100% PROJECT MANUAL

COMMERCE 2.0 MGD GROVE CREEK WPCP

COMMERCE, GEORGIA

for

CITY OF COMMERCE

BID DOCUMENTS

March 2025

Prepared By

Goodwyn Mills Cawood, LLC
6120 Powers Ferry Road NE
Suite 200
Atlanta, GA 30339
T: 770.952.2481
www.gmcnetwork.com

GMC PROJECT NUMBER: CATL230033

STATE OF GEORGIA
GOODWYN MILLS CAWOOD, LLC
No.PEF007898
Exp.06.30.2026
CERTIFICATE OF AUTHORIZATION

GEORGIA
REGISTERED
No. PE051452
PROFESSIONAL
Graham Sizemore
03.19.2025
ENGINEER
GRAHAM S. SIZEMORE

OWNERSHIP OF DOCUMENTS AND DISCLAIMER

The Project Manual, Technical Specifications, Drawings, and all other documents relating to this project have been prepared for this individual and particular project, and for the exclusive use of the original Owner, developer or other party so indicated.

Actual project conditions and as-built conditions may vary significantly. Changes made during bidding, negotiations, construction, due to additions or deletions of portions of this project, and/or for other reasons, may not be indicated in these documents.

These documents may not be used or relied upon as a certification of information indicated, or used for any other project, by any third parties or other parties, for any purpose whatsoever, without the prior written consent of Goodwyn Mills Cawood, LLC, or prior to receipt of mutually agreed to compensation paid to Goodwyn Mills Cawood, LLC, therefor.

Goodwyn Mills Cawood, LLC
Post Office Box 242128
Montgomery, AL 36124-2128
and
Birmingham, Alabama
Andalusia, Alabama
Auburn, Alabama
Daphne, Alabama
Eufaula, Alabama
Huntsville, Alabama
Mobile, Alabama
Vernon, Alabama
Lutz, Florida
Orlando, Florida
Pensacola, Florida
Sarasota, Florida
Tampa, Florida
Atlanta, Georgia
Augusta, Georgia
Brunswick, Georgia
Cartersville, Georgia
Savannah, Georgia
New Orleans, Louisiana
Charlotte, North Carolina
Charleston, South Carolina
Columbia, South Carolina
Greenville, South Carolina
Brentwood, Tennessee
Nashville, Tennessee

COMMERCE 2.0 MGD GROVE CREEK
WATER POLLUTION CONTROL PLANT

FOR

CITY OF COMMERCE

COMMERCE, GEORGIA

GMC PROJECT NO. CATL230033

TABLE OF CONTENTS

DIVISION 01 – GENERAL REQUIREMENTS

01 10 00	Summary
01 15 00	Measurement and Payment
01 21 00	Allowances
01 26 00	Contract Modification Procedures
01 29 00	Payment Procedures
01 29 00A	Contractor Progress Lien Waiver
01 29 00B	Subcontractor Progress Lien Waiver
01 31 00	Project Management and Coordination
01 32 00	Construction Progress Documentation
01 32 33	Photographic Documentation
01 33 00	Submittal Procedures
01 40 00	Quality Requirements
01 42 00	References
01 50 00	Temporary Facilities and Controls
01 60 00	Product Requirements
01 70 00	Execution and Closeout Requirements
01 78 23	Operation and Maintenance Data
01 78 39	Project Record Documents
01 79 00	Demonstration and Training
01 81 00	Geotechnical Data

DIVISION 02 – (NOT USED)

DIVISION 03 – CONCRETE

03 20 00	Anchorage in Concrete
03 30 00	Cast-in-Place Concrete
03 39 00	Concrete Curing
03 60 00	Grouting

DIVISION 04 – MASONRY

04 00 10	Unity Masonry Assemblies

DIVISION 05 – METALS

05 12 00	Structural Steel
05 35 15	Cold-Formed Metal Framing
05 40 00	Aluminum Handrail

05 50 00	Metal Fabrications
05 51 19	Metal Grating Stairs
05 52 13	Pipe and Tube Railings
05 53 13	Bar Gratings
05 60 00	Aluminum Hatches

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

06 10 53	Miscellaneous Rough Carpentry
06 16 00	Sheathing
06 60 00	FRP Weir Plates, Scum Baffles and Brackets

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

07 21 00	Thermal Insulation
07 41 13	Standing-Seam Metal Roof Panels
07 42 93	Soffit Panels
07 54 23	Thermoplastic-Polyolefin (TPO) Roofing
07 62 00	Sheet Metal Flashing and Trim
07 84 00	Firestopping
07 92 00	Joint Sealants

DIVISION 08 – OPENINGS

08 11 13	Hollow Metal Doors and Frames
08 51 13	Aluminum Windows
08 71 00	Door Hardware

DIVISION 09 – FINISHES

09 22 16	Non-Structural Metal Framing
09 29 00	Gypsum Board
09 51 13	Acoustical Panel Ceilings
09 96 00	High-Performance Coatings

DIVISION 10 – SPECIALTIES

10 14 00	Signage

DIVISION 11 - 12 – (NOT USED)

DIVISION 13 – SPECIAL CONSTRUCTION

13 10 00	Bypass Pumping
13 31 00	Fiberglass Reinforced Building Enclosure
13 34 23.11	Fabricated Electrical Houses

DIVISION 14 – 22 (NOT USED)

DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING (NOT USED)

DIVISION 24 – 25 (NOT USED)

DIVISION 26 – ELECTRICAL

26 05 00	Common Work Results for Electrical
26 05 19	Conductors
26 05 26	Grounding and Bonding
26 05 33	Raceways and Boxes
26 05 73	Short Circuit/Coordination Study
26 22 13	Low Voltage Transformers
26 24 16	Panelboards
26 27 26	Wiring Devices
26 28 11	Molded Case Circuit Breakers
26 28 16	Safety Switches
26 29 23	Variable Frequency Drives
26 32 13	Generators
26 35 26	Active Harmonic Filter
26 36 23	Automatic Transfer Switches
26 50 00	Lighting

DIVISON 27 – COMMUNICATIONS

27 05 26	Grounding and Bonding for Communications Systems
27 05 28	Pathways for Communications Systems
27 05 28.29	Hangers and Supports for Communications Systems
27 11 00	Communications Equipment Room Fittings
27 13 23	Communications Optical Fiber Backbone Cabling
27 15 13	Communications Copper Horizontal Cabling
27 15 23	Communications Optical Fiber Horizontal Cabling

DIVISION 28 – 30 (NOT USED)

DIVISION 31 – EARTHWORK

31 05 16	Aggregates for Earthwork
31 10 00	Site Clearing
31 20 00	Earth Moving
31 23 16.13	Excavation and Trenching
31 23 16.26	Rock Removal
31 23 19	Dewatering
31 25 00	Erosion and Sedimentation Controls
31 50 00	Excavation Support and Protection

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 05 19	Geosynthetics for Exterior Improvements
32 12 16	Asphalt Paving
32 13 13	Concrete Paving
32 31 13	Chain Link Fence and Gates
32 91 13	Soil Preparation
32 92 00	Turf and Grasses
32 92 19	Seeding and Restoration

DIVISION 33 – UTILITIES

33 01 30.13	Sewer and Manhole Testing
33 01 30.51	Pumping and Bypassing
33 01 30.61	Sewer and Pipe Joint Sealing
33 01 30.62	Manhole Grout Sealing
33 05 05.31	Hydrostatic Testing
33 05 13	Manholes and Structures
33 05 16.13	Precast Concrete Utility Structures
33 05 26	Utility Identification
33 31 00	Sanitary Utility Sewerage Piping
33 41 13	Public Storm Utility Drainage Piping

DIVISION 34 – 39 (NOT USED)

DIVISION 40 – PROCESS INTERCONNECTIONS

40 05 06	Couplings Adapters Specials for Process Piping
40 05 07	Hangers and Supports for Process Piping

40 05 13	Common Requirements for Process Piping
40 05 19	Ductile Iron Process Pipe
40 05 23	Stainless Steel Process Pipe and Tubing
40 05 31	Thermoplastic Process Pipe
40 05 51	Common Requirements for Process Valves
40 05 53	Identification for Process Piping
40 05 57	Actuators for Process Valves and Gates
40 05 59	Aluminum Slide Gates
40 05 62	Plug Valves
40 05 63	Ball Valves
40 05 64	Butterfly Valves
40 05 65.23	Swing and Disc Check Valves
40 05 78.21	Air Release Valves for Wastewater Service
40 42 13	Process Piping Insulation
40 70 00	Instrumentation Devices
40 71 13	Magnetic Flow Meters
40 71 69	Parshall Flume
40 72 13	Ultrasonic Level Meters
40 72 43.00	Pressure and Differential Pressure Type Level Meters
40 72 76	Level Switches
40 73 13	Pressure & Differential Pressure Gauges
40 73 64	Annular Pressure Seals
40 75 00	Refrigerated Auto Sampler
40 75 13	PH ORP Sensors
40 75 43	Fluorescent Dissolved Oxygen Measuring
40 90 00	Instrumentation and Control for Process Systems
40 94 03	Programmable Logic Controller Subsystem (PLCS)

DIVISION 41 - MATERIAL PROCESSING & HANDLING EQUIP

41 15 13	Chemical IBC Tote Scale
41 22 14	Jib Cranes
41 22 24	Electrified Monorail Hoist

DIVISION 42 (NOT USED)

DIVISION 43 – PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT

SECTION 13 10 00 – BYPASS PUMPING

PART 1 - GENERAL

1.1 SUMMARY

A. Under this item, the Contractor is required to furnish all materials, labor, equipment, power, maintenance, fuel, etc. to implement a temporary pumping system for the purpose of diverting flow around the work area throughout the required duration.

B. The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

1.2 RELATED DOCUMENTS

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

B. Related work specified elsewhere includes:

1. Division 2 – Existing Conditions
2. Division 40 – Process Interconnections

1.3 QUALITY ASSURANCE

A. Follow national standards and as specified herein.

B. Perform leakage and pressure tests on discharge piping using clean water, before operation.

C. Keep and maintain spare parts for piping on site, as required.

D. Maintain adequate hoisting equipment and accessories for the pump on-site.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. The Contractor shall prepare a detailed description of the proposed pumping system and submit. Bid proposals without an acceptable detailed plan for the temporary bypass pumping system shall be rejected.

C. The Contractor shall submit to the Engineer a detailed plan and description outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing wastewater flows in all locations requiring bypass pumping. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, ma

terials and all other incidental items necessary and/or required to insure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in these Contract Documents. No construction shall begin until all provisions and requirements have been reviewed by the Engineer.

D. The plan shall include but not be limited to details of the following:

1. Staging areas for pumps;
2. Sewer plugging method and types of plugs;
3. Number, size, material, location and method of installation of suction piping;
4. Number, size, material, location and method of installation of discharge piping;
5. Bypass pump sizes, capacity, number of each size to be on site and power requirements;
6. Calculations of static lift, friction losses, flow velocity (pump curves showing pump operating range shall be submitted), and bypass pump pipe size;
7. Downstream discharge plan;
8. Thrust and restraint block sizes and locations;
9. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill;
10. Method of noise control for each pump and/or generator;
11. Any temporary pipe supports and anchoring required;
12. Design plans and computation for access to bypass pumping locations indicated on the drawings;
13. Schedule for installation of and maintenance of bypass pumping lines; and
14. Plan indicating selection location of bypass pumping line locations.

1.5 COORDINATION AND SCHEDULING

A. Section 01 31 00 – Project Management and Coordination: Requirements for coordination.

B. Coordinate Work of this Section with plant operations

1.6 CONTRACTORS RESPONSIBILITY FOR OVERFLOWS AND SPILLS

A. Schedule and perform work in manner that does not cause or contribute to incidence of overflows, releases or spills of sewage from sanitary sewer system or bypass operation.

1.7 DELIVERY AND STORAGE

A. Transport, deliver, handle, and store pipe, fittings, pumps, ancillary equipment and materials to prevent damage and following manufacturer’s recommendations.

1. Inspect all material and equipment for proper operation before initiating work.

B. Material found to be defective or damaged due to manufacturer or shipment shall be repair as recommended by the manufacturer.

1.8 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 GENERAL

A. All bypass pumping for the duration of this project shall occur during low flow periods and as directed by the Owner.

2.2 DESIGN REQUIREMENTS

A. Bypass Schedule:

Location of Proposed Modifications	Pump From	Pump To	Maximum Flow (MGD)
Tertiary Filters	Existing Tertiary Filter influent channel upstream of the inlet butterfly valves of the first two existing filters	Chlorine Contact Basin	2.0

B. Bypass Pumping System

1. The Contractor shall provide all temporary bulk heads, pipeline plugs, and temporary discharge piping as required
2. The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. One standby pump for each size pump utilized shall be installed at the bypassing locations, ready for use in the event of primary pump failure.
3. Bypass pumping system shall be capable of bypassing the flow around the work area and of releasing any amount of flow up to full available flow into the work area as necessary for satisfactory performances of work.

C. Performance Requirements

1. It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the project. To this end, the Contractor shall provide, maintain and operate all temporary facilities such as dams,

plugs, pumping equipment (back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with his work, carry it past his work and return it to the existing sewer downstream of his work.

2. The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
3. The Contractor shall provide all necessary means to safely convey the secondary effluent flow past the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances.
4. The Contractor shall maintain flow around the work area in a manner that will not cause surcharging or overflows of the upstream processes.
5. The Contractor shall protect water resources, wetlands and other natural resources.

2.3 MATERIALS

A. Discharge and Suction Pipes

1. To prevent the accidental spillage of flows, all suction/discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Under no circumstances will aluminum "irrigation" type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the Engineer.

B. Polyethylene Plastic Pipe

1. High density solid wall and following ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-DR) based on Outside Diameter, ASTM D1248 and ASTM D3550.
2. Homogenous throughout, free of visible crack, discoloration, pitting, varying wall thickness, holes, foreign materials, blisters, or other deleterious faults.

C. High-Density Polyethylene (HDPE)

1. Homogenous throughout, free of visible crack, discoloration, pitting, varying wall thickness, holes, foreign materials, blisters, or other deleterious faults.
2. Assembled and joined at site using couplings, flanges or butt-fusion method to provide leak proof joint. Following manufacturer’s instructions and ASTM D 2657.

    a. Threaded or solvent joints and connections are not permitted.

3. Fusing shall be conducted by personnel certified as fusion technicians by manufacturer of HDPE pipe and/or fusing equipment.
4. Butt-fused joint shall be truly aligned and contain uniform roll-back beads resulting from use of proper temperature and pressure.

    a. Allow adequate cooling before removal of pressure.
    b. Watertight and have tensile strength equal to that of pipe.

D. Flexible Hoses and Associated Couplings and Connectors

1. Abrasion resistant.
2. Suitable for intended service.
3. Rated for external and internal loads anticipated, including test pressure.

    a. External loading shall incorporate anticipated traffic loadings if required.

4. When subjected to traffic loading, compose system, such as traffic ramps or covers.

    a. Install system and maintain H-20 loading requirements while in use.

E. Valves and Fittings

1. Determined according to flow calculations, pump sizes previously determined, and system operating pressures.

F. Plugs

1. Plugs shall be selected and installed according to size of line to be plugged, pipe, and manhole configurations, and based on specific site.

2.4 EQUIPMENT

A. Pumps

1. All pumps used shall be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. The pumps may be electric or diesel powered. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows.

B. Controls

1. The Contractor shall provide the necessary stop/start controls for each pump.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify layout, type, and orientation of piping connections.

C. Verify that items provided by other Sections of Work are ready to receive Work of this Section.

3.2 PREPARATION

A. Contractor is responsible for locating any existing utilities in the area the Contractor selects to locate the bypass pipelines. The Contractor shall locate his bypass pipelines to minimize any

disturbance to existing utilities and shall obtain approval of the pipeline locations from the Owner and the Engineer. All costs associated with relocating utilities and obtaining all approvals shall be paid by the Contractor.

B. During all bypass pumping operation, the Contractor shall protect any existing processes and equipment next to or in near proximity. The Contractor shall be responsible for all physical damage caused by human or mechanical failure.

3.3 INSTALLATION AND REMOVAL

A. The Contractor shall be responsible for all coordination, installation, operation, and removal of the temporary bypass pumping.

B. When working confined space entry areas, the Contractor shall exercise caution and comply with OSHA requirements.

END OF SECTION 13 10 00

SECTION 13 31 00 – FIBERGLASS REINFORCED BUILDING ENCLOSURE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pre-engineered shelters
2. Electrical wiring and devices for pre-engineered structures
3. Heating equipment for pre-engineered structures
4. Ventilation equipment for pre-engineered structures
5. Air conditioning equipment for pre-engineered structures

B. Related Requirements:

1. Section 03 30 00 – Cast-in-place concrete: Concrete pad
2. Division 26 – Electrical connections

1.2 REFERENCE STANDARDS

A. ASTM C 518 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

B. ASTM D 256 – Standard Test Method for Determining the Pendulum Impact Resistance of Notched Specimens of Plastics.

C. ASTM D 618 – Standard Practice for Conditioning Plastics for Testing.

D. ASTM D 638 – Standard Test Method for Tensile Properties of Plastics.

E. ASTM D 732 – Standard Test Method for Shear Strength Plastics by Punch Tool.

F. ASTM D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

G. ASTM D 792 – Standard Test Method for Specific Gravity (Relative Density) and Density of Plastics by Displacement.

H. ASTM D 1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.

I. ASTM D 2583 – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Certified independent test results of representative wall laminate.

C. Shop Drawings:

1. Critical dimensions, jointing and connections, fasteners and anchors.
2. Materials of construction.
3. Sizes, spacing, and location of structural members, connections, attachments, openings, and fasteners.
4. Color.

D. Manufacturer's installation instructions

E. Structural design calculations, sealed by an independent licensed Professional Engineer.

1.4 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for closeout procedures.

B. Project Record Documents: Record actual locations and final orientation of equipment and accessories.

C. Operation and Maintenance Data: Submit maintenance instructions for equipment and accessories.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Store products indoors or in weather protected area until installation. Protect from construction traffic and damage.

1.6 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish one-year manufacturer's warranty against defects in materials and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The fiberglass reinforced building enclosure shall be manufactured by:

1. TRACOM, Inc., Alpharetta, GA
2. Or Pre-Approved Equal.

2.2 SYSTEM DESCRIPTION

A. Provide one-piece molded construction FRP shelter of the following type:

1. Size: 14’-0” W x 9’-0” D x 7’-6” H.

2.3 MATERIALS

A. One-piece Molded Composite Construction:

1. General Construction: The shelter shall be provided with a smooth interior and exterior satin finish. The walls and roof shall be integral with smooth radii for all corners. No roof overhang shall be allowed. External section connection flanges shall only be allowed in those instances where the shelter is oversized.
2. Laminate: Isophthalic polyester resin with high performance, chopped, commercial grade glass strand fiber reinforcement with a suitable coupling agent.

a. Minimum glass content: 30%.
b. Exterior surface: 15 mil (minimum) gel coat with U.V. inhibitors and a satin finish lightly textured and free from fiber pattern, roughness, or other irregularities.
c. Exterior laminate: 1/8 inch thick (minimum); chemically bonded to the surface gel coat and encapsulating the foam core.
d. Foam core (2.2.A.2)
e. Interior laminate: 1/8 inch thick (minimum); chemically bonded to the interior gel coat and encapsulating the foam core.
f. Interior surface: 15 mil (minimum) gel coat with U.V. inhibitors and a textured finish, free from exposed glass or other irregularities.
g. Laminate properties:

1)	Tensile strength (ASTM D 638):	14,000 psi
2)	Flexural strength (ASTM D 790):	27,000 psi
3)	Flexural modulus (ASTM D790):	1,000,000 psi
4)	Shear strength (ASTM D 732):	12,000 psi
5)	Barcol hardness (ASTM D 2583):	40
6)	Density / specific gravity (ASTM D792)	93.6 pcf/1.5

3. Core:

a. Rigid closed cell, self-extinguishing (Class 1), polyisocyanurate foam with a density of 2.5 pounds per cubic foot. Foam shall be P250 Elfoam without exception. Lower density foams shall not be acceptable.

1) 1 inch thick with an initial insulating value of R~7.

b. Core properties:

1) Thermal conductivity

a) (ASTM C 518): 0.145 BTU inch/hr/SF/°F

2) Density / specific gravity

a) (ASTM D 1622): 2.5 PCF

3) Shear Strength

a) (ASTM C 273): 25 lb/in2

4) Tensile Strength

a) (ASTM D 1623): 45 lb/in2

5) Compressive Strength (7% deflection/yield)

a) (ASTM D 1621): 35

2.4 COMPONENTS

A. Doors

1. Quantity

a. One (1) 36” single door.

2. Construction

a. One-piece molded fiberglass construction 78 inches high, 1-3/4 inches thick, and 36” wide.
b. Mount door with two T-304 stainless steel laminated strap hinges, 5 inches long. Door must be readily replaceable – the use of continuous piano hinges or fastening methods other than bolting shall not be acceptable.
c. Rubber bulb gasket with flexible lock to retain permanent grip.
d. One-piece, purpose built, 3 inches deep fiberglass drip cap over doors; drip cap to extend 2 inches each side past door. Cut angle shall not be acceptable.
e. Full threshold, heavy duty black vinyl, 4-1/2 inches deep x 1/2 inch high.
f. Schlage stainless steel single-point key locked classroom style ball knob. To facilitate entry and exit from the building, raised or integral door sills shall not be acceptable.
g. Heavy duty stainless steel, dual compression spring cushioned overhead door stop, designed for BHMA L52231 and ANSI A156.16.
h. Provide single-flap neoprene insert style door sweep.

B. Lifting Eyes

1. Provide a minimum of two removable, 3/4 inch – 10 partially threaded, eye bolts with 6 inch shank lengths.

a. Steel (5,200 lbs. work load limit)

C. Mounting Flange

1. 3 inches wide x 1/4 inch thick (minimum) with closed cell neoprene sponge rubber gasket 1-1/4 inches wide x 3/8 inch thick to provide a weather tight seal around the building perimeter.

    a. Internal

2.5 EQUIPMENT

A. Electrical

1. Receptacles: GFCI receptacle 15A 125V, 20 A 125V feed-through, with 5mA +/- 1mA trip threshold.

    a. Interior. As required for the polymer equipment. Number of interior receptacles to be confirmed during submittals.
    b. Exterior: Include two (1) exterior mounted receptacle with extra-duty in-use weatherproof cover.

B. Shutter

1. FRP, gravity operated, 304 stainless steel screen
2. Size: 10”x10”

C. Lighting: See electrical drawings

2.6 CORROSION ENVIRONMENT ACCESSORY PACKAGE

A. Pre-wired (12 gauge THHN in Sch. 40 PVC conduit)

B. Load Center, NEMA 1, 125A, Main Lug, 120/240 VAC, 1 phase, 8 branch

C. Load Center Casing, NEMA 4X, FRP

D. Circuit Breakers, 15A/20A, 1P (for provided electrical only)

E. Duplex outlet, commercial grade, 15 A, GFCI, weatherproof cover

F. Switch, weatherproof, single toggle (light & fan on same switch)

G. Light Fixture, Jelly Jar type, NEMA 4X, A21 bulb accepted, 150W maximum

H. Fan, exhaust, corrosion resistant, 10" 524 CFM, shutter-mounted

I. Heater, 1,500 watt, 304 stainless steel, surface mount, 95 CFM, thermostat

J. Shutter, FRP, gravity operated, 304 S.S. insect screen, 10" x 10"

K. Mounting panel, marine-grade plywood, embedded in-wall, 42" x 48" x ¾" T

L. (2) Hoods, Small, fiberglass, 14" W x 7" D x 14" H (for fan and shutter)

2.7 FINISHES

A. Exterior Color: #2445 Gray Cloud

B. Interior Color: #2445 Gray Cloud

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that the concrete slab is level, true to plane, and of the correct dimensions to receive the structure. Correct all deficiencies before proceeding.

3.2 INSTALLATION

A. Install products in accordance with engineer's instructions, plans, blueprints, local codes, etc. and in a manner consistent with the installation instruction and recommendation of the manufacturer.

3.3 ADJUSTING AND CLEANING

A. Clean surfaces in accordance with the manufacturer's instructions.

B. Remove trash and debris and leave the site in a clean condition.

END OF SECTION 13 31 00

SECTION 13 34 23.11 – FABRICATED ELECTRICAL HOUSES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fabricated electrical houses.

1.2 DEFINITIONS

A. Fabricated electrical houses may also be identified as eHouse or E-House.

1.3 RELATED DOCUMENTS

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

B. Related work specified elsewhere includes:

1. Division 26 – Electrical

1.4 REFERENCE STANDARDS

A. 29 CFR 1910 - Occupational Safety and Health Standards; Current Edition.

B. ISO 9001 - Quality Management Systems — Requirements; 2015.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. NFPA 496 - Standard for Purged and Pressurized Enclosures for Electrical Equipment; 2021.

E. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.5 QUALITY ASSURANCE

A. Comply with the following:

1. NFPA 70.
2. Requirements of authorities having jurisdiction.
3. Applicable local codes.

B. Manufacturer Qualifications:

1. Firm engaged in manufacture of specified products of types and sizes required, and whose products have been in satisfactory use in similar service for minimum of 10 years.
2. Certified in accordance with ISO 9001 with applicable quality assurance system regularly reviewed and audited by third-party registrar. Develop and control manufacturing, inspection, and testing procedures under guidelines of quality assurance system.
3. Service, repair, and technical support services available 24 hours per day, 7 days per week from manufacturer or their representative.
4. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.6 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Provide sufficient information to determine compliance with Contract Documents. Identify submittal data with specific equipment tags and/or service descriptions to which they pertain. Identify specific model numbers, options, and features of equipment proposed.

C. Indicate deviations from Contract Documents with reference to corresponding drawing or specification number and written justification for deviation.

D. Product Data: Provide manufacturer's standard catalog pages and data sheets for fabricated electrical houses, components, and accessories.

E. Shop Drawings: Indicate enclosure dimensions, shipping section dimensions, weights, foundation requirements, required clearances, location and size of each field connection, and mounting and installation instructions.

1. Provide structural and electrical drawings sealed by professional engineer licensed in the State in which the Project is located.
2. Structural calculations.
3. Interconnecting cable schedule.
4. Inspection and test plan.

F. Operational Readiness Report:

1. Document test results, including assumptions, conditions, allowances, and corrections made.
2. Provide listing of field modifications and adjustments made including settings/parameters not identified as factory defaults within equipment’s operations and maintenance manual documentation.

G. Functional Demonstration Testing Report: Document test results, including assumptions, conditions, allowances, and corrections made.

H. Manufacturer's qualification statement.

I. Operation and Maintenance Data:

1. Provide detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.

    a. Include contact information for parts stocking location closest to Owner.

    b. Include list of furnished and recommended spare parts.

    c. Identify critical spare parts associated with long lead times and/or those critical to unit operation.

    d. Identify maintenance spare parts required to regularly perform scheduled equipment maintenance including, but not limited to, consumable parts required to be exchanged during scheduled maintenance periods.

J. Project Record Documents:

1. Construction, installation, schematic, and wiring diagrams updated to as-installed and commissioned state.

2. Configured settings/parameters for adjustable components updated to as-installed and commissioned state, noted if different from factory default.

K. Specimen Warranty: Statement of standard warranty.

L. Executed warranty.

M. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:

1. See Section 016000 - Product Requirements for additional provisions.

2. Spare Parts: For each type and size of unit installed.

    a. Provide minimum spare parts recommended by manufacturer.

1.7 DELIVERY AND STORAGE

A. Prior to delivery to project site, verify suitable storage space is available to store materials in well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity, and corrosive atmospheres.

B. Protect materials during delivery and storage and maintain within manufacturer's written storage requirements. At minimum, store indoors in clean, dry space with uniform temperature to prevent condensation and protect electronics from potential damage from electrical and magnetic energy.

C. Deliver materials to project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and equipment tag number or service name as identified in Contract Documents.

D. Inspect products and report concealed damage or violation of delivery, storage, and handling.

1.8 EXISTING CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.9 WARRANTY

A. Manufacturer Warranty: Provide manufacturer warranty for defects in material and workmanship for 12 months from date of commissioning or 18 months from date of shipment, whichever comes first. Complete forms in Owner's name and register with manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Schneider Electric; Square D Power-Zone Center.

B. ABB

C. Eaton

D. Or equal.

2.2 FABRICATED ELECTRICAL HOUSES

A. General Requirements:

1. Pre-Wired Utilities:

a. Provide wiring inside enclosure and for utilities.

b. Internal Wiring: Provide exposed 3/4-inch (21 mm) minimum EMT.

c. External Wiring or Wiring Penetrating Walls: Provide 3/4-inch (21 mm) minimum rigid galvanized steel conduit.

d. Provide stainless-steel ground pads with lugs welded into base on corners and shipping splits.

e. Provide interior and lights with switches and receptacles located at each entrance door.

f. Provide exterior receptacles with weatherproof covers located near each door and within 25 feet (7.62 m) of each HVAC unit.

g. Receptacles: UL 943, Class A GFCI.

h. Emergency Egress Lighting:

1) Provide immediate light for a minimum of 90 minutes upon failure of normal power source and switch off automatically upon power restoration.

2) Provide self-diagnostic type fixtures.

3) Connect to dedicated non-GFCI receptacle adjacent to fixture and supply from local lighting circuit.

2. Wiring Features:

a. Install and connect interconnecting power and control wiring before shipping.

b. Utility and Control Wiring: 600 V, stranded copper, minimum 12 AWG.

c. Identify interconnecting wire with sleeve-type wire markers at each end.

d. If constructed with shipping splits, terminate wiring between splits on terminal blocks.

3. Grounding:

a. Provide 1/4-inch (6.35 mm) by 2-inch (50.8 mm) copper bar interior grounding loop connected to exterior ground pads.

b. Electrically bond exposed non-current-carrying metal parts to grounding loop.

c. Provide system and equipment grounding for electrical equipment.

4. HVAC:

a. Provide ventilated and/or climate-controlled system including:

1) Wall-mounted air conditioners.

2) Pressurization equipment complying with NFPA 496 area declassification or environmental pressurization.

b. Heat Load Calculation: Consider equipment load losses, equipment by supplier, and defined spare and future spaces.

B. Building Style:

1. Interlocking Panel Type:

a. Provide steel beam base with galvanized, stainless steel or aluminum exterior wall panels formed to interlock with each other to form self-framing system.

b. Provide insulation within voids.

c. Provide sheet metal interior wall liners.

C. Finishes, Paints, and Coatings: Severe duty.

D. Platforms and Stairs: Comply with 29 CFR 1910.

2.3 SOURCE QUALITY CONTROL

A. See Section 014000 - Quality Requirements for additional requirements.

B. Perform factory functional testing and first parameter adjusting.

C. Identify fabricated electrical houses with label indicating inspection/testing agency and date of service.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. Examine equipment exterior and interior for damage, including but not limited to, structure, moisture, and mildew.

C. Examine for conditions detrimental to completion of work.

3.2 INSTALLATION

A. Install equipment in accordance with manufacturer’s written instructions.

B. See Section 017800 - Closeout Submittals for additional submittals.

C. See Section 017900 - Demonstration and Training for additional requirements.

D. Functional Demonstration Testing: Demonstrate proper operation of transformers and associated systems to Owner's designated representative and Engineer, observing and documenting compliance with Contract Documents.

E. Training:

1. Train Owner's personnel on operation and maintenance of system.

a. Accommodate minimum of four attendees.

b. Provide not less than one session with two hours of classroom and hands-on training.

c. Training Reference: Use submitted operations and maintenance manuals.

d. Instructor: Factory-trained manufacturer's representative.

e. Location: Project site.

2. Provide sufficient time and detail in each session to cover the following at minimum:

a. Operation theory.

b. Major equipment components.

c. Equipment operation.

d. Equipment configurations.

e. Maintenance, troubleshooting, and repair.

f. Component-level parts replacement.

3.3 PROTECTION

A. Protect installed electrical houses from subsequent construction operations.

END OF SECTION 13 34 23.11