manufacturer's service/start-up technician shall provide additional time on site at no cost to the Owner if required to resolve start-up issues associated with the system equipment, programming or other issues due to system design or performance.

3.3 WARRANTY

A. Manufacturers shall provide a 1-year warranty for all system components from the date of successful startup and Owner acceptance.

3.4 SPARE PARTS

A. A recommended spare parts list(s) shall be furnished by each Manufacturer.

END OF SECTION 44 42 63

Appendix D – Specification Section 262900 - Manufactured Control Panels

SECTION 26 29 00 - MANUFACTURED CONTROL PANELS

1.1 SCOPE

A. This Section describes control stations, PLC panels, motor control panels, manufactured control panels, and other similar panels specified herein. Specifications herein are intended as an extension of requirements in other Divisions of these specifications where reference is made to Electrical Specifications.

1.2 DEFINITIONS

A. "Control Stations": Enclosures (with all required accessories) containing only door-mounted pushbuttons, indicator lights and/or selector switches (no electronic components or starter/controller equipment).
B. "Control Panels": Enclosures (with all required accessories) containing equipment/devices other than door-mounted pushbuttons, indicator lights and/or selector switches (such as electronic components, starter/controller equipment, etc.).

1.3 SUBMITTALS

A. Provide the following for each control panel:

1. A job-specific, custom wiring diagram

a. The wiring diagram shall clearly show all components (whether the components are mounted internal or external to the control panel enclosure).
b. All wires and terminal blocks shall be clearly labeled.
c. Diagram shall be in accordance with NEMA/ICS standards.

2. Size, type and rating of all system components.
3. Unit frontal elevation and dimension drawings.
4. Internal component layout diagrams.
5. Manufacturer's product data sheets for all components.

B. A Bill of Materials shall be included with catalog information on all components.
C. Information shall be included on any proprietary logic component sufficient to demonstrate its ability to perform the required functions.
D. The following calculations shall be submitted:

1. Thermal calculations showing amount of air conditioning or ventilation and heating required for each control panel, per ambient requirements listed below and operating temperature limitations of all equipment/devices within each control panel. Where possible, forced air ventilation shall be utilized rather than air conditioning. Panel shall be oversized, interior equipment/devices shall be derated, and solar shielding shall be provided as required to allow the use of forced air ventilation as the cooling method.
a. Thermal calculations used for sizing cooling/ventilation systems for each control panel located in exterior or non-conditioned spaces shall assume:

1) Ambient exterior air temperature ranges of -5 degrees F to 105 degrees F.

2) Full solar contact where applicable (not applicable where enclosures are fully protected from solar contact using solar shields separated from panel enclosure with standoffs or similar).
3) No wind.
4) Heat loss from interior equipment (electronics, etc.) per equipment supplier's information.

b. Thermal calculations used for sizing heating systems for each control panel shall assume:

1) Ambient exterior air temperature ranges of -5 degrees F to 105 degrees F.
2) No heat loss by interior components of control panel.
3) No solar gain on exterior of control panel.
4) Doubling of heating wattage required to account for wind where control panels are located outdoors.
5) Minimum temperature difference (due to heating) of 10 degrees F to prevent condensation, regardless of equipment temperature limitations.

2. Load calculations showing the sizing of all power supplies provided (with spare capacity as specified).
3. Load calculations showing the sizing and anticipated runtime of all Uninterruptible Power Supply systems provided (with spare capacity as specified).

PART 2 - PRODUCTS

2.1 GENERAL

A. Control panels shall be Underwriters' Laboratories labeled by the panel manufacturer. Control panel manufacturers not capable of applying the U.L. label to their products are unacceptable.
B. All human interface equipment/devices (indicator lights, selector switches, pushbuttons, time switches, displays, keypads, and other similar items used for control, adjustments or monitoring) shall be mounted on the non-energized side of enclosure door(s) in such a way as to be accessible without exposing the user to energized parts.

2.2 RATINGS

A. All Control Panels shall have short circuit current ratings at least equal to the lesser of the following, unless noted otherwise on plans:

1. The short circuit current rating of the electrical distribution equipment that feeds the Control Panel.
2. 150% of the available fault current at the Control Panel as determined by a Short Circuit Current study prepared by a licensed professional electrical engineer.

B. All equipment/devices installed within control panels shall be rated to operate in ambient temperatures of 50 degrees C (122 degrees F) or higher.

2.3 ENCLOSURES

A. All enclosures (with any required accessories or auxiliary items) shall fit within the space shown on the Plans. Any costs associated with furnishing equipment which exceeds the available space shall be borne by the Contractor.

B. Enclosures (with any required accessories or auxiliary items) shall be suitable for the environment where installed.

C. Enclosure materials shall be as follows unless noted otherwise:

1. Control Stations:
   a. Where located in extremely corrosive areas (chlorine rooms, fluoride rooms, etc.): NEMA 4X of non-metallic construction (with non-metallic hardware) compatible with the associated chemical(s).
   b. Where located in other wet, process or outdoor areas: NEMA 4X of type 304 stainless steel construction (with stainless steel hardware).
   c. Where located in dry, non-process, indoor areas (such as electrical rooms): NEMA 1 of die cast zinc/aluminum construction.

2. Control Panels:
   a. Where located in extremely corrosive areas (chlorine rooms, fluoride rooms, etc.): NEMA 4X of non-metallic construction (with non-metallic hardware) compatible with the associated chemical(s).
   b. Where located in other wet, process or outdoor areas: NEMA 4X of type 316 stainless steel construction (with stainless steel hardware).
   c. Where located in dry, non-process, indoor areas (such as electrical rooms): NEMA 1 or 12.

D. Control Panel Enclosure Construction:

1. Non-metallic control panel enclosure material, where specified, shall be reinforced polyester resin or equivalent, with a minimum thickness of 3/16 inch for all surfaces except those requiring reinforcement. Panels shall be precision molded to form a one piece unit with all corners rounded. Exterior surfaces shall be gel-coated to provide a corrosion-resistant maintenance-free satin finish which shall never need painting. Color pigments shall be molded into the resin. Color shall be grey.
2. Metallic control panel enclosures, where specified, shall be fabricated using a minimum of 14 gauge steel for wall or frame mounted enclosures and a minimum of 12 gauge for freestanding enclosures. Continuously weld all exterior seams and grind smooth. Reinforce sheet steel with steel angles where necessary support equipment and ensure rigidity and preclude resonant vibrations.
3. Use pan-type construction for doors.
4. Door widths shall not exceed 36-inches.
5. Mount doors with full length, heavy duty piano hinge with hinge pins.
6. Provide gasket completely around each door opening.
7. Mount and secure all internal components to removable back plate assembly.
8. For NEMA 1 or 12 enclosures, provide handle-operated key-lockable three point stainless steel latching system for each door.
9. For NEMA 4X enclosures, provide provisions for padlocking all doors and provide clamps on three (3) sides of each door.

2.4 CONTROL PANEL ACCESSORIES:

A. Cooling systems shall be provided if so required by the application to maintain temperatures within the acceptable ranges of the interior equipment. In no case regardless of temperature ratings of internal equipment) shall maximum temperatures within control panels be allowed to exceed 50 degrees C (122 degrees F). Thermostats shall be provided to control cooling without need of manual operation. Thermostat setpoints shall be as per recommendations of the equipment suppliers. See above for thermal calculation requirements. Cooling units shall be as manufactured by Hoffman Engineering Co., Rittal or approved equal and shall be thermostatically controlled.

B. Space heaters shall be provided for condensation and temperature control. Thermostats AND hygrostats (or combination hygrotherm controllers) shall be provided to control heating requirements (based on temperature and relative humidity within enclosure) without need of manual operation. Setpoints shall be as per recommendations of the equipment suppliers. See above for thermal calculation requirements. Space heaters and associated control devices shall be as manufactured by Hoffman Engineering Co., Rittal, Stego or approved equal.

C. NEMA 4X control panels shall be provided with vapor-phase corrosion inhibitor(s) (chemical combinations that vaporize and condense on all surfaces in the enclosed area, to protect metal surfaces/devices within the enclosed area from corrosion). Corrosion inhibitor shall be Hoffman #AHCI series (sized as required by the enclosure volume to be protected) or equal.

D. For outdoor panels, stainless steel solar shields for front, top and each side of panel, supported to associated panel face with standoffs as required (to allow free air flow between solar shield and panel enclosure), shall be provided where required to limit solar loading on panel to allow use of a ventilated panel design rather than an air-conditioned panel design.

E. Provide a sun shield over all LCD displays in exterior-mounted panels. Sun shield shall be collapsible to fully protect LCD display from UV light when not in use, shall provide side and top shielding when in use, shall be constructed of stainless steel and shall be installed such as to maintain NEMA 4X ratings of enclosures.

F. Provide a clear polycarbonate gasketted hinged door or window to encompass all indicators, controllers, recorders, etc. mounted on NEMA 4 and 4X enclosures.

G. Provide interior mounting panels and shelves constructed of minimum 12 gauge steel with white enamel finish. Provide metal print pocket with white enamel finish on inside of door.

H. Provide interior LED light kit, mounted at top of interior of panel, and switched to turn “ON” when door is opened for the following control panels:

1. Control panels with outer dimensions greater than 20” wide or 30” high.
2. Control panels containing PLCs or other similar programmable devices.

I. Control panels containing VFDs or Reduced Voltage Soft Starters shall include a door mounted digital keypad for adjusting the starter parameters and viewing process values and viewing the motor and starter statuses without opening the enclosure deadfront door.

2.5 CONTROL COMPONENTS

A. General:

1. All pushbuttons, pilot lights, selector switches and other control devices shall be separate, standard size (full 30mm) and shape, heavy duty oil-tight units.
2. Devices in extremely corrosive areas (chlorine rooms, fluoride rooms, etc.) shall be of non-metallic construction.
3. Devices in other areas shall be of chrome-plated construction.
4. All components and devices so that connection can be easily made and so there is ample room for servicing each item.
5. Door-mounted indicators, recorders, totalizers and controllers shall be located between 48" and 72" above finished floor level.
6. Door-mounted indicator lights, selector switches and pushbuttons shall be located between 36" and 80" above finished floor level.
7. All devices and components shall be adequately supported to prevent movement. Mounting strips shall be used to mount relays, timers and other devices suitable for this type of mounting.

B. Pilot Lights:

1. All pilot lights to be cluster LED type & push to test.

C. Pushbuttons:

1. All STOP operators within control stations located at equipment shall be provided with lockout provisions and a minimum of two (2) sets of contact blocks.
2. Emergency shutoff pushbutton devices shall be as follows unless noted otherwise:
   a. 2 ¼" diameter, mushroom-style, maintained contact push buttons
   b. With a minimum of one (1) normally open dry contact and three normally closed dry contacts.
   c. Connections made such that pushing "in" the button will shutoff the associated equipment.
   d. Provided with a red engraved nameplate with ½" lettering to read "Emergency Shutoff".

D. Relays:

1. Control relays shall have the following characteristics, unless noted otherwise:
   a. General purpose, plug-in type.
   b. Minimum mechanical life of 10 million operations.
   c. Coil voltage as indicated or required by application.
   d. Single-break contacts rated 12 amperes, resistive at 240 volts.
   e. Contacts as shown on wiring diagrams plus a minimum of one (1) spare N.O. contact and one (1) spare N.C. contact. At a minimum, each individual relay shall have 3PDT contacts. Where required, multiple control relays shall be provided (to provide the required quantities of contacts) for each "relay" function shown on plans/diagrams.
   f. Furnished with RC transient suppressor to suppress coil-generated transients to 200% of peak voltage.
   g. LED on/off indicator light and manual operator.
   h. Industry standard wiring and pin terminal arrangements.
   i. Equal to Square D 8501KP series with matching plug-in socket.

2. Interposing/isolation relays used to isolate discrete output field wiring (and where required for voltage translation for other discrete signals) to/from PLC inputs/outputs shall be terminal-block style. Terminal-block style relays shall have the following characteristics, unless noted otherwise:

    a. Minimum mechanical life of 10 million operations.
    b. Single-break contacts rated 6 amperes, resistive at 120 volts.
    c. One (1) N.O. contact per relay.
    d. Furnished with integral transient protection.
    e. LED on/off indicator light.
    f. DIN-rail mounted.
    g. Equal to Square D type Zelio RSL.

3. Timer relays shall be electronic, adjustable plug-in devices meeting the following characteristics, unless noted otherwise:

    a. General purpose, plug-in type.
    b. Minimum mechanical life of 10 million operations.
    c. Single-break contacts rated 10 amperes, resistive at 240 volts.
    d. Contacts as shown on wiring diagrams plus a minimum of one (1) spare N.O. contact and one (1) spare N.C. contact. At a minimum, each relay shall have DPDT contacts (2 N.O. & 2N.C.). Where required, multiple timer or control relays shall be provided (to provide the required quantities of contacts) for each “relay” function shown on plans/diagrams.
    e. Rotary-thumbwheel adjustments for time value, timing range and function.
    f. Time value adjustments from .05 seconds to 999 hours
    g. Selectable Timing Functions, including the following:

        1) On Delay
        2) Interval
        3) Off Delay
        4) One Shot
        5) Repeat Cycle-Off
        6) Repeat Cycle-On
        7) On/Off Delay
        8) One Shot Falling Edge
        9) Watchdog
        10) Trigger On Delay

    h. Accuracy shall be $\pm$ 2% and repeatability shall be $\pm$ 0.1%.
    i. Furnished with integral transient protection.
    j. LED indicator light(s) for “timing” and “on/off status”
    k. Held in place with hold-down spring.
    l. Equal to Square D type JCK with matching plug-in socket.

2.6 DC POWER SUPPLIES

A. DC Power supplies shall be provided where specified elsewhere, or as required by design of system. Power supplies shall be industrial type, AC-to-DC switching, output voltage as required, 120vac input, size as required for the initial application plus 50% spare capacity.

B. Redundant power supplies with diode isolation shall be provided so that the loss of one power supply does not affect system operation. The back-up supply systems shall be designed so that either the primary or the back-up supply can be removed, repaired, and returned to service without disrupting the system operation.
C. Power supply output shall be protected by secondary overcurrent protection device(s).
D. The power distribution from multiloop supplies shall be selectively fused so that a fault in one instrument loop will be isolated from the other loops being fed from the same supply.
E. Each power supply shall meet the following requirements.

1. Regulation, line: 0.4% for input from 105 to 132vac.
2. Regulation, load: 0.8%
3. Ripple/Noise: 15mV RMS / 200 mV peak to peak
4. Operating temperature range: 0 deg C - 60 deg C
5. Overvoltage protection
6. Overload Protection
7. Output shall remain within regulation limits for a least 16ms after loss of AC power at full load.
8. Output status indicator.
9. UL listing

F. Power supplies shall be manufactured by Puls, Sola, Phoenix Contact or equal.

2.7 UNINTERRUPTIBLE POWER SUPPLIES

A. Uninterruptible power supplies (UPSs) shall be provided where specified elsewhere, or as required by design of system. Power supplies shall be industrial type, size as required for the initial application plus 50% spare capacity unless noted otherwise.
B. Battery runtime shall be as specified elsewhere. If no other specification for battery runtime is specified, battery runtime shall be 12.5 minutes at full load.
C. UPSs shall be double-conversion, on-line type.
D. UPSs shall be rated for operation in -20 degrees C to 55 degrees C ambient temperatures.
E. UPS batteries shall be hot-swappable and 12-year rated when installed in 25 degrees C environment and 4-year rated when installed in 50 degrees C environment.
F. UPSs shall include dry contacts for the following alarm points:

1. Loss of Input Power Alarm
2. Low Battery Alarm

G. UPSs shall be manufactured by Falcon UPS or approved equal.

2.8 DISCONNECTS

A. A main disconnect switch or circuit breaker shall be supplied integral to all control panels. The main disconnect or circuit breaker shall be accessible/operable without exposing the operator to energized sections of the control panel(s).
B. Individual circuit breakers shall be provided integral to the manufactured control panel for each separate power circuit originating within the control panel.

C. Where the highest continuous current trip setting for which the actual overcurrent device installed in a circuit breaker is rated (or can be adjusted to is 1200A or higher, breakers shall be electronic trip and shall be provided with arc energy-reducing maintenance switching (with local status indicator) to reduce arc flash energy per NEC 240.87 requirements.

2.9 COMBINATION STARTERS

A. All combination starters shall utilize a unit disconnect. Magnetic starters shall be furnished in all combination starter units unless specifically shown otherwise. All starters shall utilize full NEMA/EEMAC rated contactors (size 1 minimum).

B. Starters shall be provided with a three-pole, external (door mounted) manual reset, solid state overload relay. Solid state overload relay shall have switch-selectable trip class and shall provide protection from:

1. Overload.
2. Phase Unbalance.
3. Phase Loss.
4. Ground Fault (Class II detection).

C. Unless specifically shown otherwise, each combination starter shall be furnished with a control circuit transformer including two primary protection fuses and one secondary fuse (in the non-ground secondary conductor). The transformer shall be sized to accommodate the contactor(s) and all connected control circuit loads (including motor space heaters and other similar loads where specified). The transformer rating shall be fully visible from the front when the unit door is opened. Unless otherwise indicated, control voltage shall be 120V AC. Control power shall be provided by individual unit control power transformers.

D. When a unit control circuit transformer is not provided, the disconnect shall include an electrical interlock for disconnection of externally powered control circuits.

E. Auxiliary control circuit interlocks shall be provided where indicated. Auxiliary interlocks shall be field convertible to normally open or normally closed operation.

F. NEMA/EEMAC Size 1-4 starters shall be mounted directly adjacent to the wireway so that power wiring (motor leads) shall connect directly to the starter terminals without the use of interposing terminals. Larger starters shall be arranged so that power wiring may exit through the bottom of the starter cubical without entering the vertical wireway.

G. Each starter shall be equipped with a minimum of the following control devices:

1. Door-mounted reset button.
2. Two (2) field-reversible (N.O./N.C.) auxiliary contacts
3. For reversing and two-speed starters: Four (4) field-reversible (N.O./N.C.) auxiliary contacts
4. Additional control devices as indicated on plans.

H. Terminal Blocks

1. Wiring within all units shall be type B, with unit-mounted control terminal blocks for each field wire.
2. Terminal blocks shall be the pull-apart type 600 volt and rated at 25 amps. All current carrying parts shall be tin plated. Terminals shall be accessible from inside the unit when the unit door is opened. Terminal blocks shall be DIN rail mounted

with the stationary portion of the block secured to the unit bottom plate. The stationary portion shall be used for factory connections, and shall remain attached to the unit when removed. The terminals used for field connections shall face forward so they can be wired without removing the unit or any of its components.

I. Nameplates

1. Each unit shall be properly labeled with an engraved phenolic nameplate with a white background and black letters.
2. Each pilot device shall be properly labeled with a legend plate or an engraved phenolic nameplate.

2.10 WIRING

A. Refer to Section 26 05 19 for all wiring types/applications.
B. All wiring shall be identified on each end with hot stamped, shrink tube type, or self-laminating vinyl permanent wire markers to correspond with numbering shown on wiring diagrams.
C. All connections shall be made on terminals with no splices.
D. All wiring runs shall be along horizontal or vertical routes to present a neat appearance. Angled runs will not be acceptable. Group or bundle parallel runs of wire in plastic wire duct where practical.
E. All wiring runs shall be securely fastened to the panel or wire duct by means of plastic wire ties. Adequately support and restrain all wire runs to prevent sagging or movement.
F. AC power wiring and instrumentation/analog wiring shall be run separate.
G. Color code all internal wiring (not field wiring) as follows:

1. Line and load circuits: Black (B)
2. AC control wiring: Red (R)
3. Externally-Powered control wiring: Orange (O)
4. Neutral wiring: White (W)
5. Low voltage DC(+)pos: Blue (BL)
6. Low voltage DC(-)neg: Blue/White Tracer (BL/W)
7. Grounding: Green/Yellow Tracer (G/Y)

H. Terminal strips shall be provided for all input and output wiring. No more than two (2) wires shall be connected to one (1) terminal block.

2.11 ELECTRICAL SURGE AND TRANSIENT PROTECTION

A. General

1. Function: Protect the system against damage due to electrical surges.

B. Application: As a minimum, provide surge and transient protection (with proper grounding) at the following locations as described below:

1. Power Input:
   a. Provide surge protection device at any connection of 120VAC power to panels containing programmable logic controllers, remote I/O equipment,

UPS's, transmitters, radios, VFDs, Reduced Voltage Soft Starters or other electronic equipment. Device shall:

1) Be mounted internal to the associated panel, with dedicated overcurrent protection.
2) Be of two-part (base and SPD), DIN-rail mountable construction.
3) Have 15kA total nominal discharge current per line (based on 8/20µs waveform).
4) Have maximum continuous operating voltage (MCOV) rating as required by the associated circuit voltage.
5) Visually indicate operational status.
6) Be Dehn DEHNguard series or equal by MTL Technologies.

b. Provide surge protection device at any connection of multi-pole AC power to panels containing programmable logic controllers, remote I/O equipment, UPS's, transmitters, radios, VFDs, Reduced Voltage Soft Starters or other electronic equipment. Device shall:

1) Be mounted internal to the associated panel, with dedicated overcurrent protection.
2) Provide protection for all phases.
3) Have 40kA (per phase) peak surge current rating.
4) Have maximum continuous operating voltage (MCOV) rating as required by the associated circuit voltage.
5) Visually indicate operational status.
6) Be Square D SDSA or HWA series or equal.

2. Analog I/O Panel Terminations:
   a. Provide surge protection device at the PLC (or similar) panel connection of each analog I/O signal. Device shall:
      1) Be mounted internal to the associated panel.
      2) Be of two-part (base and SPD), DIN-rail mountable construction.
      3) Have 10kA total nominal discharge current per line (based on 8/20µs waveform).
      4) Have maximum continuous operating voltage (MCOV) rating as required by the associated signal.
      5) Be Dehn Blitzductor XT series or equal by MTL Technologies.

3. Discrete I/O Panel Terminations:
   a. Provide isolation relay at the PLC (or similar) panel connection of each discrete output signal (within the associated panel). See above for isolation relay requirements.

4. Low Voltage Power Supply Load Side Protection:
   a. Provide surge protection device at the PLC (or similar) panel on the load side of each low voltage power supply that has low voltage connections extending external to the panel. Device shall:

      1) Be mounted internal to the associated panel.
      2) Be of two-part (base and SPD), DIN-rail mountable construction.
      3) Have 10kA total nominal discharge current per line (based on 8/20µs

waveform).
4) Have maximum continuous operating voltage (MCOV) rating as required by the associated utilization voltage.
5) Be as manufactured by Dehn, MTL Technologies, or Phoenix Contact.

5. Network Panel Terminations:
a. Provide surge protection device at the PLC (or similar) panel connection of each network cable. Device shall:

1) Be mounted internal to the associated panel.
2) Be of DIN-rail mountable construction.
3) Have 1kA total nominal discharge current per line (based on 8/20µs waveform).
4) Be designed specifically for the associated network connection type (Ethernet, RS485, RS232, etc.).
5) Be MTL Zonebarrier series or equal.

6. Antenna Cable Terminations:
a. Provide surge protection device at the connection of antenna cable to the radio panel. Device shall:

1) Be mounted internal to the associated panel.
2) Provide coarse protection via replaceable gas-filled surge voltage arrestor
3) Be Phoenix Contact COAXTRAB series or equal.

C. Installation and grounding of suppressor: As directed by manufacturer. Provide coordination and inspection of grounding.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide enclosure mounting supports as required for floor, frame or wall mounting. All supports in exterior, wet or process areas shall be stainless steel unless noted otherwise. All floor-mounted panels or other similar distribution equipment shall be mounted on 6” concrete housekeeping pads unless specifically shown otherwise.
B. All enclosures used outside shall be solid bottom unless otherwise specified. All cable and piping openings shall be sealed watertight. Cable and piping shall enter the enclosure as shown on drawings or specified herein.
C. All equipment and components shall be solidly grounded to the control panel. One grounded terminal unit shall be provided in each control panel for connection to plant ground system. Grounding digital and analog components shall be performed in accordance with the instrument supplier’s installation recommendations. Signal ground shall be solidly connected to the ground system so as to prevent ground loops

3.2 PAINTING

A. For enclosures other than NEMA 4X stainless steel or fiberglass:

1. Completely clean all surfaces so that they are free of corrosive residue. Then,

phosphatize all surfaces for corrosion protection.

2. Prime with two (2) coats and finish with one coat of factory finish textured polyurethane. Paint shall be Sherwin-Williams Polane “T’ or approved equal.
3. Color to be selected during shop drawing review phase.

3.3 IDENTIFICATION & DOCUMENTATION

A. Refer to specification section 26 05 53 for additional requirements.

B. Control panel power supply source, type, voltage, number or circuit ratings shall be identified inside control panels and on drawings.

C. All interior devices and components shall be identified with thermal transfer labels with black letters on white background. Labels shall be placed on the subpanel and not the component. Marking system shall be a Brother “PTouch II” or equal. Lettering shall be 1/4" high.

D. All front panel mounted devices such as push buttons shall be identified by the use of engraved bakelite nameplates or legend plates. Nameplates shall be 1/8” thick, white with black core.

E. Where a panel includes a PLC or other network-connected device that is intended to be connected to another system (such as a plant SCADA system) via a network connection, the panel supplier shall provide an Interface Control Document (IDC) to the other system supplier (such as the SCADA Integrator). This document shall itemize the following for each networked parameter that is capable of being monitored or controlled by the other system:

1. Parameter Name/Function (ex: Pump No. 1 On/Off Status)
2. Parameter Type (discrete or analog, input or output)
3. Parameter register ID/location

F. Where a panel includes a touchscreen or other programmable HMI display and is to be monitored by another system (such as a plant SCADA system), the panel supplier shall provide copies of the HMI display code and screenshots of all proposed HMI screens to the other system supplier (such as the SCADA Integrator) for their use in duplicating the associated HMI.

G. A job-specific, custom wiring diagram for each control panel (not including control stations without relays) shall be provided to the contractor prior to installation for making the appropriate electrical connections. The wiring diagram shall clearly show all control components connected to the panel (whether the components are mounted internal or external to the enclosure). All wires and terminal blocks shall be clearly labeled. A laminated copy of the final wiring diagram for each unit shall be installed inside the door of the associated panel, and submitted to the owner with the as-built documentation.

3.4 OWNER TRAINING

A. Fully train the owner in the proper operation of all control panels/equipment, describing and demonstrating full operation, including function of each door-mounted device.

3.5 SPARE EQUIPMENT

A. Provide the following spare equipment:

1. Fuses: 10% (minimum of 3) of each size and type utilized, mounted within a pocket

within the associated control panel.

2. Where control panel contains programmable controller (or similar equipment): Flash drive containing copies of all final programs utilized within the control panel, with provisions/cable assemblies as required to connect the flash drive provided to the controller to download the programs. Flash drive shall be attached to retractable cord (long enough to reach the associated port) attached to the inside of the panel door.

END OF SECTION 26 29 00

Appendix E – GEFA Supplemental General Conditions

GEORGIA ENVIRONMENTAL FINANCE AUTHORITY

SUPPLEMENTAL GENERAL CONDITIONS

for

FEDERALLY ASSISTED
STATE REVOLVING FUND
CONSTRUCTION CONTRACTS

May 9, 2014

The following standard language must be incorporated into construction contract documents and in all solicitations for offers and bids for all construction contracts or subcontracts in excess of $10,000 to be funded in whole or in part by the federally-assisted State Revolving Fund in the state of Georgia.

These Supplemental General Conditions shall not relieve the participants in this project of responsibility to meet any requirements of other portions of this construction contract or of other agencies, whether these other requirements are more or less stringent. The requirements in these Supplemental General Conditions must be satisfied in order for work to be funded with the State Revolving Fund.

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INSTRUCTIONS & GENERAL REQUIREMENTS

It is the policy of the State Revolving Loan Fund (SRF) to promote a fair share of subcontract, materials, equipment and service awards to small, minority, and women-owned businesses for equipment, supplies, construction, and services. Compliance with these contract provisions is required in order for project costs to be eligible for SRF funding. The fair share objective is a goal, not a quota. Failure on the part of the apparent successful bidder to submit required information to the loan recipient (Owner) may be considered by the Owner in evaluating whether the bidder is responsive to bid requirements.

THE PRIME CONTRACTOR MUST SUBMIT THE FOLLOWING ITEMS TO THE OWNER:

A. Before beginning the work of any contract:

1) DBE Compliance Form and related documentation. The Owner must submit this information to the Georgia Environmental Finance Authority (GEFA) to demonstrate compliance with Disadvantaged Business Enterprise (DBE) requirements. GEFA concurrence is recommended prior to award of the construction contract and is required prior to commencement of any SRF-funded construction. (Pages GEFA-4&5)
2) Certification Regarding Equal Employment Opportunity. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor form should be submitted with the DBE Compliance Form, and the subcontractor forms should be submitted as the subcontracts are executed. (Page GEFA-9)
3) Certification Regarding Debarment, Suspension, & Other Responsible Matters. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor form should be submitted with the DBE Compliance Form and the subcontractor forms should be submitted as the subcontracts are executed. (Page GEFA-10)
4) *EPA Form 6100-2 DBE Subcontractor Participation Form. This form gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the Prime Contractor, how much the DBE subcontractor was paid, and any concerns the DBE subcontractor might have. The Prime Contractor must provide this form to each DBE subcontractor. The DBE subcontractor can, as an option, complete and submit this form to the GEFA DBE Coordinator, who will also forward the form to the EPA DBE Coordinator. (Page GEFA-11)
5) *EPA Form 6100-3 DBE Subcontractor Performance Form. This form captures the description of work to be performed by an intended DBE subcontractor and the price of the work. This form is to be provided by the Prime Contractor to each DBE subcontractor and submitted with the DBE Compliance Form. (Page GEFA-12)
6) *EPA Form 6100-4 DBE Subcontractor Utilization Form. This form captures intended or anticipated use of an identified DBE subcontractor by the Prime Contractor and the estimated dollar amount of the work. This form is to be completed by the Prime Contractor and submitted with the DBE Compliance Form. (Page GEFA-13)

* 6100 FORMS ARE NOT REQUIRED WHEN ALL OF THE WORK IS SELF-PERFORMED BY THE PRIME CONTRACTOR.

B. During the performance of the contract:

7) Changes to Subcontractors Form. If any changes, substitutions, or additions are proposed to the subcontractors included in previous GEFA concurrences, the Owner must submit this information to GEFA for prior concurrence in order for the affected subcontract work to be eligible for SRF funding. (Page GEFA-14)
8) DBE Annual Report. The Owner must submit this information to GEFA no later than October 20th of any year that the construction contract is active. (Page GEFA-15)
9) Certified Payrolls. These should be submitted to the Owner weekly for the Prime Contractor and all subcontractors. The Owner must maintain payroll records and make these available for inspection. Use Department of Labor form WH-347 or a similar form that contains all of the information on the Department of Labor.

THE OWNER MUST SUBMIT INFORMATION FOR GEFA REVIEW AND CONCURRENCE TO:

Georgia Environmental Finance Authority
Attention: DBE Compliance Coordinator
233 Peachtree Street, N.E.
Harris Tower, Suite 900
Atlanta, Georgia 30303
(404)584-1000; (404)584-1069 (fax)
dbe_compliance@gefa.ga.gov

DBE COMPLIANCE FORM

ALL INFORMATION OUTLINED ON THIS FORM IS REQUIRED FOR DBE COMPLIANCE REVIEW. THE PROPOSED PRIME CONTRACTOR AND OWNER SHOULD ENSURE THAT THIS INFORMATION IS COMPLETE PRIOR TO SUBMITTAL.

Loan Recipient _____ SRF Loan Number _____

PRIME CONTRACTOR'S AND OWNER'S CERTIFICATIONS:

I certify that the information submitted on and with this form is true and accurate and that this firm has met and will continue to meet the conditions of this construction contract regarding DBE solicitation and utilization. I further certify that criteria used in selecting subcontractors and suppliers were applied equally to all potential participants and that EPA Forms 6100-2 and 6100-3 were distributed to all DBE subcontractors.

_____ Date_____
(Prime Contractor signature)

_____
(Printed name and title)

I certify that I have reviewed the information submitted on and with this form and that it meets the requirements of the Owner's State Revolving Fund loan contract.

_____ Date_____
(Signature of Owner or Owner's representative)

_____
(Printed name and title)

CONTACT INFORMATION

Owner contact _____

Owner phone number & email _____

Consulting Engineer contact _____

Consulting Engineer phone number & email _____

Proposed Prime Contractor _____

Prime Contractor contact _____

Prime Contractor phone number & email _____

Proposed total contract amount $ _____

Proposed total MBE participation $ _____Percentage _____ Goal: 4.0 percent

Proposed total WBE participation $ _____Percentage _____ Goal: 4.0 percent

CONTINUED ON NEXT PAGE

Please submit the following with the DBE Compliance Form:

1) List of all committed and uncommitted subcontractors by trade, including company name, address, telephone number, contact person, dollar amount of subcontract, and DBE/MBE/WBE status.

2) Indicate in writing if no solicitations were made because the Prime Contractor intends to use only its own forces to accomplish the work.

3) Proof of certification by EPA, SBA, DOT (or by state, local, Tribal, or private entities whose certification criteria match EPA criteria) for each subcontractor listed as a DBE, MBE, or WBE.

4) Documentation of solicitation efforts for prospective DBE firms, such as fax confirmation sheets, copies of solicitation letters and e-mails, printout of online solicitations, printouts of online search results and copies and affidavits of publication in newspapers or other publications. (see also, "Six Good Faith Efforts", page GEFA-7).

    a. The Prime Contractor shall use the necessary resources to identify and directly solicit no less than 3 certified MBE firms and 3 certified WBE firms to bid in each expected subcontract trade or area. If a diligent and documented search of the recommended directories does not identify 3 potential certified MBE firms and 3 potential certified WBE firms, then the Prime Contractor shall post an advertisement in the Owner's local legal organ, the Owner's official website, a regional newspaper in a larger community in the proximity, the Prime Contractor's website, or some other appropriate resource.
    b. The Prime Contractor is encouraged to follow-up each written, fax, or e-mail solicitation with at least 1 logged phone call.
    c. Whenever possible, post solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

5) Written justification for not selecting a certified DBE subcontractor that submitted a low bid for any subcontract area.

6) Certification By Proposed Prime Contractor or Subcontractor Regarding Equal Employment Opportunity (GEFA-9)

7) Certification By Proposed Prime or Subcontractor Regarding Debarment, Suspension, and Other Responsible Matters. (GEFA-10)

8) *EPA Form 6100-3 DBE Subcontractor Performance Form for all DBE subcontracts. (GEFA-12)

9) *EPA Form 6100-4 DBE Subcontractor Utilization Form for all DBE subcontracts. (GEFA-13)

*6100 forms are not required when all of the work is self-performed by the prime contractor.

END OF DBE COMPLIANCE FORM

DBE COMPLIANCE CHECKLIST

THE PRIME CONTRACTOR MUST SUBMIT THE FOLLOWING ITEMS TO THE OWNER BEFORE THE WORK BEGINS:

Loan Recipient _____ SRF Loan Number _____

Include in Package Submittal

PRIME CONTRACTOR ONLY	TOTAL CONTRACT AMOUNT

ALL SUBCONTRACTORS, INCLUDING DBE FIRMS	TRADE	AMOUNT

ALL SUBCONTRACTORS, INCLUDING DBE FIRMS	TRADE	AMOUNT

DBE SUBCONTRACTORS ONLY	TRADE	AMOUNT

DBE SUBCONTRACTORS ONLY	TRADE	AMOUNT

PRIME CONTRACTOR ONLY *(Not applicable if self-performing all work, with no subcontracting)*

1. DBE Compliance Form. The Owner must sign and submit this information to the Georgia Environmental Finance Authority (GEFA) to demonstrate compliance with DBE requirements. GEFA concurrence is recommended prior to award of the construction contract and is required prior to commencement of any SRF-funded construction. (Pages GEFA-4&5)

2. Certification Regarding Equal Employment Opportunity. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor's form should be submitted with the DBE Compliance Form and the subcontractors' forms should be submitted as the subcontracts are executed. (Page GEFA-9)

3. Certification Regarding Debarment, Suspension, & Other Responsible Matters. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor's form should be submitted with the DBE Compliance Form and the subcontractors' forms should be submitted as the subcontracts are executed. (Page GEFA-10)

4. EPA Form 6100-2 DBE Subcontractor Participation Form. This form gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from Prime Contractor, how much the DBE subcontractor was paid, and any other concerns the DBE subcontractor might have. The Prime Contractor must provide this form to each DBE subcontractor. The DBE subcontractor can, as an option, submit this form to the GEFA DBE Coordinator, who will forward the form to the EPA DBE Coordinator. (Page GEFA-11)

5. EPA Form 6100-3 DBE Subcontractor Performance Form. This form captures an intended DBE subcontractor's description of work to be performed for the Prime Contractor and the price of the work. This form is to be provided by the Prime Contractor to each DBE subcontractor and submitted with the DBE Compliance Form. (Page GEFA-12)

6. EPA Form 6100-4 DBE Subcontractor Utilization Form. This form captures the Prime Contractor's intended use of an identified DBE subcontractor and the estimated dollar amount of the work. This form is to be completed by the Prime Contractor and submitted with the DBE Compliance Form (Page GEFA-13)

Uncommitted Trades

Documentation of Good Faith Efforts

Newspaper ads		Internet Websites	Fax Confirmation	Copies of Solicitation Emails/letters	Copies of phone logs
PROOF OF CERTIFICATION FOR EACH SUBCONTRACTOR LISTED AS A DBE, MBE, OR WBE					

SIX GOOD FAITH EFFORTS

These good faith efforts are required methods to ensure that DBEs have the opportunity to compete for procurements funded by EPA financial assistance dollars. Such good faith efforts are described as follows:

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. This will include placing DBEs on solicitation lists and soliciting them whenever there are potential sources.

2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.

5. Use the resources, services, and assistance of the Department of Transportation (DOT), Small Business Administration (SBA), and the Minority Business Development Agency of the Department of Commerce (MBDA).

6. If the Prime Contractor awards subcontracts, it must take the steps described in items (1) through (5) listed above.

Please note that DBEs, MBEs, and WBEs must be certified by EPA, SBA, or DOT (or by state, local, Tribal, or private entities whose certification criteria match EPA's). DBEs must be certified in order to be counted toward the Prime Contractor's MBE/WBE goals. "Self-certified" DBE subcontractors will not be counted toward the Prime Contractor's MBE/WBE goals. Depending upon the certifying agency, a DBE may be classified as a DBE, a Minority Business Enterprise (MBE), or a Women's Business Enterprise (WBE).

The Prime Contractor must employ and document the Six Good Faith Efforts for all subcontracts, even if the Prime Contractor has achieved the fair share objectives.

The documentation of solicitations for the Six Good Faith Efforts must be detailed in order to allow for satisfactory review. Such documentation might include fax confirmation sheets, copies of solicitation letters/emails, printouts of the online solicitations, printouts of online search results and affidavits of publication in newspapers or other publiccations. The Prime Contractor is encouraged to follow up each written, fax, or e-mail solicitation with at least 1 logged phone call.

The Prime Contractor should attempt to identify and solicit DBEs in the geographic proximity of the project before soliciting those located farther away.

If a DBE subcontractor fails to complete work under the subcontract for any reason, the Prime Contractor must notify the Owner in writing prior to any termination and must employ the Six Good Faith Efforts described above if using a replacement subcontractor. Any proposed changes from the approved DBE subcontractor list must be reported to the Owner and to GEFA on the *Changes to Approved Subcontractors Form* (GEFA-14) prior to initiation of the action. EPA Forms Nos. 6100-3 and 6100-4 must also be submitted to GEFA for new DBE subcontracts.

RESOURCES FOR IDENTIFYING DBE SUBCONTRACTORS

RESOURCES FOR IDENTIFYING DBE SUBCONTRACTOR'S FOR DIRECT SOLICITATION:

Georgia Department of Transportation (GDOT)
Disadvantaged Business Enterprise Program
(404) 631-1972
https://gdotbiext.dot.ga.gov/analytics/saw.dll?Dashboard&PortalPath=%2Fshared%2FExternal%2F_portal%2FUCP%20Directory&Page=UCP%20Directory&Action=Navigate&Syndicate=true&anon=1

City of Atlanta, Georgia Office of Contract Compliance (404) 330-6010
https://www.atlantaga.gov/government/mayor-s-office/executive-offices/office-of-contract-compliance

DeKalb County, Georgia
Office of Purchasing and Contracting
(404) 371-4730
http://dekalblsbe.info/wordpress1/wp-content/uploads/2016/05/DeKalbCountyCertifiedVendorsListMay10-2016-Final2.pdf

Fulton County, Georgia
Purchasing and Contract Compliance
(404) 612-5800
http://www.fultoncountyga.gov/fcpccd-local-business-directory

Metropolitan Atlanta Rapid Transit Authority (MARTA)
Disadvantaged Business Enterprise Program
(404) 848-4656
https://marta.diversitysoftware.com/FrontEnd/VendorSearchPublic.asp?XID=8663&TN=marta

United States Environmental Protection Agency
http://www.epa.gov/osbp/dbe_team.htm
Teree Henderson
National DBE Program Coordinator
(202) 566-2222
henderson.teree@epa.gov

For more information about DBE compliance, contact:
dbe_compliance@gefa.ga.gov

NOTES:

(1) The Prime Contractor shall use the necessary resources to identify and directly solicit no less than 3 certified MBE firms and 3 WBE firms to bid in each expected subcontract area or trade.

(2) If a diligent and documented search of the recommended directories does not identify 3 potential certified MBE firms and 3 potential certified WBE firms, then the Prime Contractor shall post an advertisement in the Owner's local legal organ, the Owner's official website, a regional newspaper in a larger community in the proximity, the Prime Contractor's website, or some other appropriate resource. Whenever possible, post solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

(3) Expenditures to a DBE that acts merely as a broker or passive conduit of funds, without performing, managing, or supervising the work of its subcontract in a manner consistent with normal business practices may not be counted.

(4) The Prime Contractor should attempt to identify and first solicit DBEs in the geographic proximity of the project before soliciting those located farther away.

(5) Contact GEFA Program Managers at (404) 584-1000 or dbe_compliance@gefa.ga.gov for further assistance or resources.

CERTIFICATION BY PROPOSED PRIME CONTRACTOR OR SUBCONTRACTOR REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Proposed Prime Contractor
Proposed Subcontractor

This certification is required pursuant to Executive Order 11246, Part II, Section 203 (b), (30 F.R. 12319-25). Any bidder or prospective prime contractor, or any of the proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicated that the prime or subcontractor has not filed a compliance report due under applicable instruction, such contractor shall be required to submit a compliance report.

(1) Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
YES _____ NO _____

(2) Compliance Reports were required to be filed in connection with such contract or subcontract.
YES _____ NO _____ (If YES, state what reports were filed and with what agency.)

(3) Bidder has filed all compliance reports due under applicable instructions, including SF-100 (EEO-1 Report).
YES _____ NO _____ (If NO, please explain in detail.)

The information above is true and complete to the best of my knowledge and belief. (A willfully false statement is punishable by law – U.S. Code, Title 18, Section 1001.)

_____
PRINTED NAME & TITLE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR OR SUBCONTRACTOR

_____ _____
SIGNATURE OF AUTHORIZED REPRESENTATIVE DATE

CERTIFICATION BY PROPOSED PRIME CONTRACTOR OR SUBCONTRACTOR REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBLE MATTERS

Proposed Prime Contractor
Proposed Subcontractor

Under Executive Order 12549 individuals or organizations debarred from participation in Federal Assistance Programs may not receive an assistance award under federal program or sub-agreement there under for $25,000 or more. Accordingly each recipient of a State loan or a contract (engineering or construction) awarded under a loan must complete the following certification (see 40 CFR 32.510).

The prospective participant certifies to the best of its knowledge and belief that it and its principals;

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and

(d) Have not within a three year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause of default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. (A willfully false statement is punishable by law – U.S. Code, Title 18, Section 1001.)

_____

PRINTED NAME & TITLE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR OR SUBCONTRACTOR

_____ _____

SIGNATURE OF AUTHORIZED REPRESENTATIVE DATE

_____ I am unable to certify to the above statements. My explanation is as follows:

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name		Project Name
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Prime Contractor Name		Issuing/Funding Entity:

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name	Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: ___ DOT ___SBA ___ Other: _____	Meets/ exceeds EPA certification standards? ___YES ___NO ___Unknown	

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package.
Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity:		

I have identified potential DBE certified subcontractors	___ YES	___ NO
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/ Company Name	**Company Address/ Phone/ Email**	**Est. Dollar Amt**	**Currently DBE Certified?**

Continue on back if needed

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

CHANGES TO APPROVED SUBCONTRACTORS FORM

Loan Recipient _____ SRF Loan Number _____

CERTIFICATIONS:
I certify that the information submitted on and with this form is true and accurate and that this firm has met and will continue to meet the conditions of this construction contract regarding DBE solicitation and utilization. I further certify that criteria used in selecting subcontractors and suppliers were applied equally to all potential participants.

_____ Date_____
(Prime Contractor signature)

_____
(Printed name and title)

I certify that I have reviewed the information submitted on and with this form and that it meets the requirements of the Owner's State Revolving Fund loan contract.

_____ Date_____
(Signature of Owner or Owner's representative)

_____
(Printed name and title)

GENERAL INFORMATION:

1) If an approved subcontractor is terminated or replaced, please identify this company and briefly state reason.

Subcontractor Name::	Trade
Reason Terminated or Replaced	

2) For new or additional subcontractors, list name, trade, address, telephone number, contact person, dollar amount of subcontract, and DBE status.

New Subcontractor Name and Contact Person	Trade
Address	Telephone Number
Dollar Amount	DBE Status

1) Attach proof of certification by EPA, SBA, DOT (or by state, local, Tribal, or private entities whose certification criteria match EPA's) for each subcontractor listed as a DBE, MBE, or WBE.

2) Attach documentation of Six Good Faith Efforts solicitation effort for all new subcontracts.

3) Provide justification for not selecting any certified DBE subcontractor that submitted a low bid for any subcontract area.

4) For each subcontractor, attach certifications regarding Equal Employment Opportunity (GEFA-9) and certifications regarding Debarment, Suspension, and Other responsible Matters (GEFA-10)

DBE ANNUAL REPORT
FORM (5700-52A)

This form must be completed by recipients of federal financial assistance for procurement of supplies, equipment, construction or services. SRF loan recipients are required to submit this report to GEFA by the 20th of October for the previous period of October 1 through September 30. Please submit a "negative" report even if $0 is the amount paid to MBE/WBE subcontractors during the reporting period.

<table>
<tr><td colspan="4">ANNUAL REPORT FORM (5700-52A)</td></tr>
<tr><td colspan="2">1. PRIME CONTRACTOR</td><td colspan="2">2. REPORTING PERIOD (Complete date using current year.)
Period Ending (September 30, _____)</td></tr>
<tr><td colspan="2">3. SUBMIT TO:
Georgia Environmental Finance Authority
Attention: DBE Compliance Coordinator
233 Peachtree Street, N.E.
Harris Tower, Suite 900
Atlanta, Georgia 30303
dbe_compliance@gefa.ga.gov</td><td colspan="2">4. LOAN RECIPIENT (Name, Address and Telephone)</td></tr>
<tr><td>5. LOAN RECIPIENT (OWNER)
REPORTING CONTACT</td><td>PHONE:</td><td>6. TYPE OF FEDERAL FINANCIAL ASSISTANCE PROGRAM (Check one)
CWSRF _____ DWSRF_____</td><td>7. SRF LOAN NUMBER</td></tr>
<tr><td colspan="2">8. CONTRACTOR NAME & TOTAL CONSTRUCTION CONTRACT AMOUNT</td><td colspan="2">9. ACTUAL DOLLAR AMOUNT PAIDTO MBE/WBE SUBCONTRACTORS THIS PERIOD
$ MBE_____ $ WBE_____ NEGATIVE REPORT ($0) ___</td></tr>
<tr><td colspan="2">10. RECIPIENT'S MBE/WBE GOALS
MBE 4.0 % WBE 4.0 %</td><td colspan="2">11. TOTAL DOLLARS SPENT THIS PERIOD
MBE $_____
WBE $_____
NON MBE/WBE $_____
TOTAL $ _____</td></tr>
<tr><td colspan="2">12. NAME & TITLE OF AUTHORIZED REPRESENTATIVE OF LOAN RECIPIENT (OWNER).</td><td>13. SIGNATURE OF AUTHORIZED REPRESENTATIVE OF LOAN RECIPIENT.</td><td>14. DATE</td></tr>
<tr><td colspan="4">MBE/WBE PAYMENTS MADE DURING PERIOD</td></tr>
<tr><td colspan="2">NAME & ADDRESS of DBE (SUB)CONTRACTOR (indicate if MBE or WBE firm)</td><td colspan="2">TOTAL DOLLAR AMOUNT PAID & DATE PAID
$_____ DATE_____</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
</table>

SPECIAL PROVISIONS

(a) The Prime Contractor is required to pay its subcontractors in accordance with the Georgia Prompt Payment Act (OCGA 13-11).

(b) The Prime Contractor is required to insert the entirety of the Davis Bacon contract requirements into all subcontracts

(c) Sewer line and water line crossing of all roads and streets shall be done in accordance with the Georgia Department of Transportation (D.O.T.) Policies and Procedures and must comply with the Ga. D.O.T. Standard Specifications, Construction of Roads and Bridges, 1993 Edition.

(c) Construction shall be carried out so as to prevent bypassing of wastewater flow and to prevent interruption of drinking water treatment during construction. EPD must receive written notification prior to any reduction in the level of treatment and must approve all temporary modifications to the treatment process prior to the activity.

(d) Erosion and Sedimentation Control shall be accomplished in accordance with the Georgia Erosion and Sedimentation Control Act of 1975 as currently amended and NPDES General Permits (Storm Water from Construction Sites). See also www.gaepd.org and www.gaswcc.georgia.gov for information regarding permits.

(e) Use of Chemicals: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in conformance with State and local regulations as appropriate.

(f) It is the duty of the Prime Contractor, the Owner and the Engineer to ensure the construction of the project, including the letting of contracts in connection therewith, shall comply with all applicable laws and regulations and requirements of the United States of America or any agency thereof, the state of Georgia or any agency thereof, territorial, or any local government laws or political subdivision and ordnances to the extent that such requirements do not conflict with Federal laws and this subchapter.

(g) EPD, EPA, and GEFA shall have access to the site and the project work at all times.

BONDS

Bonding requirements for Contracts of $100,000 or less are contained in the General Conditions. Bond requirements of contracts in excess of $100,000 are:

1. Bid guarantee equivalent to five percent of the bid price. The bid guarantee shall consist of a firm commitment such as a certified check or bid bond submitted with the bid.

2. Performance bond equal to 100 percent of the contract price and;

3. Payment bond equal to 100 percent of the contract price. Bonds must be obtained from companies holding Certificates of Authority as acceptable sureties, issued by the U.S. Treasury.

SPECIAL NOTICE TO BIDDERS

By the submission of this bid, each bidder acknowledges that he understands and agrees to be bound by the equal opportunity requirements of EPA regulations (40 CFR Part 8, particularly Section 8.4 (b)), which shall be applicable throughout the performance of work under any contract awarded pursuant to this solicitation. Each bidder agrees that if awarded a contract, it will similarly bind contractually each subcontractor. In implementation of the foregoing policies, each bidder further understands and agrees that if awarded a contract, it must engage in affirmative action directed at promoting and ensuring equal employment opportunity in the workforce used under the contract (and that it must require contractually the same effort of all subcontractors whose subcontracts exceed $10,000.00). The bidder understands and agrees that “affirmative action” as used herein shall constitute a good faith effort to achieve and maintain minority employment in each trade in the on-site workforce used on the project.

EQUAL EMPLOYMENT OPPORTUNITY NOTICE

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL OPPORTUNITY
(EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the Equal Opportunity Clause which is included in the nondiscrimination Provision and Labor Standards, EPA Form 5720-4 and the Standard Federal Equal Employment Opportunity (EEO) Construction Contract Specifications set forth herein.

2. The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	4.0 percent
Goals for female participation for each trade	4.0 percent

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minority and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation to the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical area where the contract is to be performed giving the state, county and city, if any).

EEO Construction Contract Specifications (Executive Order 11246)

EEO Specifications:

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

   b. "Director" means Director, Office of Federal Contract Compliance Program, United States Department of Labor, or any person to whom the Director delegates authority;

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form, 941.

   d. "Minority" includes:

      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7(a) through (p) of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

   a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

   b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations ☐ responses.

   c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever actions the Contractor may have taken.

   d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

   e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trained programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7(b) above.

   f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations 7(a) through (p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7(a) through (p) of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes

a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation, if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Davis-Bacon and Related Acts

Labor Standards Provisions for Federally Assisted Contracts

Contract Provision for Contracts in Excess of $2,000.

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, http://www.dol.gov/whd/govcontracts/dbra.htm (E-tools)

(ii)(A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The subrecipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly

payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/whd/forms or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the

meaning of this clause include disputes between the contractor (or any of its subcontractors) and Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job

(5) Compliance Verification:

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractors' use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must provide a report of compliance to the Georgia Environmental Finance Authority detailing compliance efforts and results. This report will be submitted with or prior to the loan recipient's first request for funding of construction costs, prior to final disbursement of funds from the loan, and as requested by the GEFA during the project.

(f) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB coordinator and to the appropriate DOL Wage and Hour District Office listed at http://www.dol.gov/whd/america2.htm.

INSERT WAGE RATE DETERMINATION HERE

Wage Rates (for *Heavy Construction*) are state/county specific can be found at:

http://www.dol.gov/whd/govcontracts/dbra.htm

Sample Payroll Form (WH-347) is found at:

http://www.dol.gov/whd/forms/wh347.pdf

Labor Standards Interview Form (SF-1445) is found at:

http://www.gsa.gov/portal/forms/download/115910

Davis-Bacon (WH-1321) poster is found at:

http://www.dol.gov/whd/regs/compliance/posters/fedprojc.pdf
(*English*)

http://www.dol.gov/whd/regs/compliance/posters/davispan.pdf
(*Spanish*)

Fair Labor Standards Act Minimum Wage poster is found at:

http://www.dol.gov/whd/regs/compliance/posters/minwagebwp.pdf
(*English*)

http://www.dol.gov/whd/regs/compliance/posters/minwagespbwP.pdf
(*Spanish*)

"EEO Is the Law" poster is found at:

http://www.eeoc.gov/employers/upload/eeoc_self_print_poster.pdf
(*English*)

http://www.eeoc.gov/employers/upload/eeoc_self_print_poster_spanish.pdf
(*Spanish*)

"EEO Is the Law" poster supplement is found at:

http://www.eeoc.gov/employers/upload/eeoc_gina_supplement.pdf
(*English*)

http://www.eeoc.gov/employers/upload/eeoc_gina_supplement_spanish.pdf
(*Spanish*)

OSHA poster is found at:

http://www.osha.gov/Publications/osha3165low-res.pdf
(*English*)

http://www.osha.gov/Publications/osha3167.pdf
(*Spanish*)

CERTIFIED PAYROLL REVIEW CHECKLIST

(This is a *recommended Certified Payroll Review Checklist for the Owner's use*.)

CONTRACT ID City of CW/DWSRF#00 - 000	PRIME CONTRACTOR/SUBCONTRACTOR X Construction
GENERAL WAGE DECISION AND DATE (Insert number & date)	PAYROLL PERIOD ENDING

INSTRUCTIONS: This checklist is to be used in conjunction with projects requiring Davis-Bacon Wage Rates and compliance reviews. All certified payrolls are to be date stamped upon receipt from the prime contractor.

Payroll Information Checklist:

_____ Prime Contractor's or subcontractor's name and address
_____ Contract ID numbers (GEFA SRF No.)
_____ Week ending.
_____ Project location.

_____ Employee ID or Last 4 digits of Social Security Number
- _____ Social Security Number removed
- _____ Employee's work classification
- _____ Identification of OJTs, apprentices and program levels (%) on payrolls.
- _____ Verify that OJT and Apprentice Program documentation is in project files.

_____ Daily and weekly employee hours worked in each job classification.
- _____ Daily and weekly employee overtime (or premium) hours worked
- _____ Total weekly hours worked on all jobs (prevailing and non-prevailing wage).
- _____ Base rate shown for each employee, overtime (or premium) rate shown when worked.
- _____ Verify correct wage rates are being paid.
- _____ Verify overtime is being paid correctly (over 40 hrs/wk, and Time and a half)
- _____ Week's gross wages
- _____ Week's itemized deductions.
- _____ Week's net wages paid

_____ Compliance statement attached.
- _____ Method of fringe benefit payment described by checking either box (4)(a) or (4)(b).
- _____ Fringe benefit package information in file and updated as needed (if 4(a) is checked)
- _____ Exceptions explanation for fringe benefit (4)(c).
- _____ Signature.

Compliance Review Checklist (for field reviews):

_____ Verify work classifications reported are consistent with the work performed.
_____ Compare payrolls with wage rate interviews when conducted.
_____ Compare number of employees and hours worked with project documentation.

REVIEWED BY:	DATE