Parish Annex Building Renovations (Phase I) (M.A. Project No. H1-22029-DA)

Beauregard Parish Police Jury

Addendum No. 1

Beauregard Parish Police Jury
Parish Annex Building Renovations (Phase I)
M.A. Project No. H1-22029-DA

April 6, 2023

The following changes, additions, deletions, or alterations to the Contract Documents shall be incorporated into the Contract Documents for the above captioned project:

A. REFERENCE: Project Manual, Table of Contents and Technical Provisions

Per Randy M. Goodloe Addendum No. 1 enclosed herein (Items 1, 3 and 4), the following provisions have been included:

- Section 04 22 00 – Concrete Unit Masonry
- Section 07 13 26 – Self-Adhering Sheet Waterproofing
- Section 09 30 13 – Porcelain Tiling
- Division 22 Plumbing
  - Section 22 00 00 – Plumbing General Provisions
  - Section 22 05 00 – Basic Materials and Methods
  - Section 22 07 00 – Plumbing Insulation
  - Section 22 11 00 – Water Supply
  - Section 22 13 00 – Waste Water Disposal
  - Section 22 42 00 – Plumbing
- Division 23 HVAC
  - Section 23 00 00 – HVAC General Provisions
  - Section 23 05 00 – Basic Materials and Methods
  - Section 23 05 93 – Testing, Adjusting and Balancing for HVAC
  - Section 22 07 00 – HVAC Insulation
  - Section 22 09 00 – Temperature Controls
  - Section 22 30 00 – Air Distribution
  - Section 22 80 00 – HVAC Equipment
- Division 26 Electrical
  - Section 26 00 01 – Electrical General Provisions
  - Section 26 05 00 – Basic Materials and Methods
  - Section 26 09 23 – Occupancy Sensors
  - Section 26 27 13 – Electrical Distribution System
  - Section 26 51 00 – Interior Lighting
  - Section 26 56 00 – Exterior Lighting
- Section 31 31 16 – Termite

B. REFERENCE: Drawings

Per Randy M. Goodloe Addendum No. 1 enclosed herein (Item 2), the following sheets have been included in the project plans:

- Sheet No. M-101 1st Floor Mechanical Demo dated April 4, 2023
- Sheet No. M-201 1st Floor Mechanical Plan dated April 4, 2023
- Sheet No. M-202 2nd Floor Mechanical Plan dated April 4, 2023
- Sheet No. M-301 Mechanical Schedules dated April 4, 2023
- Sheet No. P-100 Plumbing Site Plan dated April 4, 2023
- Sheet No. P-101 1st Floor Plumbing Demo dated April 4, 2023
- Sheet No. P-201 1st Floor Plumbing Plan dated April 4, 2023
- Sheet No. P-301 Plumbing Schedules dated April 4, 2023
- Sheet No. E-101 1st Floor Electrical Demo dated March 31, 2023
- Sheet No. E-201 1st Floor Lighting Plan dated March 31, 2023
- Sheet No. E-202 1st Floor Power and Special System Plan dated March 31, 2023
- Sheet No. E-301 Electrical Details, Schedules and Riser dated March 31, 2023

C. REFERENCE: Project Manual, Advertisement for Bids

Replace the Advertisement for Bids in the Project Manual with the attached Advertisement for Bids that has been revised to include the following:

Pre-Bid Conference

A non-mandatory pre-bid conference will be held on April 13, 2023 at 2:30 PM at Beauregard Parish Police Jury, 202 W. 2nd Street, DeRidder, LA 70634.

D. REFERENCE: Project Manual, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price)

Section 4.02 Contract Times – Days was revised as follows:

The Work will be substantially complete within **180** days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **225** days after the date when the Contract Times commence to run.

MEYER & ASSOCIATES, INC.

Byron Racca, P.E.

RMG
RANDY M. GOODLOE, AIA, APAC
A Professional Architectural Corporation

April 5, 2023

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Project: **Parish Annex Building Renovations - BPPJ**

Addendum No. 1

Note: This addendum shall become part of the contract and contract documents and the contractor shall be responsible for each item included in this addendum.

Item No. 1 - See attached specifications 04 22 00 Concrete Unit Masonry, 07 13 26 Self-Adhering Sheet Waterproofing, 09 30 13 Porcelain Tiling, 31 31 16 Termite Control.

Item No. 2 - See attached MEP sheets:

E-101	E-201	E-202	E-301
M-101	M-201	M-202	M-301
P-100	P-101	P-201	P-301

Item No. 3 - See attached MEP specifications:

DIVISION 22 PLUMBING

22 00 00 PLUMBING GENERAL PROVISIONS
22 05 00 BASIC MATERIALS AND METHODS
22 07 00 PLUMBING INSULATION
22 11 00 WATER SUPPLY
22 13 00 WASTE WATER DISPOSAL
22 42 00 PLUMBING

DIVISION 23 HVAC
23 00 00 HVAC GENERAL PROVISIONS
23 05 00 BASIC MATERIALS AND METHODS
23 05 93 TESTING, ADJUSTING AND BALANCING FOR HVAC
23 07 00 HVAC INSULATION
23 09 00 TEMPERATURE CONTROLS
23 30 00 AIR DISTRIBUTION
23 80 00 HVAC EQUIPMENT

DIVISION 26:
26 00 01 ELECTRICAL GENERAL PROVISIONS

26 05 00 BASIC MATERIALS AND METHODS
26 09 23 OCCUPANCY SENSORS
26 27 13 ELECTRICAL DISTRIBUTION SYSTEM
26 51 00 INTERIOR LIGHTING
26 56 00 EXTERIOR LIGHTING

Item No. 4 - See revised index to specifications.

End of Addendum No. 1

SECTION 04 22 00 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Steel reinforcing bars.

1.2 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For reinforcing steel. Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.

C. Samples: For each type and color of the following:

1. Exposed CMUs.

1.4 INFORMATIONAL SUBMITTALS

A. Mix Designs: For each type of mortar and grout]. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.

1.5 QUALITY ASSURANCE

A. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 "Quality Requirements" for mockups.

1. Build sample panels for typical exterior and interior walls in sizes approximately 48 inches (1200 mm) long by 48 inches (1200 mm) high by full thickness.

1.6 FIELD CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

B. Integral Water Repellent: Provide units made with integral water repellent for exposed units.

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

a. ACM Chemistries.
b. Euclid Chemical Company (The); an RPM company.
c. GCP Applied Technologies Inc.
d. Master Builders Solutions.
e. Moxie International.

C. Insulated CMUs: Where indicated, units shall contain rigid, specially shaped, molded-polystyrene insulation units complying with ASTM C578, Type I, designed for installing in cores of masonry units.

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

a. Concrete Block Insulating Systems.
b. Shelter Enterprises Inc.

D. CMUs: ASTM C90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi (14.8 MPa).
2. Density Classification: Normal weight.

2.3 CONCRETE LINTELS

A. Concrete Lintels: ASTM C1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than that of CMUs.

2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C91/C91M.

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

a. Holcim (US) Inc.
b. Lafarge North America Inc.
c. Lehigh Hanson; HeidelbergCement Group.

E. Aggregate for Mortar: ASTM C144.

1. White-Mortar Aggregates: Natural white sand or crushed white stone.
2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Aggregate for Grout: ASTM C404.

G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

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

a. Euclid Chemical Company (The); an RPM company.
b. GCP Applied Technologies Inc.

H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.

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

a. ACM Chemistries.
b. Euclid Chemical Company (The); an RPM company.
c. GCP Applied Technologies Inc.
d. Master Builders Solutions.

I. Water: Potable.

2.5 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60 (Grade 420).

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch (3.77-mm) steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

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

a. Heckmann Building Products, Inc.
b. Hohmann & Barnard, Inc.
c. Wire-Bond.

C. Masonry-Joint Reinforcement, General: ASTM A951/A951M.

1. Interior Walls: Hot-dip galvanized, carbon steel.
2. Exterior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side Rods: [**0.148-inch (3.77-mm)**] [**0.187-inch (4.76-mm)**] diameter.
4. Wire Size for Cross Rods: [**0.148-inch (3.77-mm)**] [**0.187-inch (4.76-mm)**] diameter.
5. Spacing of Cross Rods: Not more than 16 inches (407 mm) o.c.
6. Provide in lengths of not less than 10 feet (3 m)[**, with prefabricated corner and tee units**].

2.6 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
2. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
3. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

B. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- (6.35-mm-) diameter, hot-dip galvanized-steel wire.
2. Tie Section: Triangular-shaped wire tie made from 0.25-inch- (6.35-mm-) diameter, hot-dip galvanized-steel wire.

C. Rigid Anchors: Fabricate from steel bars 1-1/2 inches (38 mm) wide by 1/4 inch (6.35 mm) thick by 24 inches (610 mm) long, with ends turned up 2 inches (51 mm) or with cross pins unless otherwise indicated.

1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153/A153M.

2.7 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
1. Fabricate continuous flashings in sections 96 inches (2400 mm) long minimum, but not exceeding 12 feet (3.7 m). Provide splice plates at joints of formed, smooth metal flashing.
2. Fabricate metal drip edges from stainless steel. Extend at least 3 inches (76 mm) into wall and 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.
3. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches (76 mm) into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch (19 mm) and down into joint 1/4 inch (6 mm) to form a stop for retaining sealant backer rod.

B. Flexible Flashing: Use one of the following unless otherwise indicated:

1. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.040 inch (1.02 mm).

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

1) Carlisle Coatings & Waterproofing Inc.

2) GCP Applied Technologies Inc.
3) Hohmann & Barnard, Inc.

2. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.040 inch (1.02 mm).

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

1) DuPont de Nemours, Inc.
2) GCP Applied Technologies Inc.
3) Protecto Wrap Company.
4) Wire-Bond.

3. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy.

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

1) Hohmann & Barnard, Inc.
2) Mortar Net Solutions.
3) Wire-Bond.

4. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D4637/D4637M, 0.040 inch (1.0 mm) thick.

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

1) Carlisle Coatings & Waterproofing Inc.
2) Elevate; Holcim Building Envelope.
3) Hohmann & Barnard, Inc.
4) Wire-Bond.

C. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from UV-resistant, high-density polyethylene. Cell flashing pans have integral weep spouts designed to be built into mortar bed joints and that extend into the cell to prevent clogging with mortar.

D. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."

E. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.8 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

2.9 MASONRY-CELL FILL

A. Loose-Fill Insulation: Perlite complying with ASTM C549, Type II (surface treated for water repellency and limited moisture absorption) or Type IV (surface treated for water repellency and to limit dust generation).

B. Lightweight-Aggregate Fill: ASTM C331/C331M.

2.10 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime or masonry cement mortar unless otherwise indicated.
3. For exterior masonry, use portland cement-lime mortar.
4. For reinforced masonry, use portland cement-lime or masonry cement mortar.
5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
1. For reinforced masonry, use Type S.
2. For mortar parge coats, use Type S.
3. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
4. For interior nonload-bearing partitions, Type O may be used instead of Type N.

D. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi (14 MPa).
3. Provide grout with a slump of 8 to 11 inches (200 to 280 mm) as measured according to ASTM C143/C143M.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.2 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2-inch (12-mm) maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).

2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm).

3.3 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

D. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

E. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

F. Fill cores in hollow CMUs with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.4 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. Bed face shells in mortar and make head joints of depth equal to bed joints.
2. Bed webs in mortar in all courses of piers, columns, and pilasters.
3. Bed webs in mortar in grouted masonry, including starting course on footings.
4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.

B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.5 MASONRY-CELL FILL

A. Pour lightweight-aggregate fill into cavities to fill void spaces. Maintain inspection ports to show presence of fill at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of fill to one story high, but not more than 20 feet (6 m).

B. Install molded-polystyrene insulation units into masonry unit cells before laying units.

3.6 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).

1. Space reinforcement not more than 16 inches (406 mm) o.c.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

3.7 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:

1. Provide an open space not less than 1/2 inch (13 mm) wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 24 inches (610 mm) o.c. vertically and 36 inches (915 mm) o.c. horizontally.

3.8 FLASHING

A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
2. At lintels, extend flashing a minimum of 6 inches (150 mm) into masonry at each end. At heads and sills, extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.

3. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
4. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.

C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

3.9 REINFORCED UNIT MASONRY

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches (1520 mm).

3.10 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

B. Testing Prior to Construction: One set of tests.

C. Testing Frequency: One set of tests for each 5000 sq. ft. (464 sq. m) of wall area or portion thereof.

D. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.

E. Mortar Test (Property Specification): For each mix provided, according to ASTM C780. Test mortar for mortar air content and compressive strength.

F. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

3.11 PARGING

A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of 3/4 inch (19 mm). Dampen wall before applying first coat, and scarify first coat to ensure full bond to subsequent coat.

B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot (3 mm per 300 mm). Form a wash at top of parging and a cove at bottom.

C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.12 REPAIRING, POINTING, AND CLEANING

A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
2. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.13 MASONRY WASTE DISPOSAL

A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

1. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.

B. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.

C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04 22 00

SECTION 07 13 26 - SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes self-adhering modified bituminous sheet wall waterproofing underlayment applications.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

1.4 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer's standard materials-only warranty in which manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.

1. Warranty Period: Five years from date of Recommendation of Acceptance.

PART 2 - PRODUCTS

2.1 MODIFIED BITUMINOUS SHEET WATERPROOFING

A. Modified Bituminous Sheet: Minimum 40-mil (1.02-mm-) nominal thickness, self-adhering sheet consisting of rubberized asphalt laminated on one side to a 4-mil- (0.10-mm-) thick, polyethylene-film reinforcement, and with release liner on adhesive side.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following: W. R. Grace is specified herein as a standard of quality and construction.

a. Carlisle Coatings & Waterproofing Inc. – Miradri 860/861

b. Grace Construction Products; W.R. Grace & Co. -- Bituthene 3000.
c. American HydroTech, Inc. – VM 60.

2. Physical Properties:

a. Overall thickness: min. 40 mil.

b. Tensile Strength, Membrane: 325 psi (1.7 MPa) minimum; ASTM D 412, Die C, modified.
c. Ultimate Elongation: 200 percent minimum; ASTM D 412, Die C, modified.
d. Low-Temperature Flexibility: Pass at minus 20 deg F (minus 29 deg C); ASTM D 1970.
e. Crack Cycling: Unaffected after 100 cycles of 1/8-inch (3-mm) movement; ASTM C 836.
f. Puncture Resistance: 60 lbf (180 N) minimum; ASTM E 154.
g. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 deg F (21 deg C); ASTM D 570.
h. Water Vapor Permeance: 0.05 perms (2.9 ng/Pa x s x sq. m) maximum; ASTM E 96/E 96M, Water Method.
i. Hydrostatic-Head Resistance: 230 feet (60 m) minimum; ASTM D 5385.

3. Flashing Strips: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

2.2 AUXILIARY MATERIALS

A. General: If full adherence to substrate cannot be attained, furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.

1. Furnish liquid-type primer and/or auxiliary materials that comply with VOC limits of authorities having jurisdiction.

2. Hi-tack primer/adhesive binder as recommended by manufacturer to achieve bonding quality and performance.

B. Metal Termination Bars (if required): Aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick, predrilled at 9-inch (229-mm) centers.

PART 3 - EXECUTION

3.1 MODIFIED BITUMINOUS SHEET-WATERPROOFING APPLICATION

A. Prepare surfaces and install modified bituminous sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D 6135. Surfaces must be clean and dry.

1. Completely clean all substrates of excess dust, dirt, contaminants, grease or oils.

2. Substrates must be thoroughly dry before installation. If surfaces become wet due to dew, rain, etc. allow to dry before installation.

B. If full adherence to substrate cannot be achieved, apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will only be covered by sheet waterproofing in same day. Reprime any areas exposed to atmosphere for more than 24 hours.

C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 3-inch- (75-mm-) minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation. Horizontal seams to be top-lapped by upper membrane course by 3”

1. Apply membrane only when ambient and substrate temperatures are above 25 deg F.

2. Maximum exposure to sunlight = 30 days. If membrane is exposed for any longer period, remove and replace with new.

D. Apply continuous sheets over already-installed sheet strips, bridging substrate cracks, construction, and contraction joints.

E. Seal edges of sheet-waterproofing terminations with flashing strips.

F. Repair tears, voids, and lapped seams in waterproofing not complying with Manufacturer requirements with methods recommended by Manufacturer. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches (150 mm) beyond repaired areas in all directions.

3.2 PROTECTION, REPAIR, AND CLEANING

A. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 13 26

SECTION 09 30 13 - PORCELAIN TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Porcelain floor tile.
2. Stone thresholds.
3. Crack isolation membrane.
4. Metal edge strips.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples:

1. Each type and composition of tile and for each color and finish required. Submit full range of colors/patterns for selection by architect.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.
3. Stone thresholds.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Manufacturer’s suggested maintenance and cleaning instructions in printed form.

B. Deliver extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents for Owner’s future use.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer is a member of the National Tile Contractors Association.
2. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of floor tile pattern.
2. Build mockup of wall tile pattern.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

2.2 TILE PRODUCTS

A. Porcelain Tile Type F2 & WC-1: Glazed porcelain tile.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
   a. Basis of Design: DalTile: Volume 1.0
   b. American Olean: Theoretical

2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: Nominal 12 x 24. Per Architect’s layout.
4. Thickness: 5/16 inch.
5. Face: Plain with square or cushion edges.
6. Tile Color and Pattern: As selected by Owner.
7. Grout Color: As selected by Architect from manufacturer's full range.
8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

2.3 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to less than 1/2 inch above adjacent floor surface.

B. Marble Thresholds: ASTM C 503/C 503M, with a minimum abrasion resistance of 12 according to ASTM C 1353 or ASTM C 241/C 241M and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.
2. Description: Submit samples for selection by Architect.

2.4 SETTING MATERIALS

A. General (Use appropriate applications noted below as project requires or is otherwise indicated): Provide setting materials in pre-packaged volumes to which water combined with liquid-latex additive is added to mix and mixed at the Project Site.

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

a. Bonsal American, an Oldcastle company.
b. Bostik, Inc.
c. C-Cure.
d. Laticrete International, Inc.
e. MAPEI Corporation.

2. For wall applications, provide non-sagging mortar.

B. Latex-Portland Cement Mortar (Thinset): ANSI A118.4.

C. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3

D. Organic Adhesive: ANSI A136.1, Type I

2.5 GROUT MATERIALS

A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.

B. Standard Cement Grout: ANSI A118.6.

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

a. Bonsal American, an Oldcastle company.
b. Bostik, Inc.

c. C-Cure.
d. Laticrete International, Inc.
e. MAPEI Corporation.

2.6 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

A. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless steel, ASTM A276/A276M or ASTM A666, 300 Series exposed-edge material.

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

a. Schluter Systems.

b. Or prior approved equal.

B. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

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

a. Bonsal American, an Oldcastle company.
b. Summitville Tiles, Inc.

C. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

a. Laticrete International, Inc.
b. Southern Grouts & Mortars, Inc.
c. Summitville Tiles, Inc.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other

substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

2. Verify that concrete substrates comply with surface finish requirements in ANSI A108.01 for installations indicated.

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

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
   a. Tile floors in wet areas.
   b. Tile floors consisting of tiles 8 by 8 inches (200 by 200 mm) or larger.
   c. Tile floors consisting of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Where accent tile differs in thickness from field tile, vary setting bed thickness so that tiles are flush.

F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Porcelain Tile: 1/4 inch (6.4 mm).

H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where required or suggested by TCNA standards, or as otherwise indicated because of Field Conditions. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

J. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thinset).

K. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

L. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer from joints and from tile faces by wiping with soft cloth.

1. Test with water droplets, and re-apply sealer until water “beads” and is not absorbed by grout.

M. If required due to Field Conditions, install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

N. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

3.4 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Ceramic Porcelain Tile Installation: TCNA F113 (TCNA F115 if using epoxy grout); thinset mortar.

B. Interior Wall Installations, Wood or Metal Studs or Furring:

1. TCNA W244C or TCNA W244F: Thinset mortar on cementitious backer units or fiber-cement backer board.

    a. Ceramic Tile Type: WC-1.
    b. Thinset Mortar: Modified dry-set mortar.
    c. Grout: Sand-portland cement grout.

C. Grout: Sand-portland cement grout.

END OF SECTION 09 30 13

SECTION 22 00 00 - PLUMBING GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions) and Division 0 as appropriate, apply to the Work specified in this Section.

B. Refer to all Sections, as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding all work.

1.2 SCOPE OF WORK

A. Furnish all labor and material necessary to provide and install the complete plumbing portion of this Contract as called for herein and on accompanying drawings. Parts of the plumbing division may be bid separately or in combination, at the Contractor's option; however, it shall be the responsibility of the General Contractor to assure himself that all items covered in the Plumbing Division have been included if he chooses to accept separate bids.

B. It is the intent of this specification that all materials with temperatures below ambient conditions or conveying any fluid/gas at temperatures below 70 deg. F be insulated to completely eliminate the potential for condensation. Unless specified elsewhere in these specifications, for materials that do not require access, insulate with 2" thick 3/4# density fiberglass duct wrap insulation with foil face (seal all joints air and water tight). For materials requiring occasional access, use 2" thick closed cell rubberized insulation with re-sealable fabric joints (hook and loop type).

C. Contractor shall refer to the Architectural and Structural drawings and install equipment, piping, etc. to meet building and space requirements. No equipment shall be bid on or submitted for approval if it will not fit in the space provided.

D. It is the intention of these specifications that all plumbing systems shall be furnished complete with all necessary valves, controls, insulation, piping devices, equipment, etc. necessary to provide a satisfactory installation that is complete and in good working order.

E. Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the Contractor from the responsibility of installing his work to meet the conditions.

F. This Contractor shall protect the entire system and all parts thereof from injury throughout the project and up to acceptance of the work. Failure to do so shall be sufficient cause for the Architect to reject any piece of equipment.

1.3 DEMOLITION

A. The contractor shall visit the site prior to bid to determine the extent of work required to complete the project.

B. Contractor shall coordinate demolition with owner. All equipment shall be salvaged for owner. Locate equipment as directed by owner. All equipment and materials not salvaged by the owner shall be removed from the site and discarded at the contractors expense.

C. Contractor shall coordinate all work with general contractor and phase work as required by project.

D. All equipment piping, etc. required to be removed to accommodate the modifications shall be removed.

E. Contractor shall maintain services to existing facilities which shall remain during and after construction is complete.

F. Contractor shall coordinate any shutdown of services with the owner. It is intended that the building will remain occupied during construction. Contractor shall schedule shut down of services with the owner in order to prevent disruption of building occupancy.

G. Contractor shall be responsible for draining down of existing systems to complete demolition. All work shall be scheduled with the owner. Contractor shall also be responsible for refilling system and removing all air in order to return the systems to proper operating conditions.

H. All shutdown of services shall be done at night during a time period approved by owner. The systems shall be required to be back up and running each morning unless otherwise approved by the owner.

1.4 GROUNDS AND CHASES

A. This Contractor shall see that all required chases, grounds, holes and accessories necessary for the installation of his work are properly built in as the work progresses; otherwise, he shall bear the cost of providing them.

1.5 CUTTING AND PATCHING

A. Initial cutting and patching shall be the responsibility of the General Contractor, with the Mechanical Contractor being responsible for laying out and marking any and all holes required for the reception of his work. No structural beams or joists shall be cut or thimbled without first receiving the approval of the Architect. After initial surfacing has been done, any further cutting, patching and painting shall be done at this Contractor's expense.

1.6 FILL AND CHARGES FOR EQUIPMENT

A. Fill and charge with materials or chemicals all those devices or equipment as required to

comply with the manufacturer's guarantee or as required for proper operation of the equipment.

1.7 BIDDING REQUIREMENTS AND RESPONSIBILITIES

A. Prime bidder is responsible for all work , of all trades and sub-contractors bidding this project. It is the prime bidders responsibility, prior to submitting a bid to ensure that sub-contractors coordinate all aspects of the work between trades, sub-contractors, etc. to the fullest extent possible.

B. Prime bidder shall ensure that all sub-contractors, suppliers, equipment vendors, etc., obtain all necessary and pertinent contract document information pertaining to their work prior to the submission of a bid. Contractor shall realize that different sub-contractors may furnish equipment, accessories, devices, etc. necessary for a complete and working installation, that require provision of services by another sub-contractor or trade.

C. Bidders of all or any portions of this section or division are required to review all contract documents including but not limited to Architectural drawings, Structural drawings, Mechanical drawings, Plumbing drawings, Electrical drawings, etc. to coordinate requirements and responsibilities with and through prime bidder.

D. Bidders of all or any portions of this section or division, by furnishing a bid on a portion of the prime contract are indicating that they have received all contract documents and coordinated services provided under their portion of the work with the prime bidder; they are indicating that they have expressed any pertinent questions (which would result from a detailed, thorough review of the entire set of contract documents) to the prime bidder in accordance with Division 0 & 01 requirements, prior to bidding.

E. All timely, pertinent, questions provided in writing prior to bids, in accordance with Division 0 & 01 requirements, will be clarified, defined, or otherwise explained in a written addendum and/or addendums prior to bids, in accordance in Division 0 & 01 requirements.

F. It is not the intention of these contract documents to leave any issue relating to coordination between trades or sub-contractors vaguely defined. The intention is to define all issues, coordination matters, equipment requirements, sizes, routing, etc. to the satisfaction of the prime bidder, prior to receipt of bids.

G. Bidders of all or any portions of this section or division, by virtue of the submission of a bid to the prime bidder, are indicating that they have reviewed the entire set of contract documents with due diligence and regard for the Owner's desire for a comprehensive and complete bid proposal; that they have expressed all concerns or questions requiring clarification on matters of coordination between trades and/or sub-contractors; that they have expressed any such concerns or questions in writing in accordance with Division 0 & 01 requirements.

H. Prime bidders, by submission of a comprehensive bid on the project are indicating that the subcontractors selected in their bid have complied with all Division 0 & 01 requirements, that they have indicated in writing, prior to bidding, all questions or concerns requiring

clarification and/or explanation and have documented any and all specific exclusions involving work that would generally be considered to be work of their trade. The prime bidder shall coordinate all work so that anything excluded by the bidder of all or any portions of this section or division, have been addressed prior to bids in one of the following manners:

1. The work has been confirmed, by the prime bidder, to be work of another trade or subcontractor (whose proposal is also being accepted).
2. Clarification of the matter has been made through the prime design professional via written addendum and is clearly and mutually understood by the prime bidder and the party raising the issue/question, or seeking clarification.
3. The work has been accepted as the responsibility of the prime contractor directly.

1.8 MATERIAL AND EQUIPMENT

A. The term "provide" when used in the Contract Documents includes all items necessary for the proper execution and completion of the Work.

B. Specific reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may at his option use any article, device, product, material, fixture, form or type of construction which in the judgement of the Architect expressed in writing is equal to that specified.

C. Coordinate and properly relate all Work of this Division to building structure and work of all other trades.

D. Visit premises and become thoroughly familiar with existing conditions; verify all dimensions in field. Advise Architect of any discrepancies prior to Bid Date in accordance with Division 0.

E. Do not rough-in for any item or equipment furnished by others or noted "Not in Contract" (NIC), without first receiving rough-in information from physically examining the existing equipment, receiving specific cut sheet information from the Owner’s representative, other trades and/or Architect. Rough-in services for “NIC” equipment as required, as the work progresses.

F. Provide storage and protection for all equipment and materials in accordance with requirements of Division 0 & 01. Replace any equipment and materials damaged by improper handling, storage, or protection, at no additional cost to Owner.

G. Keep premises clean in accordance with requirements of Division 0 & 01.

1.9 SUBSTITUTIONS

A. Substitutions are only allowed by approval of the Architect prior to Bid Date as stipulated in Division 0 and/or Division 0 & 01.

B. Design of systems is based on specific equipment. If the use of other manufacturer's equipment, even though approved by Architect, involves additional cost due to space requirements, foundation requirements, increased mechanical or electrical services, the cost of such extra work shall be borne by manufacturer of substituted equipment. Even though a manufacturer's name appears in the Contract Documents as having acceptable equipment, their equipment with different model numbers shall be classified as being a substitute to the equipment originally designed for and named in the Contract Documents. Substitute equipment, materials, etc., will not be allowed to deviate from Contract Document requirements. Furnish all options specified or reasonably implied from the contract documents. Specifically identify any variance is regard to submittal versus specified performance on the cover sheet of each submittal.

1.10 VALUE ENGINEERING (V/E):

A. While it may be in the project Owner's interest to consider the first cost money saving that may be generated via alternatives and options generated via participation in Value Engineering, Division 22 contractor shall realize that substantive offers of Value Engineering (V/E), if accepted by the Owner, constitute a design-build agreement (offer and acceptance) with the owner, and drastically change the design concept of the project, as developed by the Professional of Record identified on the Contract Documents.

B. Should contractor offer, and the owner accept value engineering options that alter aspects of the system design, equipment, performance and/or performance verification or monitoring of respective systems, Division 22 contractor shall provide duly licensed professional engineering consultants working on behalf of the Division 22 contractor (including sub-contractors and equipment vendors/manufacturers) to review, approve and take professional responsibility for performance and suitability of V/E hybrid systems, materials or operational changes related to respective V/E items. The Division 22 contractor's licensed professional engineering consultants and the Division 22 contractor assume any and all responsibility for the design and suitability in terms of performance, of hybrid systems installed, as Division 22 contractor's Professional of Record, absolving the original project Professional of Record (identified on the original Contract Documents, released for the original project Bid/Negotiation) from responsibility for the V/E hybrid systems portion of the work.

C. Division 22 contractor, via the offer and acceptance of value engineering items on the project agrees to provide professional engineering design services and take full and complete responsibility for the hybrid design. Further, the Division 22 contractor's (V/E Items) professional of record (either employees, or independent consultants to the Division 22 contractor) through the offer and acceptance of V/E items, agree to indemnify and hold harmless the project owner, the owner's original A/E team (Professional of Record on behalf of the owner for the original Contract Documents) their heirs and assigns in regard to the V/E changes and their impact on the Division 22 systems altered, affected or modified, in whole or in part. The Professional of Record shown on the original Contract Documents in regard to the systems altered, adjusted, revised, modified or otherwise affected by the value engineering items implemented, shall be absolved of design responsibility as a result of implementation of V/E items, and their original use of Engineering Seals used for original Contract Documents, shall not apply.

1.11 DRAWINGS AND SPECIFICATIONS

A. The specific intent of these Contract Documents is to provide the various systems, equipment, etc. to the Owner complete and in a thoroughly calibrated functional condition.

B. The Drawings shall not be construed as shop drawings. In the event of a possible interference with piping or equipment of another trade, items requiring set grade and elevations shall have precedence over other items Should any major interference develop, immediately notify the Architect.

C. In laying out Work, refer to mechanical, electrical, structural, and architectural drawings at all times in order to avoid interference and undue delays in the progress of the Work.

1.12 CODES AND REGULATIONS

A. Work shall be in full accord with the most stringent interpretation of the State Sanitary Code, local ordinances, building codes, and other applicable national, local, and state regulations.

B. Equipment shall conform to requirements and recommendations of the National bureau of Fire Underwriters and National Fire Protection Association (NFPA).

C. Items provided under this Division shall comply with the American National Standards Institute (ANSI) "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People," ANSI A 117.1

D. In the possible event of conflict between codes or regulations and Contract Documents, the most stringent interpretation of either shall govern (provided if exceeds the requirements of other codes. In the event of an irreconcilable difference between codes or regulations notify the Architect/Engineer immediately.

E. In addition to the codes heretofore mentioned, all mechanical work and equipment shall conform to the applicable portions of the following specifications, codes and/or regulations:

1. National Electrical Code (NEC)
2. National Fire Protection Association (NFPA)
3. American Society of Mechanical Engineers (ASME)
4. American Gas Association(AGA)
5. Underwriters Laboratories (UL)

F. All materials, equipment and accessories installed under this Contract shall conform to all rules, codes, etc. as recommended by National Associations governing the manufacturer, rating and testing of such materials, equipment and accessories. All materials shall be new and of the best quality and first class in every respect. Whenever directed by the Architect, the Contractor shall submit a sample for approval before proceeding.

G. Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories, whether or not called for in these

Specifications.

H. All unfired and fired pressure vessels shall be built in accordance with the A.S.M.E. Code and so stamped. Furnish shop certificates for each vessel. Contractor shall provide and pay for first operating certificate as per State Fire Marshal Regulations.

1.13 FEES, PERMITS, AND TAXES

A. Obtain and pay for permits required for the Work of this Division. Pay fees in connection therewith, including necessary inspection fees.

B. Pay any and taxes levied for Work of this Division, including municipal and/or state sales tax where applicable.

C. All permits, fees, certificates, etc. for the installation, inspections, plan review, service connections locations, and/or construction of the work which are required by any authority and/or agencies having jurisdiction, shall be obtained and paid for by the Contractor.

D. The Contractor shall make all tests required by the Architect, Engineer or other governing authorities at no additional cost to the Owner.

E. The Contractor shall notify the Architect and local governing authorities before any tests are made, and the tests are not to be drawn off a line covered or insulated until examined

and approved by the authorities. In event defects are found, these shall be corrected and the work shall be retested.

F. Prior to requesting final inspection by the Architect, the Contractor shall have a complete coordination and adjustment meeting of all of his sub-contractors directly responsible for the operation of any portion of the system. At the time of this meeting, each and every sequence of operation shall be checked to assure proper operation. Notify the Architect in writing ten (10) days prior to this meeting, instructing him of the time, date and whom you are requesting to be present.

G. This project shall not be accepted until the above provisions are met to the satisfaction of the Architect.

1.14 MANUFACTURER'S DIRECTIONS

A. Install and operate equipment and material in strict accord with manufacturer's installation and operating instructions. The manufacturer's instructions shall become part of the Contract Documents and shall supplement Drawings and Specifications.

1.15 SUBMITTAL DATA

A. Submit shop drawings, project data, and samples in accordance with requirements of Division 0/and or Division 0 & 01.

B. Shop drawings shall consist of published ratings or capacity data, detailed construction

drawings for fabricated items, wiring and control diagrams, performance curves, installation instructions, manufacturer's installation drawings, and other pertinent data. Submit drawings showing revisions to equipment layouts due to use of alternate or substitute equipment.

C. Where approved manufacturers and suppliers of equipment, materials, etc. are unable to fully comply with Contract Document requirements, specifically call such deviations to attention of Architect on submittals. Type deviations on a separate sheet; underlined statements or notations on standard brochures, equipment fly sheets, etc. will not be accepted.

D. Approval of submittals shall not relieve Contractor from furnishing required quantities and verifying dimensions. In addition, approval shall not waive original intent of Contract Documents.

E. Failure to obtain written approval of equipment shall be considered sufficient grounds for rejection of said equipment regardless of the stage of completion of the project.

1.16 REVIEW OF MATERIALS:

A. Whenever manufacturers or trade names are mentioned in these Plans or Specifications, the words "or approved equivalent" shall be assumed to follow whether or not so stated. Manufacturers or trade names are used to establish a standard of quality only, and should not be construed to infer a preference. Equivalent products which meet the Architect's approval will be accepted; however, these products must be submitted to the Architect a minimum of ten (10) days prior to the Bid Date.

B. Submission shall include the manufacturer's name, model number, rating table and construction features.

C. Upon receipt and checking of this submittal, the Architect will issue an addendum listing items which are approved as equivalent to those specified. THE CONTRACTOR SHALL BASE HIS BID SOLELY ON THOSE ITEMS SPECIFIED OR INCLUDED IN THE "PRIOR APPROVAL ADDENDUM", AS NO OTHER ITEM WILL BE ACCEPTABLE.

D. Prior approval of a particular piece of equipment does not mean automatic final acceptance and will not relieve the Contractor of the responsibility of assuring himself that this equipment is in complete accord with the Plans and Specifications and that it will fit into the space provided. Shop drawings must be submitted on all items of equipment for approval as hereinafter specified.

E. Before proceeding with work and/or within thirty (30) days after the award of the General Contract for this work, the Mechanical Contractor shall furnish to the Architect complete shop and working drawings of such apparatus, equipment, controls, insulation, etc. to be provided in this project. These drawings shall give dimensions, weights, mounting data, performance curves and other pertinent information.

F. The Architect's approval of shop drawings shall not relieve the Contractor from the responsibility of incorrectly figured dimensions or any other errors which may be contained in these drawings. Any omission from the shop drawings or specifications, even through

approved by the Architect, shall not relieve the Contractor from furnishing and erecting same.

G. Seven (7) sets of shop drawings shall be submitted to the Architect for approval. These submittals shall be supplied as part of this Contractor's contract. Any drawings not approved shall be resubmitted until they are approved. SUBMIT ALL SHOP DRAWINGS AT THE SAME TIME. NO SEPARATE ITEMS WILL BE ACCEPTED.

H. Submit one (1) sepia with two (2) blueline prints of all mechanical room layouts showing locations of all equipment, piping, etc. to insure all will fit in space provided. Submit drawings at 1/4" scale.

1.17 PROJECT RECORD DOCUMENTS

A. Keep Project Record Documents in accordance with requirements of Division 0 & 01.

B. During construction period, keep accurate records of installations made under this Division, paying particular attention to major interior and exterior underground and concealed piping, ductwork, etc.

C. The Contractor shall obtain at his cost, two sets of blueline prints of the original bid documents by the Architect. One set shall be kept on the site with all information as referenced below, and shall update same as the work progresses. The other set will be utilized to record all field changes to a permanent record copy for the Owner.

D. If the Contractor elects to vary from the Contract Documents and secures prior approval from the Architect for any phase of the work, he shall record in a neat and readable manner, **ALL** such variances on the blueline print in red. The original bluelines shall be returned to the Architect for documentation.

E. All deviations from sizes, locations, and from all other features of the installations shown in the Contract Documents shall be recorded.

F. In addition, it shall be possible using these drawings to correctly and easily locate, identify and establish sizes of all piping, directions and the like, as well as other features of the work which will be concealed underground and/or in the finished building.

G. Locations of underground work shall be established by dimensions to columns, lines or walls, locating all turns, etc., and by properly referenced centerline or invert elevations and rates of fall.

H. For work concealed in the building, sufficient information shall be given so it can be located with reasonable accuracy and ease. In some cases this may be by dimension. In others, it may be sufficient to illustrate the work on the drawings in relation to the spaces in the building near which it was actually installed. The Architect's/Engineer's decision in this matter will be final.

I. The following requirements apply to all "As-Built" drawings:

1. They shall be maintained at the Contractor's expense.
2. All such drawings shall be done carefully and neatly, and in a form approved by the

Architect/Engineer.

3. Additional drawings shall be provided as necessary for clarifications.
4. These drawings shall be kept up-to-date during the entire course of the work and shall be available upon request for examination by the Architect/Engineer; and when necessary, to establish clearances for other parts of the work.
5. "As-built" drawings shall be returned to the Architect upon completion of the work and are subject to approval of the Architect/Engineer.

1.18 EXCAVATING AND BACKFILLING

A. Provide excavating and backfilling necessary for Work of this Division. Comply with provisions of Division 2, Site Work, if applicable.

B. Trenches shall be inspected by Code Authorities and/or Owner's Representative before and after piping is laid. Give Owner' Representative 24-hour notice for each inspection. If any trenches are filled without Owner's Representative inspection and as subsequently found to be deficient, the trenches shall be uncovered, inspected, and then re-filled, if requested by Owner's Representative.

C. Provide minimum 18 inches of cover or in compliance with local published frost line data (if greater than 18 inches) to finish grades or paving at water piping.

D. For piping, provide bell holes at trench bottom to assure uniform bearing. Accurately grade trench bottoms by instrument before laying any pipe.

E. Protect and maintain trenches in dry condition until piping has been inspected and approved. Immediately after approval, backfill trenches in tamped layers.

F. Compact fill to satisfaction of Architect and/or Owner's Representative.

1.19 CUTTING AND PATCHING

A. Comply with requirements of Division 0 and Division 0 & 01 regarding cutting and patching. Locate and timely install sleeves as required to minimize cutting and patching.

B. Cutting, fitting, repairing, patching, and finishing of Work shall be done by craftsmen skilled in their respective trades. Where cutting is required, cut in such a manner as not to weaken structure, partitions, or floors. Holes required to be cut must be cut or drilled without breaking out around the holes. Where patching is necessary in finished areas of the building, the Architect will determine the extent of such patching and refinishing.

C. Repairing Roadways and Walks: Coordinate all roadway work with authorities having jurisdiction. Cut and/or bore under roadways for connection of utilities as required. Coordinate work through General Contractor. Where this contractor cuts or breaks roadways or walks to lay the piping, he shall repair or replace these sections to match existing, unless specifically identified as the responsibility of others.

1.20 PAINTING

A. Painting shall be provided by General Contractor's painting sub-contractor, unless specified otherwise. Leave exposed piping, materials, and equipment clean and free of rust, grease, dirt, etc. before and after painting.

B. Factory finished equipment, fixtures, and materials which are marred, chipped, scratched, or otherwise unacceptable shall be repaired or replaced under this Division to Architect satisfaction, at no additions cost to Owner.

C. Coordinate all painting requirements with prime bidder prior to bids.

D. Paint all exposed piping inside and outside of building. Label all piping after painting as required. Utilize industry standard paint colors for respective system unless directed otherwise by Architect. Review proposed color scheme with Architect/Engineer prior to ordering materials.

E. All piping shall be color coded per the following:

1. Domestic Cold Water Piping Yellow
2. Domestic Hot Water Piping Blue

1.21 CLEANING AND ADJUSTING:

A. Upon completion of his work, the Contractor shall clean and adjust all equipment, controls, valves, etc.; clean all piping, ductwork, etc.; and leave the entire installation in good working order.

1.22 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Provide the Owner with three (3) copies of printed instructions indicating various pieces of equipment by name and model number, complete with parts lists, maintenance and repair instructions and test and balance report.

COPIES OF SHOP DRAWINGS WILL NOT BE ACCEPTABLE AS OPERATION AND MAINTENANCE INSTRUCTIONS.

B. This information shall be bound in plastic hardbound notebooks with the job name, Architect and Engineer names permanently embossed on the cover. Rigid board dividers with labeled tabs shall be provided for different pieces of equipment. Submit manuals to the Architect for approval.

C. In addition to the operation and maintenance brochure, the Contractor shall provide a separate brochure which shall include registered warranty certificates on all equipment, especially any pieces of equipment which carry warranties exceeding one (1) year.

D. The operation and maintenance brochure shall be furnished with a detailed list of all equipment furnished to the project, including the serial number and all pertinent nameplate data such as voltage, amperage draw, recommended fuse size, rpm, etc. The Contractor shall include this

data on each piece of equipment furnished under this contract.

1.23 GUARANTEE

A. The Contractor shall guarantee all materials, equipment and workmanship for a period of one (1) year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc. necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters. Warranties exceeding one (1) year are hereinafter specified with individual pieces of equipment.

B. If the Contractor's office is in excess of a fifty (50) mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The name of the contractor appointed to provide emergency services shall be submitted to the Architect for his approval.

1.24 LOCAL CONDITIONS

A. The location and elevation of all utility services is based on available surveys and utility maps and are reasonably accurate; however, these shall serve as a general guide only, and the Contractor shall visit the site and verify the location and elevation of all services to his satisfaction in order to determine the amount of work required for the execution of the Contract.

B. The Contractor shall contact the various utility companies, determine the extent of their requirements and he shall include in his bid all lawful fees and payments required by these companies for complete connection and services to the building, including meters, connection charges, street patching, extensions from meters to main, etc.

C. In case major changes are required, this fact, together with the reasons therefor, shall be submitted to the Architect, in writing, not less than seven (7) days before the date of bidding. Failure to comply with this requirement will make the Contractor liable for any changes, additions and expenses necessary for the successful completion of the project.

1.25 MINOR DEVIATIONS

A. Plans and detail sketches are submitted to limit, explain and define conditions, specified requirements, pipe sizes and manner of erecting work. Structural or other conditions may require certain modifications from the manner of installation shown, and such deviations are permissible and shall be made as required. However, specified sizes and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift ducts or pipes, or to change the shape of ducts, and these changes shall be made as required. All such changes shall be referred to the Architect for approval before proceeding. Extra charges shall not be allowed for these changes.

B. The Contractor shall realize that the drawings could delve into every step, sequence or operation necessary for the completion of the project, without drawing on the Contractor's experience or ingenuity. However, only typical details are shown on the Plans. In cases where

the Contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details will not be an excuse for improper installation.

C. In general, the drawings are diagrammatic and the Contractor shall install his work in a manner so that interferences between the various trades are avoided. In cases where interferences do occur, the Architect is to state which item was first installed.

1.26 VALVE TAGS

A. Secure metal tags to all valves. Labeling on all valve tags shall include type of system the valve controls and the area of building, zone, or equipment number affected by valve operation. Tag shall be 2"minimum diameter brass, engraved with code number, service and size. A framed list of the valves, giving manufacturer's name, model number, type and location shall be mounted in the main basement equipment room.

1.27 LABELING MECHANICAL EQUIPMENT

A. All equipment furnished under Division 0 & 01of contract documents shall be labeled with permanent laminated plate secured to equipment. Units shall be labeled as indicated on plans and schedules.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION 22 00 00

SECTION 22 05 00 - BASIC MATERIALS & METHODS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work in this section includes furnishing and installing all piping for project as hereinafter described.

B. Related Work: All piping shall be coordinated with Plumbing, Air Conditioning and Ventilation section of these specifications.

PART 2 - PRODUCTS

2.1 PIPE

A. All sanitary sewer waste and vent lines (with the exception of grease waste piping), 6" and under are to be constructed of schedule 40 PVC DWV plastic pipe and fittings as manufactured by Alabama Pipe Co., Tyler Pipe Co., Mead Pipe Co., or equal. Where space requirements do not allow the use of the above materials, government type DWV copper pipe and fittings shall be used All pipe and fittings shall comply with Commercial Standards CS 188-59 and marked with manufacturer's identification and proper weight classification. Provide tracer wire for all plastic pipe below grade.

B. All domestic cold water lines, domestic hot water lines, domestic hot water return lines, water heater relief lines, and A/C condensate drain lines shall be government ASTM B-88 type "L" hard copper tube of standard weight and thickness as made by Mueller, Chase, Anaconda, or equal except where indicated otherwise. Fittings are to be solder type wrought copper fittings. Use 95-5 solder on all piping above slab. For lines run underground, use Silfos 1000 deg. solder. Dielectric unions shall be used between copper and iron pipe.

C. All domestic water lines below slab shall be type "K" soft copper with no joints. Provide color coded protecto-sleeve (Red Hot, Blue Cold) where pipes penetrate slab. Return line from font shall be type “K” hard copper pipe.

D. Domestic cold water lines penetrating concrete slabs shall be wrapped with "Protect-O-Sleeve" vinyl flexible tube as manufactured by Robert H. Harris Co., or equivalent.

E. Domestic cold water piping within 5'-0" of building may be Schedule 40 PVC plastic pipe with solvent welded joints, or slip joint fittings with EPDM seals. Provide thrust blocks all at changes in direction. Installation shall be in accordance with manufacturer's recommendations. Provide tracer wire for all plastic pipe below grade.

2.2 PIPE FITTINGS

A. All pipe fittings shall be same as piping specified unless indicated otherwise.

B. All screwed fittings and pipe shall have threads cut to standard pipe thread dimensions. Pipe shall be properly reamed after cutting of threads.

C. Joint compound, Crane Thread lubricant or equal, shall be applied to male threads of the screwed pipe and fittings only.

D. Approved expansion joints or flexible couplings shall be provided as necessary.

E. Care shall be taken in making up pipe and fittings such that pipe does not extend into fitting sufficiently to reduce the waterway.

F. Unions for use on above grade pipe larger than 2 inches shall be cast iron, screwed flanges, 125 pound flat face with 1/16" non-asbestos composition gasket.

G. All risers 3" or larger shall have a flanged joint at each floor.

H. Standard, one-piece reducing fittings of approved design shall be used wherever a change in size is made. Changes in pipe sizes shall not be made by means of reducing flanges.

2.3 VALVES AND UNIONS

A. Furnish and install all valves, unions, stops, connections, etc. shown on plans and necessary to make a complete system in working order. Provide valves on inlet and outlet of all equipment and fixtures and on branch lines to fixtures or groups of fixtures.

B. Valves and unions shall be as follows:

Copper Pipe	2" and Less	Over 2"
---	---	---
Gate Valve	Crane 1320	Crane 461
Globe Valve	Crane 1310	Crane 359
Unions	Crane 633	Crane Std. Gal.
Check Valve	Crane 1303	Crane 373

Iron Pipe	2" and Less	Over 2"
---	---	---
Gate Valve	Crane 440	Crane 461
Globe Valve	Crane 7	Crane 359
Unions	Crane 633	
Check Valve	Crane 1303	Crane 373

C. All valves, unions, etc. where pipe is chrome plated shall have similar finish. All exposed supplies to plumbing fixtures shall be chrome plated.

2.4 PIPE HANGER AND SUPPORTS

A. This Contractor shall furnish and install all foundations and supports required for his equipment unless otherwise indicated on the drawings.

B. This Contractor shall furnish and install all escutcheons, inserts, thimbles, hangers, etc. required for the proper support and installation of his equipment and piping. Cooperate with other trades in locating and placing these items.

C. Provide sleeves for all pipes passing through walls, floors, beams, etc. Sleeves passing through structural members shall be of cast iron or Schedule 40 steel pipe. Sleeves passing through non-structural walls or floors shall be of 26 gauge galvanized iron. Joints between sleeves and
pipes passing through floors shall be made watertight with plastic materials. Where pipes pass through waterproofing membrane, flashing sleeves shall be installed.

D. Provide Grinnell # 108, Fee and Mason Fig. 57, Carpenter & Patterson # 34, Michigan # 450, or equal malleable iron split ring hangers with rod supports throughout. Strap hangers or wire will not be accepted. Maximum spacing of hangers for cast iron pipes shall be 5'; for other than soil, use 10'.

E. Provide galvanized iron shields between hangers and pipe covering.

F. Provide Grinnell, Fee and Mason, Crane, or equivalent heavy steel riser clamps on vertical risers at floors to support pipes.

G. Provide chrome plated brass escutcheons wherever pipes pass through floors, walls or ceilings in exposed or finished areas.

H. All piping projecting from chases shall be rigidly supported in the wall or chase. Loosely supported fixtures or accessories will not be accepted.

2.5 ACCESS PANELS

A. Furnish and install access panels where valves, drains, dampers, etc. are concealed in walls, ceilings, or floors, or otherwise inaccessible. Panels shall be Milcor, or equivalent, sized as required and furnished with prime coat finish.

END OF SECTION 22 05 00

SECTION 22 07 00 - PLUMBING INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Pipe insulation installation shall not begin until all work has been tested and found to be tight.

PART 2 - MATERIALS

2.1 THERMAL INSULATION

A. After all work has been tested and found to be tight, insulate as follows:

B. Cover all domestic cold and hot water lines and hot water return lines above slab with 1" thick, high density fiberglass insulation with Universal Fire Retardant Jacket, Owens/Corning "25 ASJ/SSL", Knauf ASJ-SSL, or equal. All laps are to be sealed and stapled in place. Fittings are to be mitered segments of insulation held in place with white vapor barrier tape for concealed areas and Zeston 25/50 PVC, Knauf 25/50 rated PVC, pre-molded insulated fitting covers in exposed areas.

C. Domestic cold and hot water lines(2 -1/2" and above) shall be insulated with 1-1/2" thick fiberglass with jacket.

D. All water lines exposed in mechanical rooms shall be covered with 0.030 PVC jacket with solvent welded seams and joints.

E. All water lines on the outside of the building exposed to the weather shall be covered with 0.160 smooth aluminum jacket and elbows.

F. Domestic cold and hot water lines run below slab within building shall be insulated with 3/4" thick closed cell tube insulation. Apply two (2) coats of mastic on insulation.

G. Mastic shall be white vapor barrier type. All insulation shall be installed in strict accordance with manufacturer's recommendations.

H. All valves, strainers, etc. shall be covered and the covering shall extend all the way up to the equipment.

I. All pipe insulation where recommended by the manufacturer shall be banded with aluminum bands, three to a section, and with one band on each side of each fitting, valve, etc.

J. P-traps receiving HVAC condensate (exposed to weather or above ceilings) shall be insulated with 2" thick 3/4 # density fiberglass ductwrap insulation with aluminum foil vapor barrier. Insulation shall be sealed at all seams and joints.

K. Insulate p-trap, tailpiece and water supplies on handicapped lavatories with white, Truebro Model 102 Handi Lav-Guard, Pro-Wrap A.D.A. lavatory insulation kit, or approved equivalent insulating system to meet A.D.A. Requirements. Provide accessories for offset tailpiece as required.

L. Insulation through hangers and sleeves shall be continuous through pipe hangers and pipe sleeves. At hangers where the pipe is supported by insulation, provide a galvanized iron protection shield. Provide pipes 2-inch i.p.s. and larger in insulation inserts at points of hanger supports. The inserts shall be of calcium silicate, cellular glass, prestressed molded glass fiber of minimum 13-pound density, or other approval material of the same thickness as adjacent insulation and not less than 13-pound density. The inserts shall have sufficient compression strength to adequately support the pipe without compressing the inserts to a thickness less than the adjacent insulation. Inserts shall be 180 degrees and not less than the length of the protection shield. Vapor barrier facing of the insert shall be the same as the facing on the adjacent insulation. Where copper clad hangers are used on domestic copper pipe, insulation may cover pipe and hanger. Provide 18 gauge metal saddles between all hangers and insulation.

END OF SECTION 22 07 00

SECTION 22 11 00 - WATER SUPPLY

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide and install new domestic hot and cold water distribution system as indicated on drawings. Contractor shall pay all service and connection charges including meter cost.

PART 2 - PRODUCTS

2.1 WATER PIPING

A. All water supply piping shall be of materials hereinbefore specified. Contractor shall make provisions for expansion and contraction of hot water lines by means of expansion bends or loops as required.

B. All water lines shall be disinfected in accordance with local code authorities.

C. Water lines run underground shall have a minimum cover of 30" from top of pipe to finished grade and hot water lines and cold water lines running parallel shall be run a minimum of 18" apart. Water lines shall be run a minimum of 18" each side of sanitary sewer piping.

D. This Contractor shall make up a complete water supply system. Connect water lines to all fixtures and outlets requiring water and provide valved stubouts for continuation by other trades where so called for.

E. At each fixture or group of fixtures, furnish and install a 12" high air chamber of same size as the branch feed line except at fixtures with quick closing valves such as dishwashers, etc., in which case provide "Shocktrol", Wade, Zurn, Josam or equal and properly sized for each unit.

F. Contractor shall use "lead free" solder, pipe, and fittings for the installation of all piping. "Lead free" when used with respect to solder and flux shall refer to solder and flux containing not more than 0.2 per cent lead. When used with respect to pipes and fittings, "Lead Free" shall refer to pipes and fittings containing not more than 8.0 per cent lead. All installations of domestic water systems shall conform with the Safe Drinking Water Act of 1986.

G. All water piping shall be disinfected in accordance with AWWA standards and local and state Plumbing Codes. All water piping where located below grade shall be placed a minimum of 24" below grade.

PART 3 - EXECUTION

3.1 TESTING

A. All domestic water lines shall be tested under 200 psig hydrostatic pressure for a minimum of five (5) hours unless elsewhere specified.

END OF SECTION 22 11 00

SECTION 22 13 00 - WASTE WATER DISPOSAL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Connect to sanitary sewage system as indicated on plans. Contractor shall verify all elevations and inverts prior to beginning construction. Contractor shall contact local utilities and pay all service and connection fees.

B. All work shall be in strict conformity with all local codes. Piping shall be routed as shown on plans or in an acceptable manner to meet building conditions. Venting shall be as shown on plumbing riser diagrams.

C. Connections between traps and cast iron pipes are to be made with heavy brass ferrules.

D. Provide reducers, increasers, special flanges, and fittings where required between piping work and fixtures in order to connect and complete work and render it ready for use. Make any offsets required to avoid construction.

E. All lines 3" and smaller shall be sloped 1/4" per foot and all lines 4" shall be sloped 1/8" per foot. Piping shall be laid so slope is continuous.

F. All vents shall extend 10" above roof and terminate in an appropriate lead flashing collar. No vents shall penetrate roof within 48" of an exterior wall. Offset in ceiling as required. All back vents shall be taken off as near trap as possible.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Vents - Provide flashing collar as detailed. Coordinate with roofing contractor to maintain roof warranty.

PART 3 - EXECUTION

3.1 TESTING

A. Test all plumbing sewer lines, vents, waste, etc. with a minimum of 10' water head, for 24 hours and in accordance with local code authority requirements. If the sanitary sewer test fails, the contractor shall remove test, repair defective pipe, joint or system and shall retest for 24 hours.

END OF SECTION 22 13 00

SECTION 22 42 00 - PLUMBING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish all labor and materials as hereinbefore specified, indicated or reasonably implied for the complete installation of the following systems:

1. Hot Water System
2. Sanitary Drainage System
3. Cold Water System

PART 2 - PRODUCTS

2.1 FLASHING

A. Flash around all pipes passing through roof in connection with this contract with sheet lead, not less than 4 # to the square foot, built 6" into the waterproofing, running 10" up the pipe and turned over into the pipe cavity. Flashing around roof drains shall be not less than 4 # lead extending at least 12" from the drain rim into membrane waterproofing. Fasten flashing to drain clamp device making watertight durable joint.

2.2 ELECTRIC HOT WATER HEATERS

A. Model Number - Furnish and install an electric hot water heater as scheduled and detailed on plans. Provide State Boiler Inspection at each water heater.

B. Warranty - The tank shall have a three (3) year warranty to protect the owner against defects in material and workmanship, discolored water or tank perforation due to erosion and corrosion.

2.3 PLUMBING FIXTURES

A. Plumbing Contractor shall furnish and install all plumbing fixtures shown on accompanying drawings. Refer to both plumbing and architectural drawings and provide all fixtures shown on either. Fixtures shall be complete with all necessary brass and accessories required for a complete installation including traps, escutcheons, angle supplies, basin cocks, etc. All fixtures shall be new and must be delivered to the building properly crated in perfect condition.

B. All brass must be of the best quality, lightweight goods will not be accepted. All brass pipe shall be seamless brass tubing and nipples shall be extra heavy. All fittings and trim shall

be cast brass with cleanouts. All exposed piping shall be chromium plated. Provide cut-off valves at each fixture in both hot and cold water piping.

C. For the purpose of establishing type and class of fixtures required, the following plate numbers have been taken from the Kohler catalog unless otherwise indicated. Fixtures as manufactured by Crane, or American Standard of equivalent quality and manufacturer will be accepted.

D. Refer to plumbing fixtures. Plumbing fixture schedule on plans for plumbing fixtures.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All plumbing fixtures shall be installed as per local code authorities.

B. All tests shall be in accordance with local code authorities.

C. All supply piping (hot and cold) to all sinks, lavatories, water closets, water coolers, etc. shall be installed so that no more than ½" of copper tubing is exposed at the supply/cutoff valves.

END OF SECTION 22 42 00

SECTION 23 00 00 - HVAC GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 01 as appropriate, apply to the Work specified in this Section.

B. Refer to all Division as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding mechanical work.

1.2 SCOPE OF WORK

A. Furnish all labor and material necessary to provide and install the complete mechanical portion of this Contract, including plumbing, air conditioning, heating and ventilating systems as called for herein and on accompanying drawings. Parts of the mechanical division may be bid separately or in combination, at the Contractor's option; however, it shall be the responsibility of the General Contractor to assure himself that all items covered in the Mechanical Division have been included if he chooses to accept separate bids.

B. It is the intent of this specification that all Division 22 materials with temperatures below ambient conditions or conveying any fluid/gas at temperatures below 70 deg. F be insulated to completely eliminate the potential for condensation. Unless specified elsewhere in these specifications, for materials that do not require access, insulate with 2-1/8" thick 3/4# density fiberglass duct wrap insulation with foil face (seal all joints air and water tight). For materials requiring occasional access, use 2" thick closed cell rubberized insulation with re-sealable fabric joints (hook and loop type).

C. Contractor shall refer to the Architectural and Structural drawings and install equipment, piping, etc. to meet building and space requirements. No equipment shall be bid on or submitted for approval if it will not fit in the space provided.

D. It is the intention of these specifications that all mechanical systems shall be furnished complete with all necessary valves, controls, insulation, piping devices, equipment, etc. necessary to provide a satisfactory installation that is complete and in good working order. The HVAC system shall ensure that under all circumstances, the building shall be kept at temperatures and indoor space relative humidities that when compared to outside temperatures and relative humidities protect building finishes installed under this contract and/or existing floor, wall and ceiling finishes within the building from damage due to excessive temperature or humidity. HVAC system shall ensure that building remain under a slight positive pressure and shall alarm in the event of a negative pressure condition. In addition Contractor shall provide training to Owner in regard to the need for space temperature and humidity control whenever the outdoor dew point (wetbulb temperature) exceed 62.5 deg. F and freeze protection procedures whenever the outdoor temperature (drybulb temperature) drops below 32 deg. F. Contractor shall obtain written sign-off on the part of the Owner to the receipt of

all training including the above and all required training referenced hereafter, throughout these specifications. Failure to obtain this sign-off shall be constructed as evidence that proper training was not given.

E. Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the Contractor from the responsibility of installing his work to meet the conditions.

F. This Contractor shall protect the entire system and all parts thereof from injury throughout the project and up to acceptance of the work. Failure to do so shall be sufficient cause for the Architect to reject any piece of equipment.

1.3 DEMOLITION

A. The contractor shall visit the site prior to bid to determine the extent of work required to complete the project.

B. Contractor shall coordinate demolition with owner. All equipment shall be salvaged for owner. Locate equipment as directed by owner. All equipment and materials not salvaged by the owner shall be removed from the site and discarded at the contractors expense.

C. Contractor shall coordinate all work with general contractor and phase work as required by project.

D. All equipment piping, etc. required to be removed to accommodate the modifications shall be removed.

E. Contractor shall maintain services to existing facilities which shall remain during and after construction is complete.

F. Contractor shall coordinate any shutdown of services with the owner. It is intended that the building will remain occupied during construction. Contractor shall schedule shut down of services with the owner in order to prevent disruption of building occupancy.

G. Contractor shall be responsible for draining down of existing systems to complete demolition. All work shall be scheduled with the owner. Contractor shall also be responsible for refilling system and removing all air in order to return the systems to proper operating conditions.

H. All shutdown of services shall be done at night during a time period approved by owner. The systems shall be required to be back up and running each morning unless otherwise approved by the owner.

1.4 GROUNDS AND CHASES

A. This Contractor shall see that all required chases, grounds, holes and accessories necessary for the installation of his work are properly built in as the work progresses; otherwise, he shall bear the cost of providing them.

1.5 CUTTING AND PATCHING

A. Initial cutting and patching shall be the responsibility of the General Contractor, with the Mechanical Contractor being responsible for laying out and marking any and all holes required for the reception of his work. No structural beams or joists shall be cut or thimbled without first receiving the approval of the Architect. After initial surfacing has been done, any further cutting, patching and painting shall be done at this Contractor's expense.

1.6 FILL AND CHARGES FOR EQUIPMENT

A. Fill and charge with materials or chemicals all those devices or equipment as required to comply with the manufacturer's guarantee or as required for proper operation of the equipment.

1.7 BIDDING REQUIREMENTS AND RESPONSIBILITIES

A. Prime bidder is responsible for all work , of all trades and sub-contractors bidding this project. It is the prime bidders responsibility, prior to submitting a bid to ensure that sub-contractors coordinate all aspects of the work between trades, sub-contractors, etc. to the fullest extent possible.

B. Prime bidder shall ensure that all sub-contractors, suppliers, equipment vendors, etc., obtain all necessary and pertinent contract document information pertaining to their work prior to the submission
of a bid. Contractor shall realize that different sub-contractors may furnish equipment, accessories, devices, etc. necessary for a complete and working installation, that require provision of services by another sub-contractor or trade.

C. Bidders of all or any portions of this section or division are required to review all contract documents including but not limited to Architectural drawings, Structural drawings, Mechanical drawings, Plumbing drawings, Electrical drawings, etc. to coordinate requirements and responsibilities with and through prime bidder.

D. Bidders of all or any portions of this section or division, by furnishing a bid on a portion of the prime contract are indicating that they have received all contract documents and coordinated services provided under their portion of the work with the prime bidder; they are indicating that they have expressed any pertinent questions (which would result from a detailed, thorough review of the entire set of contract documents) to the prime bidder in accordance with Division 0 & 01 requirements, prior to bidding.

E. All timely, pertinent, questions provided in writing prior to bids, in accordance with Division 0 & 01 requirements, will be clarified, defined, or otherwise explained in a written addendum and/or addendums prior to bids, in accordance in Division 0 & 01 requirements.

F. It is not the intention of these contract documents to leave any issue relating to coordination between trades or sub-contractors vaguely defined. The intention is to define all issues, coordination matters, equipment requirements, sizes, routing, etc. to the satisfaction of the prime bidder, prior to receipt of bids.

G. Bidders of all or any portions of this section or division, by virtue of the submission of a bid to the prime bidder, are indicating that they have reviewed the entire set of contract documents with due diligence and regard for the Owner's desire for a comprehensive and complete bid proposal; that they have expressed all concerns or questions requiring clarification on matters of coordination between trades and/or sub-contractors; that they have expressed any such concerns or questions in writing in accordance with Division 0 & 01 requirements.

H. Prime bidders, by submission of a comprehensive bid on the project are indicating that the subcontractors selected in their bid have complied with all Division 0 & 01 requirements, that they have indicated in writing, prior to bidding, all questions or concerns requiring clarification and/or explanation and have documented any and all specific exclusions involving work that would generally be considered to be work of their trade. The prime bidder shall coordinate all work so that anything excluded by the bidder of all or any portions of this section or division, have been addressed prior to bids in one of the following manners:

1. The work has been confirmed, by the prime bidder, to be work of another trade or subcontractor (whose proposal is also being accepted).
2. Clarification of the matter has been made through the prime design professional via written addendum and is clearly and mutually understood by the prime bidder and the party raising the issue/question, or seeking clarification.
3. The work has been accepted as the responsibility of the prime contractor directly.

1.8 MATERIAL AND EQUIPMENT

A. The term "provide" when used in the Contract Documents includes all items necessary for the proper execution and completion of the Work.

B. Specific reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may at his option use any article, device, product, material, fixture, form or type of construction which in the judgement of the Architect expressed in writing is equal to that specified.

C. Coordinate and properly relate all Work of this Division to building structure and work of all other trades.

D. Visit premises and become thoroughly familiar with existing conditions; verify all dimensions in field. Advise Architect of any discrepancies prior to Bid Date in accordance with Division 0.

E. Do not rough-in for any item or equipment furnished by others or noted "Not in Contract" (NIC), without first receiving rough-in information from physically examining the existing equipment, receiving specific cut sheet information from the Owner’s representative, other trades and/or Architect. Rough-in services for “NIC” equipment as required, as the work progresses.

F. Provide storage and protection for all equipment and materials in accordance with requirements of Division 0 and Division 0 & 01. Replace any equipment and materials damaged by improper handling, storage, or protection, at no additional cost to Owner.

G. Keep premises clean in accordance with requirements of Division 0 and Division 01.

1.9 SUBSTITUTIONS

A. Substitutions are only allowed by approval of the Architect prior to Bid Date as stipulated in Division 0 and/or Division 01.

B. Design of systems is based on specific equipment. If the use of other manufacturer's equipment, even though approved by Architect, involves additional cost due to space requirements, foundation requirements, increased mechanical or electrical services, the cost of such extra work shall be borne by manufacturer of substituted equipment. Even though a manufacturer's name appears in the Contract Documents as having acceptable equipment, their equipment with different model numbers shall be classified as being a substitute to the equipment originally designed for and named in the Contract Documents. Substitute equipment, materials, etc., will not be allowed to deviate from Contract Document requirements. Furnish all options specified or reasonably implied from the contract documents. Specifically identify any variance is regard to submittal versus specified performance on the cover sheet of each submittal.

1.10 VALUE ENGINEERING (V/E):

A. While it may be in the project Owner’s interest to consider the first cost money saving that may be generated via alternatives and options generated via participation in Value Engineering, Division 15 contractor shall realize that substantive offers of Value Engineering (V/E), if accepted by the Owner, constitute a design-build agreement (offer and acceptance) with the owner, and drastically change the design concept of the project, as developed by the Professional of Record identified on the Contract Documents.

B. Should contractor offer, and the owner accept value engineering options that alter aspects of the system design, equipment, performance and/or performance verification or monitoring of respective systems, Division 15 contractor shall provide duly licensed professional engineering consultants working on behalf of the Division 15 contractor (including sub-contractors and equipment vendors/manufacturers) to review, approve and take professional responsibility for performance and suitability of V/E hybrid systems, materials or operational changes related to respective V/E items. The Division 15 contractor’s licensed professional engineering consultants and the Division 15 contractor assume any and all responsibility for the design and suitability in terms of performance, of hybrid systems installed, as Division 15 contractor’s Professional of Record, absolving the original project Professional of Record (identified on the original Contract Documents, released for the original project Bid/Negotiation) from responsibility for the V/E hybrid systems portion of the work.

C. Division 15 contractor, via the offer and acceptance of value engineering items on the project agrees to provide professional engineering design services and take full and complete responsibility for the hybrid design. Further, the Division 15 contractor’s (V/E Items)professional of record (either employees, or independent consultants to the Division 15

contractor) through the offer and acceptance of V/E items, agree to indemnify and hold harmless the project owner, the owner's original A/E team (Professional of Record on behalf of the owner for the original Contract Documents) their heirs and assigns in regard to the V/E changes and their impact on the Division 15 systems altered, affected or modified, in whole or in part. The Professional of Record shown on the original Contract Documents in regard to the systems altered, adjusted, revised, modified or otherwise affected by the value engineering items implemented, shall be absolved of design responsibility as a result of implementation of V/E items, and their original use of Engineering Seals used for original Contract Documents, shall not apply.

1.11 DRAWINGS AND SPECIFICATIONS

A. The specific intent of these Contract Documents is to provide the various systems, equipment, etc. to the Owner complete and in a thoroughly calibrated functional condition.

B. The Drawings shall not be construed as shop drawings. In the event of a possible interference with piping or equipment of another trade, items requiring set grade and elevations shall have precedence over other items Should any major interference develop, immediately notify the Architect.

C. In laying out Work, refer to mechanical, electrical, structural, and architectural drawings at all times in order to avoid interference and undue delays in the progress of the Work.

D. Furnish all plumbing fixtures (with required accessories) shown on either the plumbing drawings or the architectural drawings. Review Architectural casework elevations and identify fixtures indicated. Provide fixtures indicated. Rough-in for all fixtures as work progress. Verify prior to fixture shop drawing submittal.

1.12 CODES AND REGULATIONS

A. Work shall be in full accord with the most stringent interpretation of the State Sanitary Code, local ordinances, building codes, and other applicable national, local, and state regulations.

B. Equipment shall conform to requirements and recommendations of the National bureau of Fire Underwriters and National Fire Protection Association (NFPA).

C. Items provided under this Division shall comply with the American National Standards Institute (ANSI) "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People," ANSI A 117.1

D. In the possible event of conflict between codes or regulations and Contract Documents, the most stringent interpretation of either shall govern (provided if exceeds the requirements of other codes. In the event of an irreconcilable difference between codes or regulations notify the Architect/Engineer immediately.

E. In addition to the codes heretofore mentioned, all mechanical work and equipment shall conform to the applicable portions of the following specifications, codes and/or regulations:

1. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
2. National Electrical Code (NEC)
3. National Fire Protection Association (NFPA)
4. American Society of Mechanical Engineers (ASME)
5. American Gas Association(AGA)
6. Underwriters Laboratories (UL)
7. International Building Code (IBC)

F. All materials, equipment and accessories installed under this Contract shall conform to all rules, codes, etc. as recommended by National Associations governing the manufacturer, rating and testing of such materials, equipment and accessories. All materials shall be new and of the best quality and first class in every respect. Whenever directed by the Architect, the Contractor shall submit a sample for approval before proceeding.

G. Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories, whether or not called for in these Specifications.

H. All unfired and fired pressure vessels shall be built in accordance with the A.S.M.E. Code and so stamped. Furnish shop certificates for each vessel. Contractor shall provide and pay for first operating certificate as per State Fire Marshal Regulations.

1.13 FEES, PERMITS, AND TAXES

A. Obtain and pay for permits required for the Work of this Division. Pay fees in connection therewith, including necessary inspection fees.

B. Pay any and taxes levied for Work of this Division, including municipal and/or state sales tax where applicable.

C. All permits, fees, certificates, etc. for the installation, inspections, plan review, service connections locations, and/or construction of the work which are required by any authority and/or agencies having jurisdiction, shall be obtained and paid for by the Contractor.

D. The Contractor shall make all tests required by the Architect, Engineer or other governing authorities at no additional cost to the Owner.

E. The Contractor shall notify the Architect and local governing authorities before any tests are made, and the tests are not to be drawn off a line covered or insulated until examined and approved by the authorities. In event defects are found, these shall be corrected and the work shall be retested.

F. Prior to requesting final inspection by the Architect, the Contractor shall have a complete coordination and adjustment meeting of all of his sub-contractors directly responsible for the operation of any portion of the system. At the time of this meeting, each and every sequence of operation shall be checked to assure proper operation. Notify the Architect in writing ten

(10) days prior to this meeting, instructing him of the time, date and whom you are requesting to be present.

G. This project shall not be accepted until the above provisions are met to the satisfaction of the Architect.

1.14 MANUFACTURER'S DIRECTIONS

A. Install and operate equipment and material in strict accord with manufacturer's installation and operating instructions. The manufacturer's instructions shall become part of the Contract Documents and shall supplement Drawings and Specifications.

1.15 SUBMITTAL DATA

A. Submit shop drawings, project data, and samples in accordance with requirements of Division 0/and or Division 01.

B. Shop drawings shall consist of published ratings or capacity data, detailed construction drawings for fabricated items, wiring and control diagrams, performance curves, installation instructions, manufacturer's installation drawings, and other pertinent data. Submit drawings showing revisions to equipment layouts due to use of alternate or substitute equipment.

C. Where approved manufacturers and suppliers of equipment, materials, etc. are unable to fully comply with Contract Document requirements, specifically call such deviations to attention of Architect on submittals. Type deviations on a separate sheet; underlined statements or notations on standard brochures, equipment fly sheets, etc. will not be accepted.

D. Approval of submittals shall not relieve Contractor from furnishing required quantities and verifying dimensions. In addition, approval shall not waive original intent of Contract Documents.

E. Failure to obtain written approval of equipment shall be considered sufficient grounds for rejection of said equipment regardless of the stage of completion of the project.

1.16 REVIEW OF MATERIALS:

A. Whenever manufacturers or trade names are mentioned in these Plans or Specifications, the words "or approved equivalent" shall be assumed to follow whether or not so stated. Manufacturers or trade names are used to establish a standard of quality only, and should not be construed to infer a preference. Equivalent products which meet the Architect's approval will be accepted; however, these products must be submitted to the Architect a minimum of ten (10) days prior to the Bid Date.

B. Submission shall include the manufacturer's name, model number, rating table and construction features.

C. Upon receipt and checking of this submittal, the Architect will issue an addendum listing items which are approved as equivalent to those specified. THE CONTRACTOR SHALL BASE HIS BID SOLELY ON THOSE ITEMS SPECIFIED OR INCLUDED IN THE "PRIOR APPROVAL ADDENDUM", AS NO OTHER ITEM WILL BE ACCEPTABLE.

D. Prior approval of a particular piece of equipment does not mean automatic final acceptance and will not relieve the Contractor of the responsibility of assuring himself that this equipment is in complete accord with the Plans and Specifications and that it will fit into the space provided. Shop drawings must be submitted on all items of equipment for approval as hereinafter specified.

E. Before proceeding with work and/or within thirty (30) days after the award of the General Contract for this work, the Mechanical Contractor shall furnish to the Architect complete shop and working drawings of such apparatus, equipment, controls, insulation, etc. to be provided in this project. These drawings shall give dimensions, weights, mounting data, performance curves and other pertinent information.

F. The Architect's approval of shop drawings shall not relieve the Contractor from the responsibility of incorrectly figured dimensions or any other errors which may be contained in these drawings. Any omission from the shop drawings or specifications, even through approved by the Architect, shall not relieve the Contractor from furnishing and erecting same.

G. Seven (7) sets of shop drawings shall be submitted to the Architect for approval. These submittals shall be supplied as part of this Contractor's contract. Any drawings not approved shall be resubmitted until they are approved. SUBMIT ALL SHOP DRAWINGS AT THE SAME TIME. NO SEPARATE ITEMS WILL BE ACCEPTED.

H. Submit one (1) sepia with two (2) blueline prints of all mechanical room layouts showing locations of all equipment, piping, etc. to insure all will fit in space provided. Submit drawings at 1/4" scale.

1.17 PROJECT RECORD DOCUMENTS

A. Keep Project Record Documents in accordance with requirements of Division 0 and/or Division 01.

B. During construction period, keep accurate records of installations made under this Division, paying particular attention to major interior and exterior underground and concealed piping, ductwork, etc.

C. The Contractor shall obtain at his cost, two sets of blueline prints of the original bid documents by the Architect. One set shall be kept on the site with all information as referenced below, and shall update same as the work progresses. The other set will be utilized to record all field changes to a permanent record copy for the Owner.

D. If the Contractor elects to vary from the Contract Documents and secures prior approval from the Architect for any phase of the work, he shall record in a neat and readable manner, **ALL**

such variances on the blueline print in red. The original bluelines shall be returned to the Architect for documentation.

E. All deviations from sizes, locations, and from all other features of the installations shown in the Contract Documents shall be recorded.

F. In addition, it shall be possible using these drawings to correctly and easily locate, identify and establish sizes of all piping, directions and the like, as well as other features of the work which will be concealed underground and/or in the finished building.

G. Locations of underground work shall be established by dimensions to columns, lines or walls, locating all turns, etc., and by properly referenced centerline or invert elevations and rates of fall.

H. For work concealed in the building, sufficient information shall be given so it can be located with reasonable accuracy and ease. In some cases this may be by dimension. In others, it may be sufficient to illustrate the work on the drawings in relation to the spaces in the building near which it was actually installed. The Architect's/Engineer's decision in this matter will be final.

I. The following requirements apply to all "As-Built" drawings:

1. They shall be maintained at the Contractor's expense.
2. All such drawings shall be done carefully and neatly, and in a form approved by the Architect/Engineer.
3. Additional drawings shall be provided as necessary for clarifications.
4. These drawings shall be kept up-to-date during the entire course of the work and shall be available upon request for examination by the Architect/Engineer; and when necessary, to establish clearances for other parts of the work.
5. "As-built" drawings shall be returned to the Architect upon completion of the work and are subject to approval of the Architect/Engineer.

1.18 EXCAVATING AND BACKFILLING

A. Provide excavating and backfilling necessary for Work of this Division. Comply with provisions of Division 2, Site Work, if applicable.

B. Trenches shall be inspected by Code Authorities and/or Owner's Representative before and after piping is laid. Give Owner' Representative 24-hour notice for each inspection. If any trenches are filled without Owner's Representative inspection and as subsequently found to be deficient, the trenches shall be uncovered, inspected, and then re-filled, if requested by Owner's Representative.

C. Provide minimum 18 inches of cover or in compliance with local published frost line data (if greater than 18 inches) to finish grades or paving at water piping.

D. For piping, provide bell holes at trench bottom to assure uniform bearing. Accurately grade trench bottoms by instrument before laying any pipe.

E. Protect and maintain trenches in dry condition until piping has been inspected and approved. Immediately after approval, backfill trenches in tamped layers.

F. Compact fill to satisfaction of Architect and/or Owner's Representative.

1.19 CUTTING AND PATCHING

A. Comply with requirements of Division 0 and Division 01 regarding cutting and patching. Locate and timely install sleeves as required to minimize cutting and patching.

B. Cutting, fitting, repairing, patching, and finishing of Work shall be done by craftsmen skilled in their respective trades. Where cutting is required, cut in such a manner as not to weaken structure, partitions, or floors. Holes required to be cut must be cut or drilled without breaking out around the holes. Where patching is necessary in finished areas of the building, the Architect will determine the extent of such patching and refinishing.

C. Where return air plenums above ceilings are utilized, Division 22 Contractor shall ensure that return air openings are provided in walls run to deck, for proper return air flow back to the AHU. Cut walls as required to provide openings sized for maximum 1000 feet per minute air flow velocity through openings above ceiling. Provide a fire damper at openings of fire walls and a smoke damper at openings of smoke walls. Coordinate electric or pneumatic services to smoke dampers via automatic temperature control/EMS Contractor.

D. Repairing Roadways and Walks: Coordinate all roadway work with authorities having jurisdiction. Cut and/or bore under roadways for connection of utilities as required. Coordinate work through General Contractor. Where this contractor cuts or breaks roadways or walks to lay the piping, he shall repair or replace these sections to match existing, unless specifically identified as the responsibility of others.

1.20 PAINTING

A. Painting shall be provided by General Contractor’s painting sub-contractor, unless specified otherwise. Leave exposed piping, materials, and equipment clean and free of rust, grease, dirt, etc. before and after painting.

B. Factory finished equipment, fixtures, and materials which are marred, chipped, scratched, or otherwise unacceptable shall be repaired or replaced under this Division to Architect satisfaction, at no additions cost to Owner.

C. Coordinate all painting requirements with prime bidder prior to bids.

D. Paint all exposed piping inside and outside of building. Label all piping after painting as required. Utilize industry standard paint colors for respective system unless direct otherwise by Architect. Review proposed color scheme with Architect/Engineer prior to ordering materials.

1.21 CLEANING AND ADJUSTING:

A. Upon completion of his work, the Contractor shall clean and adjust all equipment, controls, valves, etc.; clean all piping, ductwork, etc.; and leave the entire installation in good working order.

1.22 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Provide the Owner with three (3) copies of printed instructions indicating various pieces of equipment by name and model number, complete with parts lists, maintenance and repair instructions and test and balance report.

B. COPIES OF SHOP DRAWINGS WILL NOT BE ACCEPTABLE AS OPERATION AND MAINTENANCE INSTRUCTIONS.

C. This information shall be bound in plastic hardbound notebooks with the job name, Architect and Engineer names permanently embossed on the cover. Rigid board dividers with labeled tabs shall be provided for different pieces of equipment. Submit manuals to the Architect for approval.

D. In addition to the operation and maintenance brochure, the Contractor shall provide a separate brochure which shall include registered warranty certificates on all equipment, especially any pieces of equipment which carry warranties exceeding one (1) year.

E. The operation and maintenance brochure shall be furnished with a detailed list of all equipment furnished to the project, including the serial number and all pertinent nameplate data such as voltage, amperage draw, recommended fuse size, rpm, etc. The Contractor shall include this data on each piece of equipment furnished under this contract.

1.23 GUARANTEE

A. The Contractor shall guarantee all materials, equipment and workmanship for a period of one (1) year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc. necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters. Warranties exceeding one (1) year are hereinafter specified with individual pieces of equipment.

B. If the Contractor's office is in excess of a fifty (50) mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The name of the contractor appointed to provide emergency services shall be submitted to the Architect for his approval.

1.24 LOCAL CONDITIONS

A. The location and elevation of all utility services is based on available surveys and utility maps and are reasonably accurate; however, these shall serve as a general guide only, and the Contractor shall visit the site and verify the location and elevation of all services to his satisfaction in order to determine the amount of work required for the execution of the Contract.

B. The Contractor shall contact the various utility companies, determine the extent of their requirements and he shall include in his bid all lawful fees and payments required by these companies for complete connection and services to the building, including meters, connection charges, street patching, extensions from meters to main, etc.

C. In case major changes are required, this fact, together with the reasons therefor, shall be submitted to the Architect, in writing, not less than seven (7) days before the date of bidding. Failure to comply with this requirement will make the Contractor liable for any changes, additions and expenses necessary for the successful completion of the project.

1.25 MINOR DEVIATIONS

A. Plans and detail sketches are submitted to limit, explain and define conditions, specified requirements, pipe sizes and manner of erecting work. Structural or other conditions may require certain modifications from the manner of installation shown, and such deviations are permissible and shall be made as required. However, specified sizes and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift ducts or pipes, or to change the shape of ducts, and these changes shall be made as required. All such changes shall be referred to the Architect for approval before proceeding. Extra charges shall not be allowed for these changes.

B. The Contractor shall realize that the drawings could delve into every step, sequence or operation necessary for the completion of the project, without drawing on the Contractor's experience or ingenuity. However, only typical details are shown on the Plans. In cases where the Contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details will not be an excuse for improper installation.

C. In general, the drawings are diagrammatic and the Contractor shall install his work in a manner so that interferences between the various trades are avoided. In cases where interferences do occur, the Architect is to state which item was first installed.

1.26 VALVE TAGS

A. Secure metal tags to all valves. Labeling on all valve tags shall include type of system the valve controls and the area of building, zone, or equipment number affected by valve operation. Tag shall be 2"minimum diameter brass, engraved with code number, service and size. A framed list of the valves, giving manufacturer's name, model number, type and location shall be mounted in the main basement equipment room.

1.27 MACHINERY GUARDS

A. This Contractor shall provide v-belt guards for each v-belt drive or other hazardous drive. The guard shall enclose the drive entirely and shall have a hole for taking a tachometer reading.

1.28 LABELING MECHANICAL EQUIPMENT

A. All mechanical equipment (A/C units, air handlers, fan coil units, fan powered boxes, water heaters, etc.) furnished under Division 22 of contract documents shall be labeled with

permanent laminated plate secured to equipment. Units shall be labeled as indicated on plans and schedules.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION 23 00 00

SECTION 23 05 00 - BASIC MATERIALS & METHODS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work in this section includes furnishing and installing all piping for project as hereinafter described.

B. Related Work: All piping shall be coordinated with Plumbing, Air Conditioning and Ventilation section of these specifications.

PART 2 - PRODUCTS

2.1 MOTORS, STARTERS, AND ELECTRICAL WORK

A. The Mechanical Contractor shall furnish to the Electrical Contractor for installation, all the motor starters, start-stop switches and pilot lights for each piece of motor driven equipment unless shown otherwise.

B. The Electrical Contractor shall install all motor starters, start-stop switches and pilot lights as furnished by the Mechanical Contractor. The Electrical Contractor shall also do all power wiring required for the installation of such mechanical equipment.

C. The Mechanical Contractor shall furnish and install equipment interlocking, control wiring, etc., as hereinafter specified under Temperature Controls. All work shall be done in accordance with the National Electric Code requirements. The Mechanical Contractor shall be responsible for coordinating all work to provide a complete system in working order.

D. All electrical equipment shall have the U.L. Label and shall meet the standards of the National Electrical Code and NEMA.

E. All motors for the mechanical equipment shall be of the 40oC rise type and shall be furnished and installed by the Mechanical Contractor. All motors shall be wound for plus or minus 10% of the specified voltage. Motors ½ HP and smaller shall be 120 volt, single phase, 60 cycle. Motors above ½ HP shall be the voltages as indicated on the Drawings. All motors shall be PREMIUM EFFICIENCY type with a minimum motor efficiency of: 1,1.5 and 2 HP-84%; 3 HP-85%; 5 HP-87%; 7.5 and 10 HP-89%; 15 HP-90%; 20 HP-91%; 25 and 30 HP-92%; 40 HP-93%. Contractor shall submit certification after project is complete indicating minimum motor efficiency requirement has been met. All motors shall be rated for inverter duty.

F. Mechanical contractor shall furnish magnetic type starters for all motors regardless of horse power and phase.

G. Exception: Manual starters can be furnished for fractional horsepower motors that are not controlled automatically or remotely. Refer to Section 15800 (Temperature Control) and mechanical drawings to determine if fractional horsepower motors are controlled automatically or remotely.

2.41 SINGLE PHASE AC FRACTIONAL HORSEPOWER MANUAL STARTERS - 1HP OR LESS FHP manual starters shall be Square D Class 2150 or Allen Bradley Bulletin 600.

A. The manual starters shall consist of a manually operated toggle switch equipped with melting alloy type thermal overload relay. Thermal unit shall be of one-piece construction and interchangeable. Starter shall be inoperative if thermal unit is removed. Contacts shall be double break, silver alloy visible from both sides of starter.

B. All FHP MANUAL STARTERS shall be double-pole type with one thermal overload relay and general purpose enclosure and red pilot light.

2.42 SINGLE AND THREE PHASE AC MAGNETIC STARTERS - LINE VOLTAGE TYPE (ALL MOTORS BELOW 10 HP

A. Motor starters shall be Square "D" Class 8536 or Allen Bradley Bulletin 509. Motor starters shall be across-the-line magnetic type rated in accordance with NEMA Standards, sizes and horsepower ratings. Starters shall be mounted in general purpose enclosures unless otherwise indicated on plans.

B. Across-the-line magnetic starters through NEMA Size seven shall be equipped with double break silver alloy contacts. Single break contacts shall be supplied on Size eight. All contacts shall be replaceable without removing power wiring or removing starter from panel. The starter must have straight-through wiring.

C. Coils shall be of molded construction through NEMA Size seven. Coils on size eight starters shall be form wound, taped, varnished and baked. All coils shall be replaceable from the front without removing the starter from the panel.

D. Overload relays shall be them letting alloy type with a replaceable control circuit module. Thermal units shall be of one-piece construction and interchangeable. The starter shall be inoperative if the thermal unit is removed.

E. NEMA Size 0 thru 7 starters shall be suitable for the addition of at least four external auxiliary contracts of any arrangement normally open or normally closed; Sizes 0-7 external auxiliary contacts shall be field convertible. Size 00 and Size 8 starters shall be suitable for the addition of up to three external auxiliary contacts of any arrangement normally open or normally closed. A minimum of two auxiliary contacts (one normally open and one normally closed) shall be provided.

F. Single and Three-Phase Starter:

1. All magnetic starters shall be equipped with a "HAND-OFF-AUTO" SELECTOR SWITCH, A RED RUN PILOT LIGHT, and a control circuit transformer with two fuses in primary circuit and one fuse in secondary. Control voltage shall be coordinated with other trades.

G. Three Phase Starters:

1. All three phase starters shall be equipped with an individual phase relay for

protection against phase failures, phase voltage unbalance, and phase reversal. This relay shall have a response delay adjustable from ½ to 1 second and an adjustable unbalance voltage level of 5 of 30%.

2.43 REDUCED VOLTAGE AC MAGNETIC STARTERS - (ALL MOTORS 10 HP AND ABOVE)

A. All starters for motors 10 HP and above shall be autotransformer type containing a starter and contactors with a vertically actuated magnet and armature assembly, and horizontally actuated contacts through NEMA Size 4, contacts, on NEMA Size 5 through NEMA size 7.

B. The controller will be supplied for use on an electrical system as indicated on drawings.

C. The Reduced Voltage Starter will be sized to control horsepower, as indicated on drawings.

D. The Reduced Voltage Starter shall be Square "D" Class 8606 or Allen Bradley Belletin 570 and shall have the following features: hand-off-automatic selector switch, pilot light (red), control circuit transformer with two fuses in the primary circuit, and one fuse in the secondary circuit. Control voltage shall be coordinated with other trades.

E. All three phase starters shall be equipped with an individual phase relay for protection against phase failures, phase voltage unbalance, and phase reversal. This relay shall have a response delay of approximately 3 seconds. After either the undervoltage or voltage unbalance limits are exceeded.

REFER TO DESCRIPTION OF MAGNETIC STARTERS FOR DETAILS REGARDING CONTACTORS AND STARTERS INTERNAL TO THIS DEVICE.

F. Refer to electrical plans and provide combination starters and disconnects where required.

G. All starters which are to be energized from remote "start-stop" stations shall be equipped with a step-down transformer to 120 volts.

2.2 ACCESS PANELS

A. Furnish and install access panels where valves, drains, dampers, etc. are concealed in walls, ceilings, or floors, or otherwise inaccessible. Panels shall be Milcor, or equivalent, sized as required and furnished with prime coat finish.

END OF SECTION 23 05 00

SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 TEST AND BALANCE:

A. The balancing, testing, and adjusting of the air conditioning, heating, and ventilating systems shall be performed by an independent certified NEBB/AABC air balancing contractor. The contractor shall be responsible for inspecting, adjusting, balancing and logging the data on the performance of fans, air handling units, low pressure supply and exhaust ductwork, and the flows of air through all fans, coils, and heat exchangers.

B. Results of the investigation shall be submitted in typed triplicate prior to final inspection of the project and shall include results of the following:

1. Complete air balance including all A/C units, exhaust fans, ducts, etc. and other components in which flow occurs.
2. A tabulation of all electrical data including starter type, size, heater rating, amperage and voltage rated and running.
3. Complete air balance report on all air handling units, A/C units, fans and grilles connected to low pressure rectangular ductwork.
4. Actual operating capacities of all equipment.
5. Dry bulb temperature at site on day of test.
6. Entering and leaving air temperatures (D.B. and W.B.) on heating and cooling cycle with outdoor air damper closed.
7. Adjust and record pressure drop and temperature drop across all heat exchangers, coils, equipment, etc. giving, entering, and leaving conditions.
8. Mark settings on all valves, splitters, and dampers.
9. Test and adjust each diffuser, grille and register to within 10% of design and requirements.
10. Test and adjust blower RPM to design requirements.
11. In cooperation with control manufacturer's representative, setting adjustments of automatically operated dampers to operate as specified, indicated or noted. Contractor shall check all controls for proper calibrations and list all controls requiring adjustment by control installers.
12. As a part of the work in this contract, air conditioning contractor shall make any changes in the pulleys, belts, and dampers required for correct balance. Contractor shall notify Architect no later than seven (7) days prior to bid if any items other than those called out on drawings are required for system balancing.
13. As a part of the work of this contract, air conditioning contractor shall make any changes in the duct elements, fans, vibration isolators, etc. as required.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by the basic designation only.

1. American National Standards Institute (ANSI)
2. American Society of Heating, Refrigeration, & Air Conditioning Engineers (ASHRAE)
3. Associated Air Balance Council (AABC)
4. National Environmental Balancing Bureau (NEBB)

1.3 DEFINITIONS

A. Adjust: To regulate the specified fluid flow rate and air patterns at the terminal equipment, (e.g., reduce fan speeds, throttling, etc.).

B. Balance: To proportion flows within the distribution system (submains, branches, and terminals) in accordance with specified design quantities.

C. Procedure: Standardize approach and execution of sequence of work operations to yield reproducible results.

D. Report Forms: Test data sheets arranged for collection of test data in logical order for submission and review. This data should also form the permanent record which shall be used as the basis for any future testing, adjusting, and balancing required.

E. Test: To determine quantitive performance of equipment.

PART 2 - EXECUTION

2.1 INSTALLATION

A. Air balance and testing shall not begin until system has been completed and is in full working order. Contractor shall put all heating, ventilating, and air conditioning systems and equipment into full operation and shall continue the operation of same during each working day of testing and balancing. The contractor shall submit within 15 days after receipt of the contract, 6 copies of submittal data for the testing and balancing of the air conditioning, heating and ventilating system. The air balance agency shall provide proof of having successfully completed at least 5 projects of similar size and scope and shall be a certified member of the Associated Air Balance Council.

B. Test and balance shall include an extended warranty of 90 days after completion of test and balance work during which time the Engineer, at his discretion, may request a re-check or re-setting of any outlet, supply air fan or exhaust fan as listed in test report. The agency shall provide technicians to assist architect in making any tests he may require during this period of time.

C. Air conditioning contractor shall award the test and balance contract to the approved agency upon receipt of his contract to proceed with air conditioning installation, to allow the air balance agency to schedule this work in cooperation with other trades involved and comply with the completion date.

D. Upon completion of the air conditioning system, air balance agency shall perform the following tests, compile the test data and submit five (5) copies of the complete test data to contractor for forwarding to the Engineer for evaluation and approval. The contractor agency shall comply with all standards as set forth by the Associated Air Balance Council.

2.2 TESTING PROCEDURES

A. Perform the following tests and balance system in accordance with the following requirements.

1. Test and record all full motor load amperes.
2. Make Pitot Tube traverse of main supply ducts and obtain design cfm at fans.
3. Test and record system static pressures, suction and discharges.
4. Test and adjust system for design recirculated air, cfm.
5. Test and adjust system for design cfm outside air.
6. Test and record entering air temperature (D.B. heating and cooling).
7. Test and record leaving air temperature (D.B. heating and cooling).
8. Test and record leaving air temperature (W.B. cooling).
9. Test and record entering air temperature (W.B. cooling).
10. Adjust all main supply and return air ducts to proper design cfm.
11. Adjust all zones to proper cfm, supply and return.
12. Test and adjust each diffuser, grille and register to within 10% of design and requirements.
13. Each grille, diffuser, and register shall be identified as to location and area.
14. Size, type and manufacturer of diffusers, grilles, registers, and all tested equipment shall be listed. Manufacturer's ratings on all equipment shall be used to make required calculations.
15. Readings and tests of diffusers, grilles and registers shall include required FPM velocity and test resultant velocity, required CFM and test resultant CFM after adjustments.
16. In cooperation with control manufacturer's representative, setting adjustments of automatically operated dampers to operate as specified, indicated or noted. Testing agency shall check all controls for proper calibrations and list all controls requiring adjustment by control installers.
17. All diffusers, grilles and registers shall be adjusted to minimize drafts in all areas.
18. As a part of the work in this contract, air conditioning contractor shall make any changes in the pulleys, belts, and dampers or the addition of dampers required for correct balance as recommended by Air Balance Agency at no additional cost to the owner.
19. As a part of the work of this contract, air conditioning contractor shall make any changes in the duct elements, fans, vibration isolators, etc. as recommended by Air Balance Agency to comply with sound and vibration criteria below.

B. The Contractor shall make a total of three (3) inspections within ninety (90) days after use of the system to insure satisfactory conditions are being maintained. During this period the Architect, at his discretion, may request a re-check or re-setting of any outlet, supply air fan or exhaust fan as listed in test report. Provide technicians to assist the Engineer in making any tests he may require during this period of time.

C. All work shall be done in accordance with "National Standards for Field Measurement and Instrumentation", Total System Balance, Volume I, Number 81266 published by the Associated Air Balance Council.

END OF SECTION 23 05 93

SECTION 23 07 00 - HVAC INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Duct insulation installation shall not begin until all joints are sealed with mastic and all work has been tested and found to be tight.

PART 2 - MATERIALS

2.1 THERMAL INSULATION

A. After all work has been tested and found to be tight, insulate as follows:

B. Wrap all rigid supply ductwork, exhaust ductwork, return ductwork, and outside air ductwork with flexible Fiberglass insulation with aluminum foil facing, as follows: 2-1/8" thick, 3/4 # density, R-6, sealing all joints w/ 2" wide vapor barrier tape. An additional band or tape shall be applied between the circumferential joints for a maximum two feet spacing of taped bands.

C. Insulate all refrigerant suction lines, with 3/4" Armstrong "Armaflex" Insulation or equal. On all lines exposed to weather or exterior conditions, provide two coats of mastic caulking over entire assembly. Mastic shall be Virginia foam mastic or equal.

D. Condensate drain lines shall be insulated with 3/4" Armstrong "Armaflex" Insulation or equal.

E. HVAC flex-connections shall be wrapped on outside with 2-1/8" thick 3/4 # density fiberglass insulation with aluminum foil vapor barrier. Insulation shall be taped at all joints and installed per the manufacturer's recommendations.

F. Reheat coils shall be wrapped on outside with 2-1/8" thick 3/4 # density fiberglass insulation with aluminum foil vapor barrier. Insulation shall be taped at all joints and installed per the manufacturer's recommendations.

G. Duct mounted heaters shall be wrapped on outside with 2-1/8" thick 3/4 # density fiberglass insulation with aluminum foil barrier. Insulation shall be taped at all joints and installed per the manufacturer's recommendations.

END OF SECTION 23 07 00

SECTION 23 09 00 - TEMPERATURE CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish and install as hereinafter specified, a complete system of electronic temperature controls. This control system shall be as manufactured by Johnson Service Co. or approved equal. This system shall be installed and adjusted by mechanics regularly employed by the mechanical contractor. All equipment shall be of the manufacturer's first quality and shall be of full proportioning type.

B. All temperature controls and instrumentation covered by this specification shall be manufactured, installed and supervised by the same manufacturer in order to consolidate the responsibility of this system to one manufacturer. The control system shall consist of all thermostats, central control panel and other necessary equipment to provide controls of the following:

C. Split System Air Conditioning System

D. Exhaust Fans

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials shall be new and delivered to the jobsite in the manufacturer's original shipping package. Used or otherwise second class material shall not be acceptable.

2.2 THERMOSTATS

A. Provide Daikin 7-day programmable thermostat with night setback and gas heat compatible with the existing packaged rooftop unit.

2.3 TEMPERATURE CONTROL WIRING INTERLOCK

A. The control sub-contractor shall make complete and coordinated interlock wiring and supervisory central system wiring diagrams. This sub-contractor shall obtain necessary diagrams from the successful manufacturer and shall completely coordinated the interlock diagram.

B. Interlocks by control contractor shall be as follows:
   1. Interlock all firestats and smoke detectors with respective fans or air units.
   2. Interlock electric heaters so that strip heaters shall only be able to be energized if

fan operation is proven.

3. Interlock smoke detectors to de-energize the respective A/C units and exhaust fans when sensors detect a presence of products of combustion.
4. Interlock all control dampers with 2nd stage of cooling/heating cycles where multiple condensing unit serve a single air handling unit.
5. Interlock all 120V actuators for exhaust fans.
6. Interlock fresh air motorized dampers to shut when corresponding A/C Unit is "Off".
7. Provide interlocks and control wiring for motorized combination louver dampers with end switches, such that corresponding exhaust fan will not start until the dampers are fully open.

2.4 FIRESTAT:

A. Provide manual reset firestat in return air to each air handling unit. Firestat shall stop associated fan on a rise in air temperature above 125of.

2.5 FLOAT SWITCH:

A. Provide float switch to emergency drain pan of each AHU. Switch shall be interlocked with AHU to de-energize the unit when the water level in the pan rises above a set level.

2.6 MOTORIZED DAMPERS:

A. O.A. motorized dampers shall be interlocked with A/C units in respective mechanical rooms to open when any A/C unit is "on" and closed when all A/C units are "off". Provide all necessary relays, switches, transformers, etc. as required.

B. Motorized dampers shall be furnished and set in place by contractor installing the ductwork.

C. Damper actuators shall be 120/1/60 electric actuators specifically selected for damper manufacturer's requirements. Controls contractor shall furnish and install actuators. Coordinate all work with contractor installing dampers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The Mechanical Contractor shall coordinate with the Electrical Contractor and shall provide all motor starters, etc., required for the completion of the electrical work.

B. All control wiring 24V or 120V shall be provided by the Mechanical Contractor. Coordinate with electrical contractor.

C. All wiring required in the control systems, including electrical connections for the

thermostats, firestats, smoke detectors, exhaust fans and all interlocking motor control wiring shall be furnished and installed by Mechanical Contractor.

D. All wiring shall be in conduit and in accordance with the National Electrical Code (N.E.C.).

E. All control wiring located outdoors shall be installed in rigid or intermediate metal conduit.

F. All control wiring located indoors where an accessible ceiling is not available shall be installed in E.M.T. conduit.

G. All control wiring located above accessible ceilings shall be N.E.C. approved cable. All control wiring located above accessible ceilings used as air plenums shall be N.E.C. approved "plenum cable".

H. All conductors shall be copper. Conductors used for power circuits shall be #12 TW minimum. Conductors used for control circuits shall be #14 TW minimum. Conductors used for sensor circuits shall be #18 TW minimum.

END OF SECTION 23 09 00

SECTION 23 30 00 - AIR DISTRIBUTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish and install all ducts for Air Conditioning, Heating and Ventilating System as shown on the plans and as may be required to provide complete system. Ductwork shall be complete with grilles, vanes, flashings, hangers, flexible connections, splitters, dampers, fresh air inlets, louvers, reinforcing angles, etc. All ductwork shall be concealed and insulated as hereinafter specified. All ductwork indicated on drawings shall be metal-to-metal outside dimensions.

PART 2 - PRODUCTS

2.1 DUCT HANGERS AND SUPPORTS

A. All ductwork shall be properly braced to prevent rattling, breathing or other unnecessary noise. No sharp edges or obstructions shall project into the air stream. (1" wide x 16 gauge minimum)

2.2 LOW PRESSURE DUCTWORK

A. All ductwork for constant air units shall be galvanized steel and shall be of gauges and construction as recommended by ASHRAE Guide and Data Book. Gauges are as follows, with longest side governing.

1.

Dimensions of longest side	Sheet Metal Gauge
0"-12"	26 Gauge
13"-30"	24 Gauge
31"-54"	22 Gauge
55"-84"	20 Gauge

B. Joints and reinforcing shall be as per ASHRAE Guide and Data Book and all slips shall be installed without edge of internal part of slip facing downstream.

C. All joints shall be sealed with hard cast FTA adhesive and hardcast DT 5300 tape.

D. Construction standards of Article 110 of the National Board of Fire Underwriters, Bulletin 90, latest edition, shall apply throughout.

E. Flashings shall be sheet copper, and shall be furnished and installed around all outside openings used for ducts of fans and wherever required. Roof flashings shall extend at least 8" above roof.

F. All ducts shall be straight and true and installed in a neat and workmanlike manner.

G. All edges shall be straight and true, and all bends shall be made with vaned turns. Where long radius turns cannot be used, the Contractor shall use square turns and use air splitters spaced not more than 3" center to center, and of a length so air will be properly distributed over the ducts.

2.3 ROUND DUCTWORK

A. Shall be constructed of 26 gauge galvanized sheet metal with screwed and taped joints or snap lock joints.

B. At contractor's option, pre-insulated flexible ductwork (R-6) as manufactured by Thermaflex Model MKE, Flexmaster 8M or prior approved equal may be used to connect to ceiling diffusers (maximum 6'-0" length). Quietflex Series 80 and Thermaflex Model KM are not approved.

C. Flexible duct shall be maximum 4' in length, properly installed tight and straight with hangers and no sagging or kinks. Provide hard round snap lock duct wrapped with insulation for all runs greater than 6' in length. Any flexible duct runs 6' or less shall only be used for straight runs. Any turns shall have hard round elbows at spin in fittings prior to running flexible duct.

D. Insulated Acoustical Low Pressure Flexible Duct Specification:

1. The duct shall be constructed of a CPE fabric supported by helical wound galvanized steel. UL181 Class I Air Duct. Fabric shall be mechanically locked to the steel helix without the use of adhesives or chemicals. The internal working pressure rating shall be at least 6" w.g. positive and 4" w.g. negative with a bursting pressure of at least 2½ time the working pressure. The duct shall be rated for a velocity of at least 4000 feet per minute. The duct must be suitable for continuous operation at a temperature range of -20° F to +250° F. Factory insulate the flexible duct with fiberglass insulation. The R value shall be at least 6.0 at a mean temperature of 75° F. (R-4.2 is not acceptable) Cover the insulation with a fire retardant metalized vapor barrier jacket reinforced with crosshatched scrim having a permeance of not greater than 0.05 perms when tested in accordance with ASTM E96, Procedure A. All flex connections to ceiling diffusers must be connected with an insulated square to round box.

2.4 DUCTWORK SEALANT

A. All ductwork shall be air tight. All seams, both shop made and field installed, and shall be sealed with tape and glue. All transverse joints shall be sealed as well as spin collar takeoffs and rough duct connections. All duct connections and seams shall be sealed with a UL approved non-flammable tape and mastic system. Strict adherence to manufacturers installation instruction is required. The duct sealant shall be equal to Hardcast FTA20/DT5300, United McGill Unit-Sealer Tape and Glue or 3M Company Sealing System.

2.5 DUCT ACCESSORIES

A. Dampers of the fusible link operated type shall be provided in all ductwork passing through the floor or firewalls. In all cases, the time rating of damper shall be equal to or greater than the time rating of the wall.

B. Provide quadrant or adjustable splitters and mark shaft to give position of splitter damper in duct.

C. Provide vanes behind every supply grille or diffuser. Splitters shall be provided where shown on Plans and where located in concealed, non-accessible space, provide Young Regulators to operate splitter. Vanes shall be Tuttle and Bailey "Ducturns", Barber Coleman Uniflo or equivalent. Shop fabricated vanes will be acceptable. All dampers shall be constructed of 14 gauge steel.

2.6 REGISTERS, GRILLES AND DIFFUSERS

A. Square or rectangular ceiling supply outlets, unless noted otherwise, shall be Anemostat, Metalaire, Price, Titus or equal, as indicated in schedules. Color shall be white. Grilles shall be of aluminum construction with baked enamel finish. Where noted on plans, grilles with the fire dampers in ceiling shall be steel construction with fire rated blanket behind grille as required by grille type scheduled.

B. All wall supply grilles shall be complete with horizontal and vertical adjustable deflectors and opposed blade volume control damper. Grilles shall be manufactured by Titus, Anemostat, Metalaire, Price or prior approved equivalent.

C. Return air grilles shall be as manufactured by Anemostat, Metalaire, Titus, Price or equivalent, and shall be of the style called for on the Plans. Provide filters in filter back grilles.

D. All supply outlets shall have a sponge rubber gasket.

E. "Stamped" grilles and diffusers are not approved.

F. Unless otherwise shown on Drawings, all grilles installed in walls and doors shall be furnished with prime coat finish suitable for painting by painting sub-contractor.

2.7 MOTORIZED DAMPERS

A. Mechanical Contractor shall furnish and install motorized dampers at outdoor intakes as indicated on mechanical and architectural drawings. Damper shall be parallel blade motorized type equivalent to Ruskin CD36/PB, Arrow Series 1770, or equal. Motorized dampers shall be operated by 120/1/60 electric actuator as indicated on plans. Damper shall be complete with outboard support bearing, blade and jamb seals. Dampers shall be low - leakage type.

2.8 FILTERS

A. Unless noted otherwise, AHU filter media shall be 1" thick and of the non-woven cotton fabric type. The filter media shall have an average efficiency of 25-30% on ASHRAE Test Standard 52-76. It shall have an average arrestance of 90-92% in accordance with that test standard. Media support grid shall be a welded wire grid with an effective open area not less than 96%. The welded wire grid shall be bonded to the filter media to eliminate the possibility air bypass. Filters shall be Farr 30/30 or A.A.F. AM 300.

B. Provide one (1) set of filters for start-up and replace with new set after building is turned over to owner.

C. Provide one (1) additional set of filters for every piece of equipment to owner for stock.

2.9 DUCT ACCESS PANELS

A. Access panel shall be Flexmaster “Inspector Series” Model SDSM low leakage spin-in access door. Door shall be 1" insulated type and shall be 24 gauge steel with 24 gauge steel frame. A continuous 3/8" wide by 3/16" thick open cell adhesive neoprene gasket shall be installed in the door frame to provide a positive seal upon insertion and locking of door. The door shall be held secure with every spaced cast aluminum cam latches for even pressure against the gasket.

2.10 MANUAL DAMPERS

A. Mechanical contractor shall furnish and install manual dampers at outdoor air intakes and in other rectangular ductwork as indicated on plans. Damper shall be complete with outboard support bearing, and manual locking quadrant lever for balancing, blade and jamb seals.

B. Manual balancing dampers meeting the following specifications shall be furnished and installed where shown on plans and/or as described in schedules. Dampers shall consist of: a 16 ga galvanized steel hat channel frame with 5 in depth; triple V type blades fabricated from 16 ga galvanized steel; 0.5 india. plated steel axles; external (out of the airstream) blade-to-blade linkage. Damper manufacturer's printed application and performance data including pressure, velocity and temperature limitations shall be submitted for approval showing damper suitable for pressures to 4 in wg, velocities to 2,000 ft/min and temperatures to 180 F. Testing and ratings to be in accordance with AMCA Standard 500. Basis of design is Greenheck's Model MBD-15, Nailor 1022, Ruskin MBD-35.

C. Manual balancing damper and motorized damper sizes shall be 6” in height. Transition 4” high fresh air ductwork to standard manual and motorized damper sizes.

2.11 SPIN COLLARS:

A. All round low pressure connections to rectangular ducts shall be made with a factory fabricated spin collar fitting with damper and constructed of minimum 26 ga galvanized steel. The damper shall have a 2” raised handle with a high quality locking quadrant. A 3/8” continuous rod with “U” bolts connects the damper to the rod. Nylon end bearings are required where the rod penetrates the spin collar barrel. Provide Dace #SM-7 SPININ-

W/SOLQ-CR, Flexmaster #FLD-B03, or prior approved equal. A sample must be submitted for engineer's approval prior to installation.

2.12 DUCT ACCESS PANELS

A. Access panel shall be Flex Master "Inspector Series" Model SDSM low leakage spin-in access door. Door shall be 1" insulated type and shall be 24 gauge steel with 24 gauge steel frame. A continuous 3/8" wide by 3/16" thick open cell adhesive neoprene gasket shall be installed in the door frame to provide a positive seal upon insertion and locking of door. The door shall be held secure with every spaced cast aluminum cam latches for even pressure against the gasket.

2.13 FIRE DAMPERS

A. Furnish and install, at locations shown on Plans, fire dampers constructed and tested in accordance with UL Safety Standard 555. Each fire damper shall have fire protection label in accordance with established UL labeling procedures. Damper manufacturer's literature submitted for approval prior to installation shall include comprehensive performance data developed from testing in accordance with AMCA Standard 500, and shall illustrate pressure drops for all sizes of dampers required at all anticipated air flow rates. Fire dampers shall be equipped for vertical or horizontal installation as required by the location shown.

B. Fire dampers shall be 100% free area and installed in wall openings utilizing steel sleeves, angles or other materials and practices required to provide an installation equivalent to that utilized by the manufacturer when dampers are tested by UL. Installation shall be in accordance with the damper manufacturer's instructions. Fire dampers shall be Ruskin Type DIBD, Style B, Air Balance or approved equivalent

PART 3 - EXECUTION

3.1 INSTALLATION

A. All installations shall comply with SMACNA standards, or ASHRAE standards whichever is more stringent for the type if installation being performed.

B. Coordinate with other trades as required to assure proper and adequate provisions in the work of those trades for interface with the work of this section.

C. NOTE: Prior to fabrication and installation of ductwork, contractor shall coordinated the location of all ducts and ductwork with structural shop drawings and shall make any and all deviations necessary to accommodate ductwork to structural conditions. Contractor shall verify all locations, routing, installation, and sizes with existing conditions on job site prior to fabricating or installing ductwork. Notify architect of any changes required for proper coordination between trades.

END OF SECTION 23 30 00

SECTION 23 80 00 - HVAC EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Air Conditioning System, in general, shall be for the entire building providing cooling and dehumidification in summer and heating in winter. A constant amount of fresh air shall be taken into the system and all air shall be filtered.

1.2 SCOPE OF WORK

A. This section calls for furnishing all labor and materials necessary to provide and install the complete air conditioning, heating and ventilating system. It is the intention of these specifications that the mechanical system shall be furnished complete with all necessary valves, controls, insulation, piping, devices, equipment, etc. necessary to provide a satisfactory installation in working order.

B. All ductwork and piping shall be concealed and insulated as hereinafter specified unless noted otherwise.

C. Provide a temperature control system.

PART 2 - PRODUCTS

2.1 VENTILATING SYSTEM

A. This contractor shall furnish and install all exhaust fans shown and scheduled on plans. Fans shall be of type indicated and shall be Acme, Cook, Greenheck, or approved equal. All belt driven fans shall have adjustable pitch sheaves and adjustable motor bases. Maximum sones shall be as scheduled.

B. All fans shall bear AMCA certified ratings and seal. Fan performances shall be rated according to AMCA standards 210 and standard 300. For belt driven models BHP shall include belt drive losses.

C. All exhaust fans shall be equipped with bird screen, wall collars and automatic back draft dampers unless noted otherwise.

D. Fan motors shall be of the 40 degrees C ambient temperature rise type and shall be suitable for continuous duty operation.

E. Fresh air intakes shall be of the same type and style as exhaust fans and of the size indicated on plans.

F. Aluminum insect screens shall be provided with fresh air intakes.

2.2 AIR FILTERS

A. Filters shall be as hereinafter specified filters shall be sized for capacity as scheduled on drawings. Filters shall be field installed on filter rack as required by filter manufacturer and A/C unit manufacturer. Filter housing shall be equipped with access doors on each side of housing.

B. Housing and doors shall be constructed of minimum 16 gauge galvanized steel.

C. Independent access doors for filter servicing shall be provided on each side of the housing. Doors shall utilize perimeter gasketing of closed cell neoprene rubber. Latches shall be quick acting, spring loaded, and of noncorrosive materials. Hinges shall be plated.

D. Pre-Filters for central station air handling units shall be AIRGUARD 2" thick pleated filters with a maximum pressure drop of .22 at 500 FPM initial velocity. Filter media shall be of the non-woven cotton fabric type. The filter medial shall have an average efficiency of 25 - 30% on ASHRAE Test Standard 52-76. It shall have an average arrestance of 90-92% in accordance with that test standard. Media support grid shall be a welded wire grid with an effective open area of not less than 96%. The welded wire grid shall be bonded to the filter media to eliminate the possibility of air bypass.

2.3 LABELING

A. Contractor shall provide unit identification numbers at each indoor and outdoor A/C unit. Numbers shall be as detailed on plans. Identification shall have black background and white numbers and shall indicate respective A/C equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All A/C installations shall comply with manufacturer's recommendations.

3.2 INSTALLATION OF EQUIPMENT

A. Install all equipment where indicated on drawings, in accordance with equipment manufacturer’s published installation instructions, and with recognized industry practices, to ensure equipment comply with other trades as necessary to insure the equipment is installed and interfaced with other associated equipment to insure a complete installation and the equipment operates properly and serves its intended purposes.

B. Provide access to equipment for servicing as for the published manufacturers installation drawing and instruction and as per accepted trade practices dictate.

C. Install electrical devices furnished by the manufacturer but not specified to be factory mounted. Furnish copy of manufacturer’s submittal and installation requirements of Division 16 section. Do not proceed with equipment start-up until wiring installation is acceptable to equipment installer.

D. Piping connections are to be according to Division 15. Provide piping, valves, accessories, gauges, supports, and flexible connector as indicated on drawings and equipment manufacturers submittals if applicable.

E. All connections i.e., duct connections are to be per Division 15 and equipment manufacturer's submittals. Provide all necessary accessories to make connection complete as per acceptable trade practices.

F. Provide positive equipment ground for all installed equipment as per equipment manufacturer's specifications.

3.3 FIELD QUALITY CONTROL

A. Upon completion of installation of equipment start-up operate equipment to demonstrate capability and compliance with requirements. Field correct malfunctioning equipment and retest to demonstrate compliance.

3.4 INSPECTION

A. Examine areas and conditions under which equipment is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the installer. Under no circumstance is any equipment to be installed and operated under normal conditions without all necessary controls and safety shut off devices installed and working properly.

END OF SECTION 23 80 00

SECTION 26 00 01 - ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions as appropriate, apply to the Work specified in this Section.

B. Refer to all Electrical Divisions of the Specifications as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

1.2 BIDDING REQUIREMENTS AND RESPONSIBILITIES

A. Bidders of all or any portions of this section or division are required to review all contract documents including but not limited to Architectural drawings, Structural drawings, Mechanical drawings, Plumbing drawings, Electrical drawings, etc. to coordinate requirements and responsibilities with and through prime bidder.

B. Bidders of all or any portions of this section or division, by furnishing a bid on a portion of the prime contract are indicating that they have received all contract documents and coordinated services provided under their portion of the work with the prime bidder; they are indicating that they have expressed any pertinent questions (which would result from a detailed, thorough review of the entire set of contract documents) to the prime bidder in accordance with the general provisions of the Specifications requirements, prior to bidding.

C. All timely, pertinent, questions provided in writing prior to bids, in accordance with the general provisions of the Specifications requirements, will be clarified, defined, or otherwise explained in a written addendum and/or addendums prior to bids, in accordance with the general provisions of the Specifications requirements.

D. It is not the intention of these contract documents to leave any issue relating to coordination between trades or sub-contractors vaguely defined. The intention is to define all issues, coordination matters, equipment requirements, sizes, routing, etc. to the satisfaction of the prime bidder, prior to receipt of bids.

E. Bidders of all or any portions of this section or division, by virtue of the submission of a bid to the prime bidder, are indicating that they have reviewed the entire set of contract documents with due diligence and regard for the Owner's desire for a comprehensive and complete bid proposal; that they have expressed all concerns or questions requiring clarification on matters of coordination between trades and/or sub-contractors; that they have expressed any such concerns or questions in writing in accordance with contract document’s General Provisions requirements.

1.3 MATERIAL AND EQUIPMENT

A. The term "provide" when used in the Contract Documents includes all items necessary for the proper execution and completion of the work.

B. Specific reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and

the Contractor, in such cases, may at his option use any article, device, product, material, fixture, form or type of construction which in the judgement of the Architect expressed in writing is equivalent to that specified.

C. Coordinate and properly relate all work of this Division to building structure and work of all other trades.

D. Visit premises and become thoroughly familiar with existing conditions; verify all dimensions in field. Advise Architect of any discrepancies prior to Bid Date in accordance with contract document's General Provisions.

E. Do not rough-in for any item or equipment furnished by others or noted "Not in Contract" (NIC), without first receiving rough-in information or determining rough-in requirements from other trades and/or Architect.

F. Provide storage and protection for all equipment and materials in accordance with requirements of contract document's General Provisions. Replace any equipment and materials damaged by improper handling, storage, or protection, at no additional cost to the Owner.

G. Keep premises clean in accordance with requirements of contract document's General Provisions.

1.4 SUBSTITUTIONS

A. Substitutions are allowed under La. R.S. 38:2291 and La R.S. 38:2292. Any requests for prior approval (as provided for under La. R.S. 38:2295) including any re-submitted data, shall be received by the Architect/Engineer a minimum of ten (10) working days prior to bid date. Submittals sent via facsimile and/or electronic mail will not be accepted. The Contractor shall recognize that it may be necessary to submit certain requests for prior approval sooner than the final date listed in the Instructions to Bidders, depending upon the complexity and completeness of the submittal. If, in the opinion of the Architect/Engineer, there is neither sufficient time available nor adequate descriptive data attached to the submittal, the submittal will not be considered. Except as otherwise specified, materials and equipment shall be new and bear the approval label of the Underwriters Laboratories, Inc. for the type of installation required.

B. Basis of design of systems is based on specific equipment for performance, size, shape, color, construction material, etc... If the use of other manufacturer's equipment, even though approved by Architect, involves additional cost due to space requirements, foundation requirements, increased mechanical or electrical services, the cost of such extra work shall be borne by the contractor. Even though a manufacturer's name appears in the Contract Documents as having acceptable equipment, his equipment shall be classified as being a substitute to the equipment originally designed for and named in the Contract Documents. Substitute equipment, materials, etc., will not be allowed to deviate from basis of design requirements.

C. All requests for prior approval shall identify where proposed material matches or exceeds the performance of the equipment specified. In addition, such submittal shall also clearly identify all deficiencies compared to specified product. Submittal of general cut sheets will be returned rejected.

D. The following items shall be submitted for prior approval:

1. Lighting Fixtures
2. Electrical Gear

3. Dimmer Switches
4. Occupancy/Motion Sensors

1.5 DRAWINGS AND SPECIFICATIONS

A. The specific intent of these Contract Documents is to provide the various systems, equipment, etc. to the Owner complete and in a thoroughly calibrated and functional condition.

B. The Drawings shall not be construed as shop drawings. In the event of a possible interference with piping or equipment of another trade, items requiring set grade and elevations shall have precedence over other items. Should any major interference develop, immediately notify the Architect.

C. In laying out Work, refer to mechanical, electrical, structural, and architectural drawings at all times in order to avoid interference and undue delays in the progress of the Work.

1.6 CODES AND REGULATIONS

A. Work shall be in full accord with the LA Sanitary Code, 2020 N.E.C. (NFPA 70), local ordinances, building codes, and other applicable national, state, and local regulations.

B. Equipment shall conform to requirements and recommendations of the National Bureau of Fire Underwriters and National Fire Protection Association (NFPA).

C. Items provided under this Division shall comply with the American National Standards Institute (ANSI) "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People," ANSI A 117.1, and the Americans with Disabilities Act (A.D.A.).

D. Work called for in these Plans and Specifications shall be executed by competent workmen.

E. In the possible event of conflict between codes or regulations and Contract Documents, notify the Architect/Engineer immediately.

F. The drawings show approximate locations only of feeders, branch circuits, outlets, etc., except where specific routing or dimensions are indicated. The Architect reserves the right to make reasonable changes in locations indicated, before roughing-in, without additional cost to the Owner.

G. Because of the small scale of the drawings, it is not possible to indicate all of the offsets, fittings, and accessories required. The Contractor shall investigate the structural and finish conditions affecting his work and shall arrange such work accordingly, fittings, bends, junction boxes, pull boxes, access panels, and accessories required to meet such conditions at no additional costs to the Owner.

1.7 FEES, PERMITS, AND TAXES

A. Obtain and pay for permits required for the Work of this Division. Pay fees in connection therewith, including necessary inspection fees.

B. Pay any and all taxes levied for Work of this Division, including municipal and/or state sales tax where applicable.

1.8 MANUFACTURER'S DIRECTIONS

A. Install and operate equipment and material in strict accord with manufacturer's installation and operating instructions. The manufacturer's instructions shall become part of the Contract Documents and shall supplement Drawings and Specifications.

1.9 SUBMITTAL DATA

A. Submit shop drawings, project data, and samples in accordance with requirements of the General Provisions of the contract documents. Submittals shall be received no later than thirty (30) consecutive calendar days from effective date of “Notice to Proceed”.

B. Shop drawings shall consist of published ratings or capacity data, detailed construction drawings for fabricated items, wiring and control diagrams, performance curves, installation instructions, manufacturer's installation drawings, and other pertinent data. Submit drawings showing revisions to equipment layouts due to use of alternate or substitute equipment.

C. Where manufacturers and suppliers of equipment, materials, etc. are unable to fully comply with Contract Document basis of design requirements, specifically call such deviations to attention of Architect/Engineer on submittals. Typed deviations on a separate sheet; underlined statements or notations on standard brochures, equipment fly sheets, etc. will not be accepted. Submittals shall clearly indicate where material submitted meets and/or exceeds the performance criteria of the equipment used as the basis of design of the project. Failure to note compliance with the basis of design material/equipment shall result in rejection of submittals.

D. Approval of submittals shall not relieve Contractor from furnishing required quantities and verifying dimensions. In addition, approval shall not waive original intent of Contract Documents.

E. Failure to obtain written approval of equipment shall be considered sufficient grounds for rejection of said equipment regardless of the stage of completion of the project.

F. Contractor shall submit Submittals/Shop Drawings on all equipment listed below. In addition, contractor shall refer to subsequent sections of the Electrical portion of the specifications for additional shop drawing submittal requirements.

1. Lighting Fixtures
2. Electrical Gear
3. Dimmer Switches
4. Occupancy/Motion Sensors

G. Shop drawings may be submitted electronically as described below.

1. Must be in a portable document format (PDF).
2. Must be submitted to the prime designer and the prime designer will forward to ADG Engineering for distribution/processing.

1.10 PROJECT COORDINATION

A. Refer to applicable Electrical Specification Sections for products work of this Division.

B. Refer to all plumbing, mechanical and fire protections specifications sections for related products affecting work of these electrical sections.

C. Coordinate handling of all products, materials, etc., through the Contractor. Coordinate space, access, clearances, etc., through the Contractor prior to preparation of shop drawing submittal.

1.11 SERVICE CONTINUITY

A. At all times during the construction of the project, electric service shall be maintained to all portions of the site and existing facility, except with prior written approval from the Architect/Engineer of interruptions. Any required interruptions of electric service due to work being performed under this Contract shall be scheduled in writing a minimum of forty-eight (48) hours in advance after consultation with the Architect/Engineer and the Owner, and shall occur when permitted by the Architect/Engineer. The Contractor shall be responsible for any overtime pay required to meet these requirements, at no additional cost to the Owner.

1.12 VALUE ENGINEERING (V/E):

A. While it may be in the Owner's interest to consider the first cost money saving that may be generated via alternatives and options generated via participation in Value Engineering, contractor shall realize that substantive offers of Value Engineering (V/E), if accepted by the Owner, constitute a design-build agreement (offer and acceptance) with the owner, and drastically change the design concept of the project, as developed by the Professional of Record identified on the Contract Documents.

B. Should contractor offer, and the owner accept value engineering options that alter aspects of the system design, equipment, performance and/or performance verification or monitoring of respective systems, the contractor shall provide duly licensed professional engineering consultants working on behalf of the contractor (including sub-contractors and equipment vendors/manufacturers) to review, approve and take professional responsibility for performance and suitability of V/E hybrid systems, materials or operational changes related to respective V/E items. The contractor's licensed professional engineering consultants and the contractor assume any and all responsibility for the design and suitability in terms of performance, of hybrid systems installed, as contractor's Professional of Record, absolving the original project Professional of Record (identified on the original Contract Documents, released for the original project Bid/Negotiation) from responsibility for the V/E hybrid systems portion of the work.

C. The contractor, via the offer and acceptance of value engineering items on the project agrees to provide professional engineering design services and take full and complete responsibility for the hybrid design. Further, the contractor's (V/E Items) professional of record (either employees, or independent consultants to the contractor) through the offer and acceptance of V/E items, agree to indemnify and hold harmless the project owner, the owner's original A/E team (Professional of Record on behalf of the owner for the original Contract Documents) their heirs and assigns in regard to the V/E changes and their impact on the systems altered, affected or modified, in whole or in part. The Professional of Record shown on the original Contract Documents in regard to the systems altered, adjusted, revised, modified or otherwise affected by the value engineering items implemented, shall be absolved of design responsibility as a result of implementation of V/E items, and their original use of Engineering Seals used for original Contract Documents, shall not apply.

D. Contractor shall refer to subsequent specification sections for additional requirements for submission and approval of VE items.

1.13 PROJECT RECORD DOCUMENTS

A. Keep Project Record Documents in accordance with general provision requirements of the specifications.

B. During construction period, keep accurate records of installations paying particular attention to major interior underground and concealed piping, ductwork, etc.

C. The Contractor shall obtain a minimum of one (1) set of the contract documents including all addenda and change orders (including CAD files) as prepared by the Architect/Engineer.

D. If the Contractor elects to vary from the Contract Documents and secures prior approval from the Architect/Engineer for any phase of the work, he shall record in a neat and readable manner all such variances on the contract documents in red ink. Prior to requesting substantial completion, the marked-up set of contract documents shall be returned to the Architect/Engineer for approval.

E. All deviations from sizes, locations and from all other features of the installation shown in the Contract Documents shall be recorded.

F. In addition, it shall be possible using these drawings to correctly and easily locate, identify and establish sizes of all piping, directions, and the like, as well as other features of work which will be concealed in the finished building.

G. For work concealed in the building, sufficient information shall be given so it can be located with reasonable accuracy and ease. In some cases, this may be by dimension. In others, it may be sufficient to illustrate the work on the drawings in relation to the spaces in the building near which it was actually installed. The decision of the Architect/Engineer in this matter will be final.

H. The following requirements apply to all Record Drawings:

1. They shall be maintained at the Contractor's expense.
2. All such drawings shall be done carefully and neatly.
3. Additional drawings shall be obtained at the Contractor's expense.
4. They shall be kept up-to-date during the entire course of the work and shall be available upon request for examination by the Architect/ Engineer and when necessary, by other trades, to establish clearances for other parts of the work.
5. Record Drawings shall be returned to the Architect/Engineer upon completion of the work and are subject to approval of the Architect/ Engineer.
6. CAD files can be provided upon request (proper release forms must be completed). Contractor shall update CAD files to reflect As-Built conditions and shall submit revised file back to Architect/Engineer as part of the close-out documents.

1.14 OPERATION AND MAINTENANCE DATA

A. Refer to the specification Sections related to PROJECT CLOSEOUT or OPERATION AND MAINTENANCE DATA for procedures and requirements for preparation and submittal of maintenance manuals.

B. Provide the Owner with three (3) copies of printed instructions indicating various pieces of equipment by name and model number, complete with parts lists, maintenance and repair instructions.

C. COPIES OF SHOP DRAWINGS WILL NOT BE ACCEPTABLE AS OPERATION AND MAINTENANCE INSTRUCTIONS.

D. This information shall be bound in plastic hardbound notebooks with the job name, Architect and Engineer names permanently embossed on the cover. Rigid board dividers with labeled tabs shall be provided for different pieces of equipment. Submit manuals to the Architect for approval.

E. In addition to the operation and maintenance brochure, the Contractor shall provide a separate brochure which shall include registered warranty certificates on all equipment, especially any pieces of equipment which carry warranties exceeding one (1) year.

F. The operation and maintenance brochure shall be furnished with a detailed list of all equipment furnished to the project, including the serial number and all pertinent nameplate data such as voltage, amperage draw, recommended fuse size, rpm, etc. The Contractor shall include this data on each piece of equipment furnished under this contract including but not limited to those items listed below.

1. Lighting Fixtures
2. Electrical Gear
3. Dimmer Switches
4. Occupancy/Motion Sensors

1.15 CUTTING AND PATCHING

A. Comply with requirements of the Specifications regarding cutting and patching. Locate and timely install sleeves as required to minimize cutting and patching.

B. Cutting, fitting, repairing, patching, and finishing of Work shall be done by craftsmen skilled in their respective trades. Where cutting is required, cut in such a manner as not to weaken structure, partitions, or floors. Holes required to be cut must be cut or drilled without breaking out around the holes. Where patching is necessary in finished areas of the building, the Architect will determine the extent of such patching and refinishing.

1.16 PAINTING

A. Painting shall be provided under the Specification section regarding painting, unless specified otherwise. Leave exposed piping, materials, and equipment clean and free of rust, grease, dirt, etc. before and after painting.

B. Factory finished equipment, fixtures, and materials which are marred, chipped, scratched, or otherwise unacceptable shall be repaired or replaced under this Division to Architect satisfaction, at no additional cost to Owner.

C. Coordinate all painting requirements with prime bidder prior to bids.

1.17 EXISTING CONDITIONS

A. The Electrical Contractor shall visit the building site to determine existing conditions and will be held responsible for allowing for these conditions in his bid.

B. Note that this area of work will have storm drainage, mechanical and electrical utilities located underground and within and under the building. It is part of this work for the Contractor to determine the scope and location of all utilities to be installed with this project and arrange his work around others. There will be no extra consideration for work discovered as being hidden after the bid, and no change orders for extra cost that may be

caused by unknown after bid conditions. The drawings show approximate locations only of feeders, branch circuits, outlets, etc., except where specific routing or dimensions are indicated. The Architect reserves the right to make reasonable changes in locations indicated, before roughing-in, without additional cost to the Owner.

1.18 PROTECTION OF APPARATUS

A. The Contractor shall take precautions necessary at all times to properly protect his apparatus from damage. Failure on the part of the Contractor to comply with the above to the Architect's satisfaction shall be sufficient cause for the rejection of the particular piece of apparatus in question.

1.19 MINOR DEVIATIONS

A. The Contractor shall realize that the drawings cannot delve into every step, sequence, or operation necessary for the completion of the project without drawing on the Contractor's experience. Only typical details are shown on the plans. In cases where the Contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details will not be an excuse for improper installation.

1.20 SALVAGED MATERIALS

A. The Owner shall have priority for the selection of salvaged material and equipment. Any equipment, light fixtures, devices, ballasts, materials, etc. selected to remain property of the Owner shall be removed and delivered to a location on the site as designated by the Owner. Material and equipment not retained by the Owner shall become the property of this Contractor and shall be removed from the site by him.

B. The Contractor shall obtain written approval of all material and equipment determined not to be salvaged by the Owner.

1.21 SAFETY PRECAUTIONS

A. Work methods and project safety are the Contractor's sole responsibility.

B. Contractor shall furnish and place proper guards for prevention of accidents. He should provide and maintain any other necessary construction required to secure safety of life or property, including maintenance of sufficient lights during all day and night hours as required to secure such protection.

C. Temporary electrical services during construction should be maintained in perfect condition. Frayed, lose or opened connections should not be used for temporary services. The Contractor should use only equipment in first class working condition for construction services.

1.22 TEMPORARY CONSTRUCTION LIGHTING

A. The Contractor should provide and install construction lighting as required by General Contractor and other trades. The installation shall conform to requirements of the National Electrical Code.

1.23 SUPERVISION

A. Contractor shall personally, or through an authorized and competent representative, constantly supervise the work done from beginning to completion and final acceptance. To the best of his ability, he shall keep the same foreman and workmen throughout the project

duration. Foreman shall be present at project site at all times while work under this section of the contract documents is being performed. Foreman shall be accessible by cellular phone at all times. Respective telephone numbers shall be forwarded to Architect/Engineer prior to commencement of work on this project.

1.24 CAD FILES

A. ADG will provide, upon request, CAD files to the contractors for use in preparing submittals and record drawings. Plans will be provided at a cost of $10.00 per drawings sheet requested. By submitting request for CAD files, contractors automatically consent to the verbiage contained in the CAD release form contained in the plans. This includes any all limitations, restrictions, indemnifications, etc… contained therein.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Panelboards, safety switches, equipment cabinets, and other equipment shown on the drawings and furnished and/or installed under this section of the Specifications shall be labeled with laminated plastic nameplates inscribed to identify equipment with description shown on the drawings for panels, the name of the equipment controlled for the system or function involved for other equipment. Provide typewritten panelboard directories indicating the equipment served and its location using final approved room numbers, etc., as directed by the Architect. Refer to specification section – Electrical Distribution System and details(s) for additional requirements.

PART 3 - EXECUTION

3.1 COORDINATION OF TRADES

A. Where work is in close proximity to the work of other contractors, the Contractor shall review plans of other contractors and coordinate his work with theirs. The Electrical Contractor shall verify the location of lighting fixtures, beams, structural members, conduit, ductwork, pipes or other obstructions before beginning his work in the area. Notify the Architect where proper clearances do not occur or where the work of others would interfere with the safe and/or proper operation of this work.

3.2 SUPPORTS AND FOUNDATIONS

A. Support all items covered by this Specification directly from building structural members independent of any ceilings or any other installed item. Panelboards and switches may be attached to suitably reinforced walls. Ground or slab mounted equipment shall be mounted on a separate four-inch-high concrete slab. Extending 6" beyond equipment footprint on all sides.

B. Do not attach items of this Specification to HVAC ductwork, ceiling grids and ceiling support members, piping or other equipment unless specifically shown otherwise. Where applicable, all equipment including conduit shall be supported from overhead wall, floor or roof structures using galvanized channel or angle members for a rigid support. Position supports and equipment such that access through lay-in ceilings or panels is not impaired and all Code required clearances are maintained.

C. Where applicable, under no circumstances is the Contractor to attach to or support from any bar joist bridging. Any supports to the bar joists or any structural systems shall be approved by the Architect. All supplemental angle or channel iron required to support equipment of this Specification shall be furnished by the Electrical Contractor.

3.3 GUARANTEE

A. The Contractor shall guarantee all materials, equipment and workmanship for a period of one (1) year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc. necessary to restore the project to first class condition. This guarantee shall include the replacement of lamps. Warranties exceeding one (1) year are hereinafter specified with individual pieces of equipment.

B. If the Contractor's office is in excess of a fifty (50) mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The name of the contractor appointed to provide emergency services shall be submitted to the Architect/Engineer for approval.

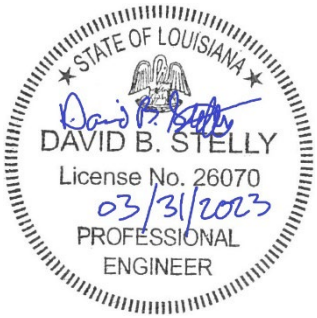
3.4 CLEANING

A. Refer to the Specification Section relating to PROJECT CLOSEOUT or FINAL CLEANING for general requirements for final cleaning.

B. Clean all light fixtures, and lenses prior to final acceptance and replace inoperable drivers or LED modules.

END OF SECTION 26 00 01

SECTION 26 05 00 - BASIC MATERIALS AND METHODS



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions; as appropriate, apply to the work specified in this section.

B. Refer to all portions of the Contract Documents as well as the plans and specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

PART 2 - PRODUCTS

2.1 WIRE (600 VOLT AND BELOW)

A. All conductors used in the work shall be soft drawn annealed copper having a composition of not less than 98% of pure copper. Conductors shall be standard code gauge in size, insulated, and shall have insulation rated for use at 600 volts. The contractor's bid shall reflect the use of all copper conductors unless specifically indicated otherwise.

B. Unless otherwise noted or specified, insulation shall be Type THWN. Wires shall be of the single conductor type and shall be stranded. Wire insulation shall not contain any asbestos materials.

C. Wire #8 AWG and smaller may be type MC-cable where allowed by applicable codes and ordinances.

D. Throughout the system, conductors shall be identified as to phase and voltage of system by color-coding. Color-coding shall be continuous the full length of wire for all wire sizes. Identification by permanent paint bands or tags at outlets will not be acceptable. Surface printing at regular intervals on all conductors shall indicate manufacturer, size, voltage, and insulation type. White and/or gray colored insulation shall be used for grounded conductors and only for grounded conductors.

E. The color code assigned to each phase wire shall be consistently followed throughout the project. The following systems of color-coding shall be strictly adhered to:

1. 208/120 Volt, 3-Phase, 4-wire Wye Systems
   a. Grounding leads = green
   b. Grounded neutral leads = white
   c. Ungrounded phase wires = black, red and blue
2. 120/240 Volt, 1-Phase, 3-Wire Systems
   a. Grounding leads = green
   b. Grounded neutral leads = white
   c. Ungrounded phase wires = black, red
3. 120/240 Volt, 3-Phase, 4-wire Delta Systems
   a. Grounding leads = green
   b. Grounded neutral leads = white
   c. Ungrounded phase wires = black, blue
   d. Ungrounded phase "wild" leg wire = orange

F. Where multiple neutral conductors are installed in a common raceway, the neutral conductor for each circuit shall be separately identified in accordance with the National Electric Code (NEC).

2.2 CONDUIT

A. Unless otherwise specified or shown on the drawings, all conduit shall be rigid galvanized steel (RGS), electrical metallic tubing (EMT), or rigid nonmetallic conduit (PVC) as allowed in the paragraphs below.

B. RGS may be used for conduit shown run underground, may be used in concrete slabs, and shall be used for conduit run exposed to the weather (locations defined as damp locations and wet locations in Article 100 of the NEC) and shall be run in hazardous areas.

C. EMT shall be used for conduit run indoors – exposed or concealed.

D. PVC may be used for conduit run in concrete slabs or may be run underground. Concrete encasement will not be required on underground runs unless specifically noted or specified elsewhere. PVC shall not be run exposed nor concealed in walls nor above ceilings nor in hazardous areas. When rigid nonmetallic conduit (PVC) is installed underground, it shall be Schedule 80 at all underground road crossings, at all underground driveway crossings, and when required by the NEC or local ordinance or specified otherwise. PVC Schedule 40 may be used at all other underground locations.

E. Where PVC is utilized for underground installations, RGS 90^{o} elbows and conduit shall be utilized to turn conduit vertical and to rise up to above grade/slab. Red concrete encasement shall be required for all elbows and vertical conduits. Refer to detail on plans.

F. All conduit shall be new and shall bear the inspection label of the Underwriters Laboratories, Inc. (U.L.).

G. Fittings for rigid steel conduit and EMT shall be hot-dipped galvanized and shall be of an approved type specially designed and manufactured for their purpose.

H. All flexible conduit, where installed indoors and outdoors, shall be of the flexible liquid tight metallic type. Flexible weatherproof electrical conduit is prohibited from use on this project.

I. Metallic conduit shall be metallized, sheradized, or hot-dipped galvanized.

2.3 METAL-CLAD CABLE (600 VOLTS AND BELOW)

A. Where permitted by NEC and local codes and ordinances, metal-clad (MC) cables may be used in lieu of conduit and wiring specified elsewhere herein.

B. Installation of MC cables shall be in compliance with the National Electric Code (NEC).

C. Conductors shall be softdrawn annealed copper having a composition of not less than 98% of pure copper.

D. Conductors shall be solid -type, standard Code gauge in size, insulated, and shall be rated for use at 600 volts or below. Minimum size shall be No. 12.

E. Conductor insulation shall be of a type listed in the NEC and be rated for 75 deg. C (167 deg. F) as a minimum and shall be of a type approved for use in MC cable.

2.4 EXPANSION FITTINGS

A. Each conduit that is buried in or rigidly secured to the building construction on opposite sides of a building expansion joint and each long run of exposed conduit that may be subject to excessive stresses shall be provided with an expansion fitting. Expansion fittings shall be made of hot-dipped galvanized malleable iron and shall have a factory-installed packing, which will prevent the entrance of water, a pressure ring, and a grounding ring.

B. Where conduits are buried in concrete, they shall cross the building expansion joints at right angles. Ends of conduit shall be provided with insulated bushings.

2.5 OUTLET BOXES

A. Outlet boxes in concealed conduit systems shall be flush mounted. Boxes shall be galvanized steel of sufficient size to accommodate devices shown and shall have raised covers. Requirements of the NEC shall be minimum.

B. Boxes for lighting fixtures shall be four-inch (4") octagon, not less than 1-1/2" deep. Where boxes are installed in concrete, boxes designed for this application shall be used.

C. Outlet boxes for switches and receptacles in concealed work shall be 4" square, and not less than 1-1/2" deep. Flush mounted outlet boxes shall be installed with plaster rings.

D. Outlet boxes for switches and receptacles installed in exposed conduit system shall be cast iron or cast aluminum Type FD or approved equivalent.

E. Where multiple outlet boxes are shown to be installed at the same location, they shall be installed using B-Line Series BB8 mounting bracket or approved equivalent. Where single boxes are shown to be installed, the B-Line Series BB2 mounting bracket or approved equivalent shall be used.

F. Outlet boxes for adjacent rooms shall not be installed in the same stud space to minimize sound transmission.

G. Outlet boxes used for lighting toggle switches shall have outlet box stabilizer(s) installed.

H. Outlet boxes installed in rated walls shall receive appropriately rated putty pads as manufactured by 3M or STI.

2.6 OUTLET COVER PLATES

A. Unless otherwise noted, all outlets including telephone outlets, television outlets, computer outlets, etc. shall be fitted with cover plates of the type indicated below.

B. Cover plates shall be uniform in design and finish for switches, receptacles, and other outlets requiring cover plates. Plates shall be one (1) piece of the required number of gangs. Sectional plates shall not be used.

C. Cover plates shall be smooth nylon with gray, white, black, brown or ivory finish. Color shall be selected by the Architect/Engineer to suit the wall finish.

D. Provide blank coverplates for all un-used/empty device boxes including, but not limited to tele/data, CATV, access controls, etc....boxes.

2.7 WIRING DEVICES

A. Wiring devices shall be as listed in the following table, except that color of device shall match color of outlet cover plate. Where cover plates are aluminum or stainless steel, device color shall be as selected by the Architect. The "*" in the model numbers indicate color selection to be made.

1. Leviton / Hubbell (or equivalent by Pass and Seymour)
Single Pole-20A (5621-2* / DS120*)
Rocker or Paddle Switch

2. Three Way-20A (5623-2* / DS320*)
Rocker or Paddle Switch

3. Four Way-20A (5624-2* / DS420*)
Rocker or Paddle Switch

4. 20A 125V 2P 3W Duplex (16342-* / DR20*)
Decora Style
Grounded Receptacle

5. 20A 125V 2P 3W Duplex (G5362-00*/ GFRST20SNAP*)
GFCI Receptacles (Indoor)

6. 20A 125V 2P 3W Duplex (G5362-WT*/ GFTWRST20*)
GFCI Receptacles (Outdoor)

2.8 WEATHERPROOF RECEPTACLES

A. Weatherproof receptacles shall be duplex receptacles of the ground fault current interrupting type as specified under WIRING DEVICES, mounted in a cast iron or cast aluminum Type FD (or approved equivalent) conduit fitting with Leviton No. 5997-DGY, (or approved equivalent) clear, extra deep GFCI Style weather resistant cover. Weatherproof receptacles shall be flush mounted in exterior walls whenever possible.

2.9 PHOTOELECTRIC CONTROLS

A. Unless otherwise noted on the drawings, photoelectric controls shall be electronic-stem/swivel with sensor on side: Intermatic EK4236S or equivalent by Voltage and power requirements of circuits controlled per drawings.

2.10 DIMMER SWITCHES

A. Dimmer switches shall be Legrand Radiant series or approved equivalent. Ratings shall be of appropriate wattage for the circuits to be controlled. Provide and install all required 0-10V. control interface units for all LED lighting circuits. Dimmer loading shall not exceed 80% of the dimmer rating. Dimmers shall be UL listed.

PART 3- EXECUTION

3.1 MOUNTING HEIGHTS

A. Unless otherwise noted on the drawings or required by the Architect/Engineer, the mounting heights set forth below shall apply. Dimensions given are from finished floor to the top of the device unless noted otherwise noted.

1.	Toggle Switches	4'-0" to top of device
2.	Receptacles	1'-6" to bottom of receptacle
3.	Panelboards	6'-7" to top of can
4.	Tele/Data Outlets	1'-6" to bottom of outlet
5.	Motor Control Equipment	5'-0"
6.	Fire Alarm Audio/Visual	6" from ceiling on wall *
7.	Fire Alarm Hand Stations	4'-0" to top of device
8.	Fire Alarm Visual Only	6" from ceiling on wall *
9.	Electric Water Cooler	Concealed behind unit **

* Mounting height shall be 6" from ceiling or maximum 80" above finished floor, whichever is lowest.

** Contractor shall be responsible for coordinating exact location in field with the plumbing contractor.

B. Where overcurrent or safety switch devices are shown to serve exterior equipment, the Contractor shall review in detail with the Architect/Engineer proposed exterior mounting locations, mounting heights, conduit routing, etc., and receive approval prior to rough-in.

C. Where overcurrent or safety switch devices are shown to serve condensing units, the top of the overcurrent device shall be 3’- 0” AFG or level with the top of the condensing unit(s) whichever is lower. Refer to detail on plans for additional requirements.

3.2 WIRE (600 VOLT AND BELOW)

A. Service entrance, feeders, and motor circuit conductors shall be run their entire length without joints or splices. Splices and joints in branch circuit wiring shall be only at outlets or in accessible junction boxes.

B. Joints and splices in branch circuit wiring shall be made with compression type solderless connectors. Connectors of the nonmetallic screw on type are not acceptable.

C. Terminations or splices for conductors # 6 AWG and larger shall utilize Burndy Unitap, Polaris Black or equivalent connectors.

D. Unless otherwise specified, all wiring shall be installed in conduit.

E. No wire shall be smaller than No. 12 for power or lighting service, fixture whips or for switch legs. Wire for each branch circuit shall be of a single size and type from the branch circuit protective device to the last outlet on the circuit unless noted otherwise.

F. Not more than three (3) branch circuits shall be installed in a raceway for three-phase electrical systems. For single phase electrical systems, the number of circuits in any one raceway shall be limited to two (2).

G. Branch circuits shall have a 200% rated neutral where more than one (1) branch circuit is in a raceway and the neutral conductor is shared. The neutral should match the branch phase wire size when only one (1) circuit is in a raceway and when the neutral conductor is not shared. Refer to the "Multiple Circuit Neutral Wiring Diagram." Provide multi-pole breakers to simultaneously trip all phase conductors for shared neutral circuits.

H. Branch circuit home run numbers shown on the drawings shall be used for connection of circuit wiring to similarly numbered protective devices in branch circuit panelboards.

I. Where the length of a home run, from panel to the first outlet exceeds 75 feet (75') for 120-volt circuits or 175 feet (175') for 277-volt circuits, the conductor size shall be No. 10 AWG or that shown on the drawings, whichever is larger.

J. For all 3-phase circuits, contractor shall provide and install a full-size neutral conductor and a grounding conductor for a complete 5-wire circuit. If the neutral conductor is not required by the equipment, contractor shall install wire nuts on each end of the neutral conductor for future use.

3.3 CONDUIT

A. When conduits are shown to be installed in the floor slab, under the floor slab, or underground, whenever possible and approved by the Architect/Engineer, conduits one-inch (1") trade size and smaller shall be installed in the concrete floor slab. Conduits embedded in concrete slabs shall have lateral spacing not less than three diameters except where the slab has been specially designed to accommodate closer spacing.

B. Conduits larger than one-inch (1") trade size shall not be installed in the floor slab and shall be installed a minimum of twelve inches (12") below the floor slab.

C. Conduits shown underground but not in or under a floor slab shall be installed not less than twenty-four inches (24") below grade. Conduit locations shall be identified by means of 4" wide; detectable, red warning/ marker tape installed in trench in accordance with NEC requirements.

D. Prior to backfilling of trenches and /or providing concrete encasement, contractor shall take photographs of conduit installation including spacers/supports and concrete support blocks. In addition, prior to backfilling trenches and after concrete encasement, take additional photographs of installation. Submit photographs to engineer upon request.

E. Rigid conduit joints shall be made with threaded fittings made up tight with at least five threads fully engaged. Compression type threadless fittings and setscrew type fittings shall not be used for RGS unless specifically approved in writing by the Architect/Engineer.

F. Couplings and connectors for EMT shall be compression type or cast-iron set screw type.

G. Where conduits enter boxes or cabinets that do not have threaded hubs the conduit shall be secured in place with galvanized locknuts inside and outside and shall have bushings inside for interior locations. All exterior terminations shall be made with Meyers hubs or approved equivalent. Conduits larger than one inch (1") shall have galvanized insulating bushings.

H. All conduits shall be installed as indicated or scheduled on the drawings and shall be of sufficient size to accommodate the required number of insulated conductors including equipment-grounding conductor. A grounding conductor shall be pulled in every raceway and properly terminated. The Contractor shall increase the conduit size from that shown on the drawings where necessary to accommodate the equipment-grounding conductor and/or where to comply with the NEC.

I. Unless otherwise noted, conduit shall be run concealed. Conduit runs from wall mounted receptacles, toggle switches, etc. shall be run concealed in walls whenever possible.

J. Conduit runs shall be straight; elbows and bends shall be uniform, symmetrical, and free from dents or flattening. All conduit shall be installed with runs parallel or perpendicular to walls, ceilings and structural members.

K. Conduit shall not be run nearer than three inches (3") to hot water or steam pipes except where crossings are unavoidable. Conduit shall be kept at least one inch (1") from covering of pipe crossed and the conductor size shall be increased one (1) size

L. Conduit shall be held securely in place by approved hangers and fasteners of appropriate design and dimensions for the particular application. Support shall be such that no strain will be transmitted to the outlet box and/or pull box supports. Conduit shall be secured only to the building structure.

M. All conduit runs shall be installed in accordance with all applicable sections of the National Electrical Code and local codes or ordinances.

N. Where empty conduits are shown, a #14 pull wire shall be installed and conduits shall be capped.

O. Terminations to all mechanical equipment and to all dry-type transformers shall be made using a minimum of 12" to a maximum of 24" liquid-tight flexible metallic conduit.

P. At each concealed junction box in the power and lighting system, identify the panel and circuit number(s) contained in the junction box by writing in permanent marker on the outside of the junction box cover.

Q. Where conduits are run from condition spaces to/thru un-conditioned spaces, the ends of the conduits shall be sealed (after conductor installation) to prevent the transmission of air from non-conditioned spaces into the conditioned spaces. Expanding spray foam and EYS seals are approved methods of sealing conduits.

R. For all surface mounted devices, including fire alarm, intercom and nurse call systems, device boxes shall be Wiremold No. R5752 and R5753 or approved equivalent style boxes sized such that device does not overhang edge(s) of back box. Color of box shall match device.

3.4 METAL-CLAD CABLE (600 VOLTS AND BELOW)

A. The metallic sheath shall be galvanized steel or aluminum corrugated sheath type and shall be terminated at outlet boxes, cabinets, etc. with fittings specifically approved for such use, which shall properly ground the metallic sheath.

B. Each metal-clad cable assembly shall have one (1) green insulated ground conductor sized as required by NEC for the application as a minimum size.

C. Where run in walls, cable shall be fastened using B-Line Series BX4 or approved equivalent cable fasteners. Cable shall be fastened to wall stud not more than 8" from entry into device box.

D. MC Cable shall be supported horizontally and vertically every 5’ minimum or closer where required by NEC and applicable federal, state and local ordinances.

3.5 MANUFACTURER’S DIRECTION

A. Contractor shall be responsible for coordinating all aspects of equipment electrical service installation for all electrical gear, devices, mechanical, plumbing, fire protection, architectural, and owner furnished equipment. Contractor shall obtain and review actual manufacturer’s installation instructions and shall install electrical facilities to said equipment in accordance with the instructions, NEC, NFPA and contract documents.

Should a discrepancy exist between the manufacturer's installation directions and the contract documents, the engineer shall be notified in writing immediately.

3.6 COORDINATION WITH OTHER TRADES

A. Prior to purchasing and installing any wire and/or conduit for all circuitry to mechanical equipment, owner furnished equipment, and other equipment requiring electrical power furnished by other trades as part of this project, contractor shall review equipment cut sheets and shall verify exact equipment electrical requirements. Any discrepancies between contract documents and equipment submittals shall be immediately brought to the architect/engineer's attention for clarification.

END OF SECTION 26 05 00

SECTION 26 09 23 - OCCUPANCY SENSORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions) as appropriate, apply to the Work specified in this Section.

B. Refer to all other Electrical specification sections, as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

1.2 GENERAL

A. Contractor shall provide and install motion sensors in accordance with the plans and specifications herein. System shall be installed to provide detection system coverage of the entire space the sensors are located in. It is understood that due to some manufacturer's devices providing different coverage patterns, the plans represent a generic system. Contractors shall evaluate each space individually and shall at no additional costs to the owner, provide additional detection sensors where required to provide a complete coverage pattern and shall also adjust installation locations to retain the coverage while reducing false triggers of the sensors.

PART 2 - PRODUCTS

2.1 WALL MOUNTED SENSORS

A. For single-pole/single switch applications wall mounted motion sensors shall be IR-TecLDS700S, Watt Stopper No.: DSW-100, Lutron MS-A102, Greengate ONW-D-1001-MV, Leviton ODS10, Acuity Controls (Sensor Switch) WSX-PDT.

B. For two-pole/dual switch applications, wall mounted motion sensors shall be IR-TecLDT700S or Watt Stopper No.: DSW-200, Greengate ONW-D-1001-DMV, Leviton ODSOD, Acuity Controls (Sensor Switch) WSX-PDT-2P.

C. Color of sensor shall be selected by Architect/Engineer during shop drawing submittal.

2.2 CEILING MOUNTED SENSORS

A. Ceiling mounted motion sensors shall be IR-Tec-BDS-600S, Watt Stopper No. DT-305, Lutron LOS-CDT-2000-WH, Greengate OAC-DT-2000, Sensor Switch CM-PDT-9 (or 10 depending upon coverage required for space) or approved equivalent

B. All relays, contactors, and power packs required to provide a fully operational system shall be provided and installed at no additional cost to the owner.

C. Install device using properly sized device box recessed in ceiling. Utilize MC-cable to run all conductors. Install power pack in properly rated junction box.

D. Color of sensor shall be selected by Architect/Engineer during shop drawing submittal.

2.3 POWER/SWITCH PACKS

A. Power packs shall employ zero crossing circuit to limit inrush current. Contacts shall be dry-type (Isolated) twenty-ampere (20A). Leads shall be Class 2 Teflon insulated for use in plenums. Power pack shall be rated for both 120 volt and 277-volt operation.

B. Install device using properly sized device box recessed in ceiling. Utilize flexible conduit to run all control voltage conductors. Install power pack in properly rated junction box.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Should a particular manufacturer's product require that additional sensors and associated wiring and accessories be provided to allow full and complete coverage of the space, the additional sensors and associated wiring and accessories shall be provided at no additional cost to the owner.

B. Installation of motion sensor shall be such that motion is detected as soon as a person enters the particular room and with the sensor being a minimum of four feet (4') from any HVAC diffuser/register.

C. All sensors shall be installed on the line side of all toggle switches so that power is maintained to the sensor at all times.

D. Prior to requesting substantial completion, contractor shall coordinate with the owner to determine the length of time the sensors shall keep the lighting illuminated after the room if vacated and shall program sensors accordingly. Time shall be adjustable from a minimum of 5 minutes to a maximum of 30 minutes. Contractor shall provide a minimum of one additional setting adjustment per sensor installed for the duration of the one-year warranty period.

3.2 SUBMITTALS

A. Prior to installation, contractor shall submit a proposed layout in shop drawings indicating all sensor and power pack locations. The sensor Contractor shall be responsible for such layout.

B. At time of substantial completion, contractor shall submit how each and every sensor is programmed including but not limited to trigger on technology, maintain on technology, time delay to off.

3.3 MISCELLANEOUS ITEMS

A. Contractor shall be responsible for providing all relays, contactors, power packs, etc. to provide a complete motion detecting lighting switching circuit.

END OF SECTION 26 09 23

SECTION 26 27 13 - ELECTRICAL DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions); as appropriate, apply to the work specified in this section.

B. Refer to all Electrical specification sections, as well as the plans and specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

1.2 ELECTRIC SERVICE

A. Contractor shall modify existing electrical service at the facility as specified herein and noted on the drawings. This Contractor shall be responsible for the coordination of all electrical work with the local utility company, Cleco.

1.3 GENERAL

A. All electrical gear furnished as part of this project, panelboards, switchboards, motor control centers, dry-type transformers, safety switches, etc. shall be of the same manufacturer unless specified otherwise. Electrical equipment manufactured by a subsidiary or parent company of manufacturer that is prior approved is not itself prior approved unless its own manufacturer's name specifically is listed as being prior approved.

1.4 ARC-FLASH; COORDINATION AND FAULT CURRENT STUDIES

A. As part of the electrical gear shop drawings, the contractor shall perform and submit complete arc–flash, coordination and fault current studies, including phase-to-phase and ground faults for coordinating all elements of the distribution system. These three studies shall be performed and furnished by the successful electrical gear manufacturer. Contractor shall refer to these specification sections for specific study requirements: These studies shall be submitted simultaneously with the gear submittal or the gear submittal will be returned un-reviewed.

1. Overcurrent Protective Device Short-Circuit Study
2. Overcurrent Protective Device Coordination Study
3. Overcurrent Protective Device Arc-Flash Study

B. Provide all arc-flash safety and short circuit current stickers on all panels, switchboards, safety switches, motor control center, etc. as required/specified. Refer to details for additional requirements. Proposed stickers for each individual piece of gear shall be submitted for review as part of shop drawings.

C. Provide and install a fully coordinated electrical distribution system as directed by the Overcurrent Protective Device Coordination Study at no additional costs to the Owner.

D. In addition, this study shall indicate all required settings for adjustable circuit breakers and motor circuit protectors. These settings include instantaneous, short time, long time, ground fault trip characteristics and all-time based pick-up, drop-out and re-close parameters.

E. The contractor shall provide all breakers, trip plugs, solid state breakers, etc. to provide a fully coordinated electrical system as identified in the coordination study. This shall be accomplished as part of the Base Bid and all alternates at no additional costs to the owner and/or design team.

F. Refer to individual specification sections of each specified study for additional requirements.

G. Electrical gear submittals will not be reviewed until all device studies specified are performed, submitted and approved.

H. At the conclusion of the project, contractor shall have the specified studies updated to reflect “As-Installed” conditions and submit the revised studies as part of the O&M manuals. This includes the electronic software data files, PDF of the study and PDFs of the appropriate labels.

1.5 SERIES RATING OF EQUIPMENT

A. The electrical gear provided and installed as part of this project shall not be series rated.

PART 2 - PRODUCTS

2.1 PANELBOARDS OR LOADCENTERS

A. Panelboards shall be circuit breaker type using quick-make, quick-break, trip free, thermal magnetic trip indicating, bolt-on circuit breakers. Two and three pole branches and mains shall be common trip. Panelboards shall be dead front safety type with main breaker or main lugs, and number and size of branches as shown on the drawings. Panelboards shall have single, feed through, or double lugs, to accommodate feeder conductors as shown on the drawings, and shall have neutral and ground bus for termination of conductors. Bussing shall be copper.

B. Doors shall be fitted with flush cylinder locks, keys to which shall all on project be alike. Two (2) keys shall be furnished for each lock. Cabinet fronts shall be finished as directed by the Architect/Engineer. Cabinet fronts shall not be removable with door in the locked position. Provide for each panel a directory frame with waterproof transparent plastic window on inside of door and place therein a typewritten identification of all circuits.

C. Directories shall be made only after permanent room numbers have been assigned. Room numbers shown on the construction drawings shall not be used for making directories. Each circuit shall be clearly identified as to use and location (ex: Receptacles Rooms 201, 202 or Lighting Rooms 207, 209, 211, and 213).

D. Cabinets shall be galvanized steel not less than twenty inches (20") in width. Gutters shall not be smaller than minimum dimensions required by the National Electrical Code.

E. All panels rated NEMA 1, shall be of the door-in-door type construction providing tool-less access to interior of the panelboard(s).

F. Panelboards shall be as shown in the schedules and shall be completely factory assembled. Do not purchase panelboards or cabinets until shop drawings have been approved. Approved manufacturers include:

1. General Electric
2. Square D
3. Eaton-Cutler Hammer
4. Siemens

G. Minimum short circuit current interrupting ratings for circuit breakers shall be 10,000 amps. Where a specific interrupting rating is shown on the drawings, in the panel schedules, or as required by the coordination and fault current study, panelboards and associated circuit breakers shall be rated for that value as a minimum at no additional cost to the owner.

H. In branch circuit panelboards having two (2) vertical columns of devices, circuit numbers shall be such that, starting at the top, odd numbers shall be used in sequence down the left-hand side. See Schedule of Panelboards on drawings for circuit device sizes and number of poles.

I. Construction of panelboards shall be such that, where applicable, any three (3) adjacent single-pole devices are individually connected to each of the three different phases in such a manner that 2 or 3 pole devices, when available, can be installed at any location.

J. UL Listing: Panelboards shall be listed by UL and bear the UL label.

K. Interior panelboards shall be NEMA 1 unless noted otherwise. All exterior panelboards shall be rated NEMA 3R.

2.2 LABELS

A. All panelboards, starters, VFD's, contactors, safety switches and fused safety switches installed by this contractor shall have laminated phenolic tags with 1/4" characters embossed thereon identifying the equipment by name, voltage, ampacity, phase and number of current carrying conductors such as:

Panel Name
120/208 V - 400A
3 Phase - 4 Wire
Fed From Panel: _____, Circuit _____

The tags shall be fixed to the center of the equipment cover/door with a suitable heavy duty industrial grade adhesive.

2.3 SAFETY SWITCHES

A. Furnish and install safety switches at locations and in capacities shown on the drawings, as hereinafter specified and/or as required by the latest edition of the National Electrical Code.

B. Indoor safety switches shall be rated general duty – NEMA 1 (Fusible where noted).

C. Outdoor safety switches shall be rated heavy duty - NEMA 3R (Fusible where noted).

D. Safety switches shall be of the solid neutral type where required by circuit or feeder specified.

E. Safety switch covers shall be internally mechanically held closed when in the ON position and shall be allowed to open in the OFF position. The switch shall come equipped with provisions to allow the switch to be padlocked in the off position.

F. Galvanized angle or other suitable supports shall be provided for switches that cannot be mounted on walls or other rigid surfaces. Switches shall not be supported by conduit alone and shall not be mounted on HVAC or other equipment unless specifically approved by the Architect/Engineer. Verify mounting heights for all exterior locations with Architect/Engineer prior to rough-in.

G. Fuses shall be installed so that fuse rating and type are clearly and easily readable from the front of the disconnect.

H. Safety switches shall be General Electric, Square "D", Eaton Electrical, Siemens or approved equivalent.

2.4 FUSES

A. Unless otherwise noted or specified, all fuse holders shall be equipped with dual-element, time-lag, and current limiting fuses. Provide one (1) spare set of fuses for each size initially installed, with a minimum of three (3) fuses of each size. Spare fuses shall be turned over to the Owner's maintenance supervisor prior to requesting substantial completion inspection.

B. Fuses shall be Gould, Bussman, or approved equivalent.

PART 3 - EXECUTION

3.1 MANUFACTURER’S DIRECTION

A. All electrical gear shall be installed in accordance with the manufacturer’s directions. Contractor shall review these directions prior to rough-in. Should any discrepancies exist between the contract documents and the manufacturer’s direction, contractor shall advise the engineer in writing.

B. All electrical terminations shall be properly tightened to manufacturer’s specifications. Where manufacturer’s specifications are not available, contractor shall refer to the NEC and adjust tightness valves (torque) to the NEC published values.

C. Install all safety switches, breakers, disconnects, etc., in accordance with manufacturer’s directions and maintain all required NEC clearances. Coordinate exact locations in field with applicable contractors.

END OF SECTION 26 27 13

SECTION 26 51 00 – INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions) as appropriate, apply to the Work specified in this Section.

B. Refer to other Electrical specifications, as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

1.2 GENERAL

A. The Contractor shall furnish and install lighting fixtures and accessories as shown on the drawings and/or described herein.

B. Unless otherwise specified, lighting fixtures shall be permanently installed and connected to the wiring system.

C. The Contractor shall support each new fixture independently, from the building structure. Ceiling framing members shall not be used to support fixtures except in specific areas where ceiling supports for this purpose have been specified elsewhere in these specifications.

D. Catalog numbers scheduled on the drawings or descriptions of lighting fixtures contained herein may indicate fixture compatibility with certain types of ceiling construction. The Contractor shall determine exact type of ceilings actually to be furnished in each area and shall obtain fixtures to suit, deviating from specified catalog numbers or descriptions only where necessary, and only to the extent necessary to insure fixture-ceiling compatibility. The Contractor shall notify the Architect/Engineer in writing where such changes are to be made. Contractor shall clean all lighting fixtures of dirt and debris upon completion of project prior to requesting substantial completion inspection.

E. Unless noted otherwise on the drawings, lamps installed in each fixture shall be of the type specifically recommended by the manufacturer of the fixture for use in the fixture. Fixtures shall not be wired with or have any parts constructed using asbestos materials.

PART 2 - PRODUCTS

2.1 EMERGENCY BATTERY PACKS

A. Emergency battery packs shall be provided and installed in all fixtures denoted by the letter “E” appearing at the end of the fixture type designation and where required in the light fixture schedule.

B. Operation of the fixture shall be as follows:

Normal A/C Power	Switch Position	Operation of Lamps/LED’s
On	On	All lamps/LED’s operating
On	Off	All lamps/LED’s off
Off	On	Emergency Lamps/LED’S all operating
Off	Off	Emergency Lamps/LED’s all operating

C. Emergency operation of the light fixture shall provide a minimum total lamp output of 1000 lumens for a minimum time period of ninety (90) minutes.

D. Emergency battery packs shall be as manufactured by Bodine, Iota Engineering Co., or approved equivalent.

E. The Contractor shall be responsible for any additional wiring, conduit, labor, etc., to provide the emergency lighting system specified at no additional cost to the Owner. This includes running of a continuously energized conductor to each and every battery pack.

2.2 LED FIXTURES

A. Manufacturers of LED luminaires shall demonstrate a suitable testing program incorporating high heat, high humidity and thermal shock test regimens to ensure system reliability and to substantiate lifetime claims.

B. The use of IESNA LM-80 data to predict luminaire lifetime is not acceptable.

C. At time of manufacture, electrical and light technical properties shall be recorded for each luminaire. At a minimum, this should include lumen output, CCT, and CRJ. Each luminaire shall utilize a unique serial numbering scheme. Technical properties must be made available for a minimum of 5 years after the date of manufacture.

D. Luminaires shall be provided with a full, non-pro-rated, non-limited, 5-year warranty covering LEDs, drivers, paint and mechanical components.

1. Each luminaire shall consist of an assembly that utilizes LEDs as the light source. In addition, a complete luminaire shall consist of a housing, LED array and electronic driver (power supply).
2. The rated operating temperature range shall be 30°C to +40°C.
3. Each luminaire is capable of operating above 100°F° (37°C), but not expected to comply with photometric requirements at elevated temperatures.
4. Photometry must be compliant with IESNA LF-79 and shall be conducted at 25°C ambient temperature.
5. The individual LEDs shall be constructed such that a catastrophic loss or the failure of one LED will not result in the loss of the entire luminaire.
6. Luminaire shall be constructed such that LED modules may be replaced or repaired without replacement of whole luminaire.
7. Each luminaire shall be listed with Underwriters Laboratory, Inc. under UL 1598 for luminaires, or an equivalent standard from a nationally recognized testing laboratory.
8. Power Consumption: Maximum power consumption allowed for the luminaire shall be determined by application. The luminaire shall not consume power in the off state.
9. Operation Voltage: The luminaire shall operate from a 60 HZ ± 3HZ AC line over a voltage ranging from 108 VAC to 305 VAC. The fluctuation of line voltage shall have no visible effect on the luminous output.
10. Power Factor: The luminaire shall have a power factor of 0.90 or greater.
11. THD: Total harmonic distortion (current and voltage) induced into an AC power line by a luminaire shall not exceed 20 percent.
12. Surge Suppression: The luminaire onboard circuitry shall include fused surge protection devices (SPD) to withstand high repetition noise transients as a result of utility line switching, nearby lightning strikes, and other interference. The SPD shall protect the luminaire from damage and failure for common mode transient peak voltages up to 10 kV (minimum) and transient peak currents up to 5 kA (minimum) SPD shall conform to UL 1449 depending on the components used in

the design. SPD performance shall be tested per the procedures in ANSI/IEEE C62.41-1992 (or current edition for category C (standard). The SPD shall fail in such a way as the luminaire will no longer operate. The SPD shall be field replaceable.

13. Each luminaire shall have integral UL Listed Class II power supplies. Class I power supplies will not be acceptable.
14. Operational Performance: The LED circuitry shall prevent visible flicker to the unaided eye over the voltage range specified above.
15. RF Interference: LED drivers must meet Class A emission limits referred in Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 regulations concerning the emission of electronic noise.
16. Drivers shall have a Class A sound rating.
17. Illuminance: The illuminance shall not decrease by more than 30% over the expected operating life. The measurements shall be calibrated to standard photopic calibrations.
18. Light Color Quality: The luminaire shall have a correlated color temperature (CCT) range of 3500K to 5000K. The color rendition index (CRI) shall be 80 or greater. Binning of LEDS shall conform to ANSI/G.NEMA SSL 3-2010.
19. Backlight –Uplight-Glare: the luminaire shall not allow more than 10 percent of the rated lumens to project above 80 degrees from vertical. The luminaire shall not allow more than 2.5 percent of the rated lumens to project above 90 degrees from vertical. Backlight and Glare ratings as per fixture schedule and calculated per IESNA TM-15.
20. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the luminaire over the expected useful life.
21. The LED manufacturer’s maximum thermal pad temperature for the expected life shall not be exceeded.
22. Thermal management shall be passive by design. The use of fans or other mechanical devices shall not be allowed.
23. The luminaire shall have a minimum heat sink surface such that LED manufacturer’s maximum junction temperature is not exceeded at maximum rated ambient temperature.
24. The heat sink shall be aluminum.
25. The luminaires shall be dimmable from 100 percent output to 0 percent output.
26. Driver shall be integral to the fixture and field replaceable.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All surface mounted fixtures shall be properly anchored so that all sides of the fixture are butted up against the mounting surface. A minimum of two (2) anchors shall be used; however, where additional anchors are required to properly install fixture (all sides evenly spaced from ceiling), the Contractor shall provide and install them at no additional cost to the Owner.

1. Anchor types shall be as follows:

Mounting Surface Material	Anchor type
* Gypsum board (wall)	Toggle bolts or blocking with screws
Gypsum board (ceiling)	Expansion type anchor
Concrete/concrete block	Expansion type anchor
** Wood	Screws

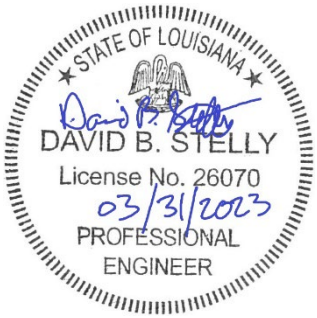
*Anchor type shall be determined in field by Architect/Engineer as dictated by fixture weight.

** Any fixture installed on combustible material shall be installed on ½ minimum spacers unless prior approved, otherwise in writing by Architect/Engineer.

B. All recessed fixtures in suspended ceiling shall be supported by a minimum of two (2) support wires, at opposite corners of the fixture. Each support wire shall be continuous without splices to the building structure and separately anchored. Fixture support wires shall support only the light fixture and not the ceiling. Surface mounted fixtures installed on lay-in ceiling shall be supported as lay-in fixtures. Refer to details for additional requirements.

END OF SECTION 26 51 00

SECTION 26 56 00 - EXTERIOR LIGHTING



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes exterior lighting fixtures, lamps, ballasts, and accessories.

B. Where a “Standard Specification” (i.e., ANSI, UL, etc.) is referenced and no manufacturers are listed the Contractor shall submit manufacturers for Prior Approval in adherence with the specified standard.

1.3 DEFINITIONS

A. Fixture: A complete lighting unit. Fixtures include LED’s and drivers and parts required to distribute the light and connect to the power supply.

B. Lighting Unit: A fixture, or an assembly of fixtures with a common support and support accessories.

C. Luminaire: A fixture.

1.4 SUBMITTALS

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

B. Product data describing fixtures and accessories. Arrange product data for fixtures in order of fixture designation. Include data on features, accessories, and the following:

1. Outline drawings of fixtures indicating dimensions and principal features.

C. Maintenance data for products for inclusion in Operating and Maintenance Manual specified in Division 1.

1.5 QUALITY ASSURANCE

A. Comply with NFPA 70 "National Electrical Code" for components and installation.

B. Comply with ANSI C2, "National Electrical Safety Code."

C. Listing and Labeling: Provide fixtures and accessories that are listed and labeled for their indicated use and location on the Project.

1. The Terms "Listed" and "Labeled": As defined in the "National Electrical Code," Article 100.
2. Listing and Labeling Agency Qualification: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

D. Manufacturers' Qualifications: Firms experienced in manufacturing lighting units that are similar to those indicated for this Project and that have a record of successful in-service performance.

PART 2 - PRODUCTS

2.1 FIXTURE COMPONENTS, GENERAL

A. Metal Parts: Free from burrs and sharp edges and corners.

B. Sheet Metal Components: Corrosion-resistant aluminum, except as indicated. Form and support to prevent warping and sagging.

C. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed fixtures.

D. Doors, Frames, and Other Internal Access Provisions: Smooth operating, free from light leakage under operating conditions, and arranged to permit relamping without use of tools. Arrange doors, frames, lenses, diffusers, and other pieces to prevent accidental falling during relamping and when secured in the operating position. Provide for door removal for cleaning or replacing lens. Arrange for door opening to disconnect ballast.

E. Exposed Hardware Material: Stainless steel.

F. Reflecting Surfaces: Minimum reflectances as follows, except as otherwise indicated:

1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.

G. Lenses and Refractors: Materials as indicated. Use heat- and aging-resistant, resilient gaskets to seal and cushion lens and refractor mounting in fixture doors.

2.2 LED FIXTURES

A. Each luminaire shall consist of an assembly that utilizes LEDS as the light source. In addition, a complete luminaire shall consist of a housing, LED array, and electronic driver (power supply).

B. Each luminaire shall be rated for a minimum operational life of 50,000 hours at an average operating time of 11.5 hours per day. This life rating must be conducted at 40C ambient temperature.

C. The individual LEDS shall be constructed such that a catastrophic loss or the failure of one LED will not result in the loss of the entire luminaire.

D. Luminaire shall be constructed such that LED modules may be replaced or repaired without replacement of whole luminaire.

E. Each luminaire shall be listed with Underwriters Laboratory, Inc. Under UL 1598 for luminaires or an equivalent standard from a nationally recognized testing laboratory.

F. Operation Voltage: The luminaire shall operate from a 60 HZ±3 HZ AC line over a voltage ranging from 108 VAC to 305 VAC. The fluctuations of line voltage shall have no visible effect on the luminous output.

G. Power factor: The luminaire shall have a power factor of 0.90 or greater.

H. Surge Suppression: The luminaire onboard circuitry shall include fused surge protection devices (SPD) to withstand high repetition noise transients as a result of utility line switching, nearby lightning strikes and other interference. The SPD shall protect the luminaire from damage and failure for common mode transient peak voltages up to 10 kV (minimum) and transient peak currents up to 5 kA (minimum). SPD shall conform to UL 1449 depending on the components used in the design. SPD performance shall be tested per the procedures in ANSI/IEEE C62.41-1992 (or current edition) for Category C (standard). The SPD shall fail in such a way as the luminaire will no longer operate. The SPD shall be replaceable.

I. Each luminaire shall have integral UL Listed Class II power supplies. Class I power supplies will not be acceptable.

J. Drivers shall have a Class A sound rating.

K. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the luminaire over the expected useful life.

L. The LED manufacturer’s maximum thermal pad temperature for the expected life shall not be exceeded.

M. Thermal management shall be passive by design. The use of fans or other mechanical devices shall not be allowed.

N. The luminaire shall have a minimum heat sink surface such that LED manufacturer’s maximum junction temperature is not exceeded at maximum rated ambient temperature

O. The heat sink material shall be aluminum.

P. The luminaire shall be a single, self-contained device, not requiring on-site assembly for installation. The power supply for the luminaire shall be integral to the unit.

Q. LED luminaires shall include 10-year warranty including labor to replace said drivers or fixtures for 10-year period.

2.3 FINISH

A. Metal Parts: Manufacturer's standard finish except as otherwise indicated. Finish applied over corrosion-resistant primer, free of streaks, runs, holidays, stains, blisters, and similar defects. Remove poles, fixtures, and accessories showing evidence of corrosion or finish failure during Project warranty period and replace with new items.

B. Other Parts: Manufacturer's standard finish except as otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set units plumb, square, level, and secure according to manufacturer's written instructions and shop drawings.

B. Fixture Attachment: Fasten to structural supports.

C. Fixture Attachment with Adjustable Features or Aiming: Attach fixtures and supports to allow aiming for indicated light distribution.

3.2 FIELD QUALITY CONTROL

A. Inspect installed units for damage.

B. Tests: Verify normal operation of lighting units after installing fixtures and energizing circuits with normal power source.

C. Replace or repair damaged and malfunctioning units and retest.

3.3 ADJUSTING AND CLEANING

A. Clean components on completion of installation. Use methods and materials recommended by manufacturer.

B. Adjust aimable fixtures to provide required light intensities.

END OF SECTION 26 56 00

SECTION 31 31 16 - TERMITE CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Soil treatment with termiticide.

B. See Section 06 10 00 "Rough Carpentry" for wood preservative treatment by pressure process.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include the EPA-Registered Label.

B. Product certificates.

C. Soil Treatment Application Report: Include the following:

1. Date and time of application.
2. Moisture content of soil before application.
3. Brand name and manufacturer of termiticide.
4. Quantity of undiluted termiticide used.
5. Dilutions, methods, volumes, and rates of application used.
6. Areas of application.
7. Water source for application.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located, and who employs workers trained and approved by bait-station system manufacturer to install manufacturer's products.

B. Regulatory Requirements: Formulate and apply termiticides according to the EPA-Registered Label.

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

1. Warranty Period: five years from date of Recommendation of Acceptance.

1.5 MAINTENANCE SERVICE

A. Continuing Service: Beginning at Recommendation of Acceptance, provide 12 months' continuing service including monitoring, inspection, and re-treatment for occurrences of termite

activity. Provide a standard continuing service agreement. State services, obligations, conditions, and terms for agreement period; and terms for future renewal options.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Termiticides:

a. Aventis Environmental Science USA LP; Termidor.

b. Bayer Corporation; Premise 75.

c. Dow AgroSciences LLC; Dursban TC.

d. FMC Corporation, Agricultural Products Group; Prevail FT.

e. Syngenta; Demon TC.

2.2 SOIL TREATMENT

A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to product's EPA-Registered Label.

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.

B. Soil Treatment Preparation: Loosen, rake, and level soil to be treated except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.

3.2 APPLYING SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute treatment evenly.

1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.

2. Foundations: Adjacent soil including soil along the entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric

conduit penetrating the slab, and around interior column footers, piers, and chimney bases; also along the entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.

3. Crawlspaces: Soil under and adjacent to foundations as previously indicated. Treat adjacent areas including around entrance platform, porches, and equipment bases. Apply overall treatment only where attached concrete platform and porches are on fill or ground.

4. Masonry: Treat voids.

5. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.

B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

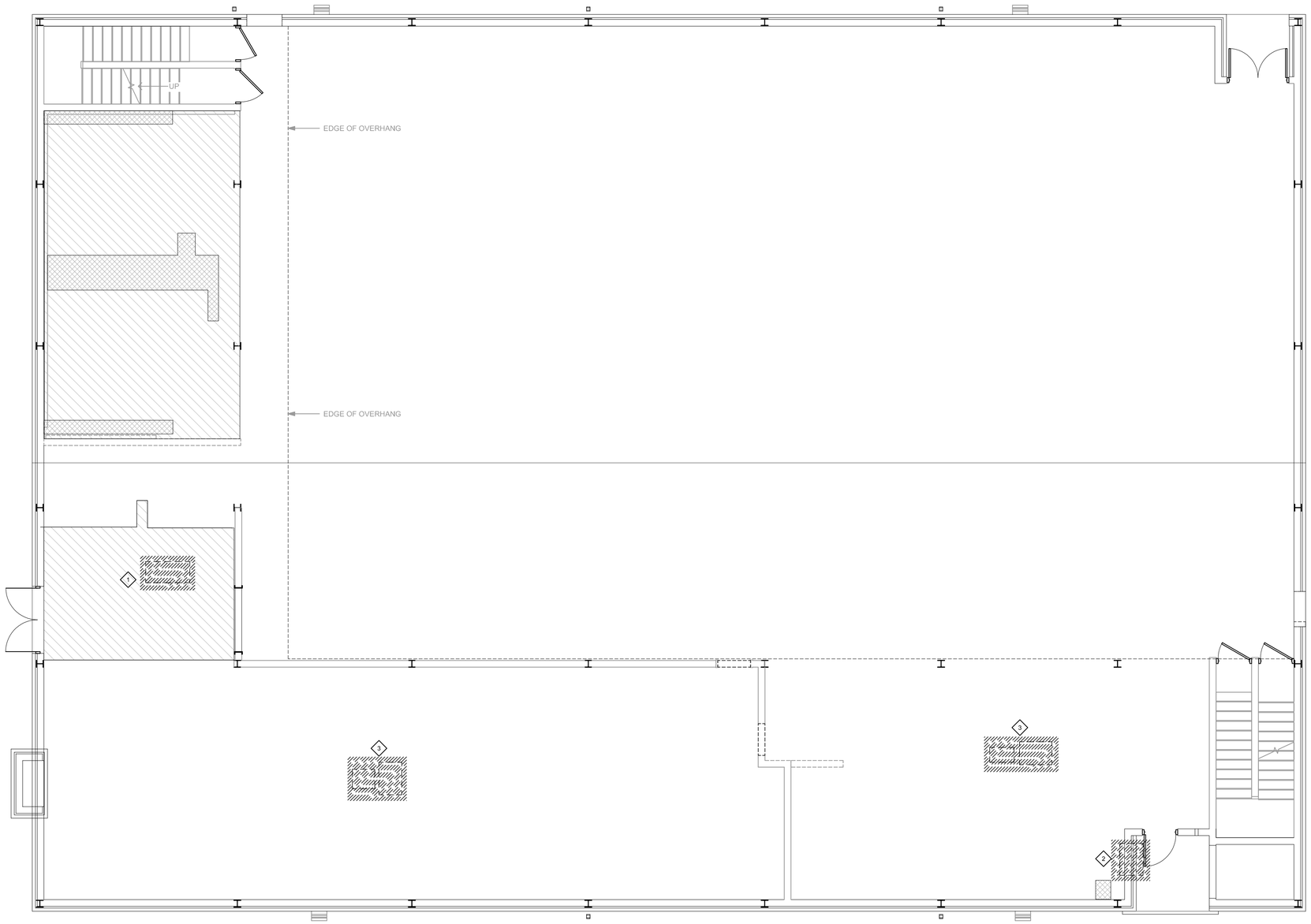
D. Post warning signs in areas of application.

E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 31 31 16

MECHANICAL DEMOLITION KEYNOTES:

1. REMOVE EXISTING FAN COIL UNIT, DUCTWORK, CONTROLS, PIPING, ETC.
2. REMOVE EXISTING WINDOW A/C UNIT. PATCH HOLE IN WALL TO MATCH EXISTING WALL.
3. REMOVE EXISTING DUCT DROP THROUGH 2ND FLOOR BACK UP TO MAIN DUCT. CAP AND INSULATE WHERE REMOVED.



16 1ST FLOOR MECHANICAL DEMOLITION PLAN
3/16" = 1'-0"

PLAN NORTH

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Project No. 23061

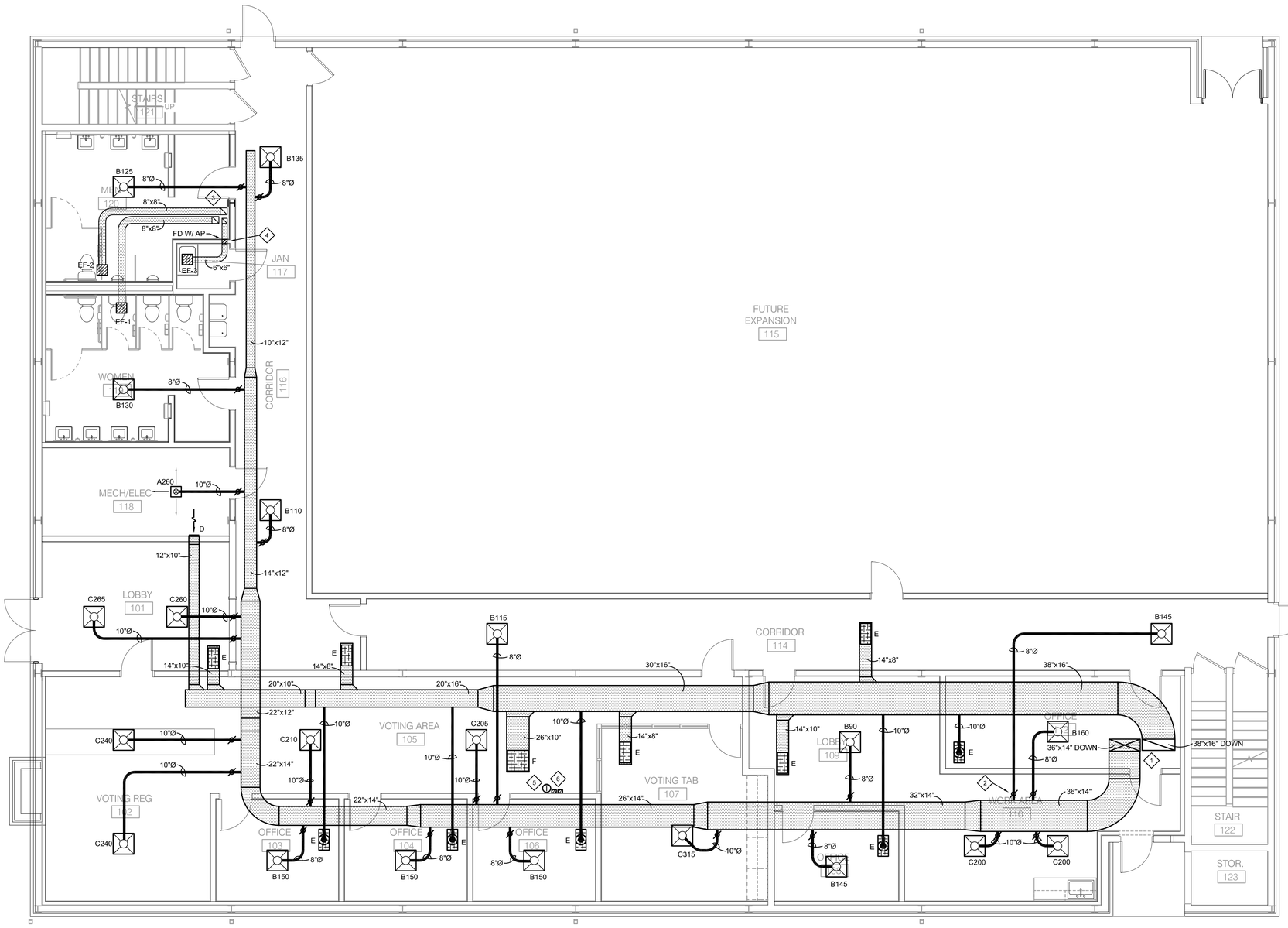
RENOVATION
BPPJ ANNEX BUILDING
FOR
BPPJ
219 WEST 2ND ST. DERIDDER, LA 70634

PROJECT NO.
22029
PROJECT MANAGER
DATE ISSUED
03-31-2023
REVISED

SHEET NUMBER
M-101
1ST FLOOR
MECHANICAL DEMO

MECHANICAL KEYNOTES:

1. DROP DOWN WITH SUPPLY AND RETURN DUCTWORK FROM 2ND FLOOR ABOVE RUN AT MAX HEIGHT BELOW JOISTS AND ABOVE NEW 1ST FLOOR CEILING WITH INSULATION AND NEW HANGERS.
2. PROVIDE SPIN COLLAR WITH MANUAL BALANCING DAMPER. BALANCE TO CFM SHOWN. (TYPICAL)
3. DROP DOWN WITH EXHAUST DUCTWORK FROM 2ND FLOOR ABOVE RUN AT MAX HEIGHT BELOW JOISTS AND ABOVE NEW 1ST FLOOR CEILING WITH INSULATION AND NEW HANGERS. PROVIDE NEW EXHAUST FANS IN RESTROOMS AND JANITOR CLOSET AND CONNECT TO NEW EXHAUST DUCTWORK UP TO ROOF.
4. PROVIDE FIRE DAMPER WITH ACCESS PANEL AT RATED WALL PENETRATION.
5. INSTALL THERMOSTAT AT ADA HEIGHT. COORDINATE EXACT LOCATION IN FIELD WITH ARCHITECT PRIOR TO ROUGH-IN.
6. INSTALL REMOTE AUDIBLE AND VISUAL INDICATORS FOR SUPPLY AND RETURN DUCT DETECTORS NEXT TO THERMOSTAT. PROVIDE PERMANENT PHENOLIC LABELS FOR DUCT DETECTOR ALARMS. REFER TO KEYNOTE 2 ON SHEET M-202.



16 1ST FLOOR MECHANICAL PLAN
3/16" = 1'-0"

PLAN NORTH

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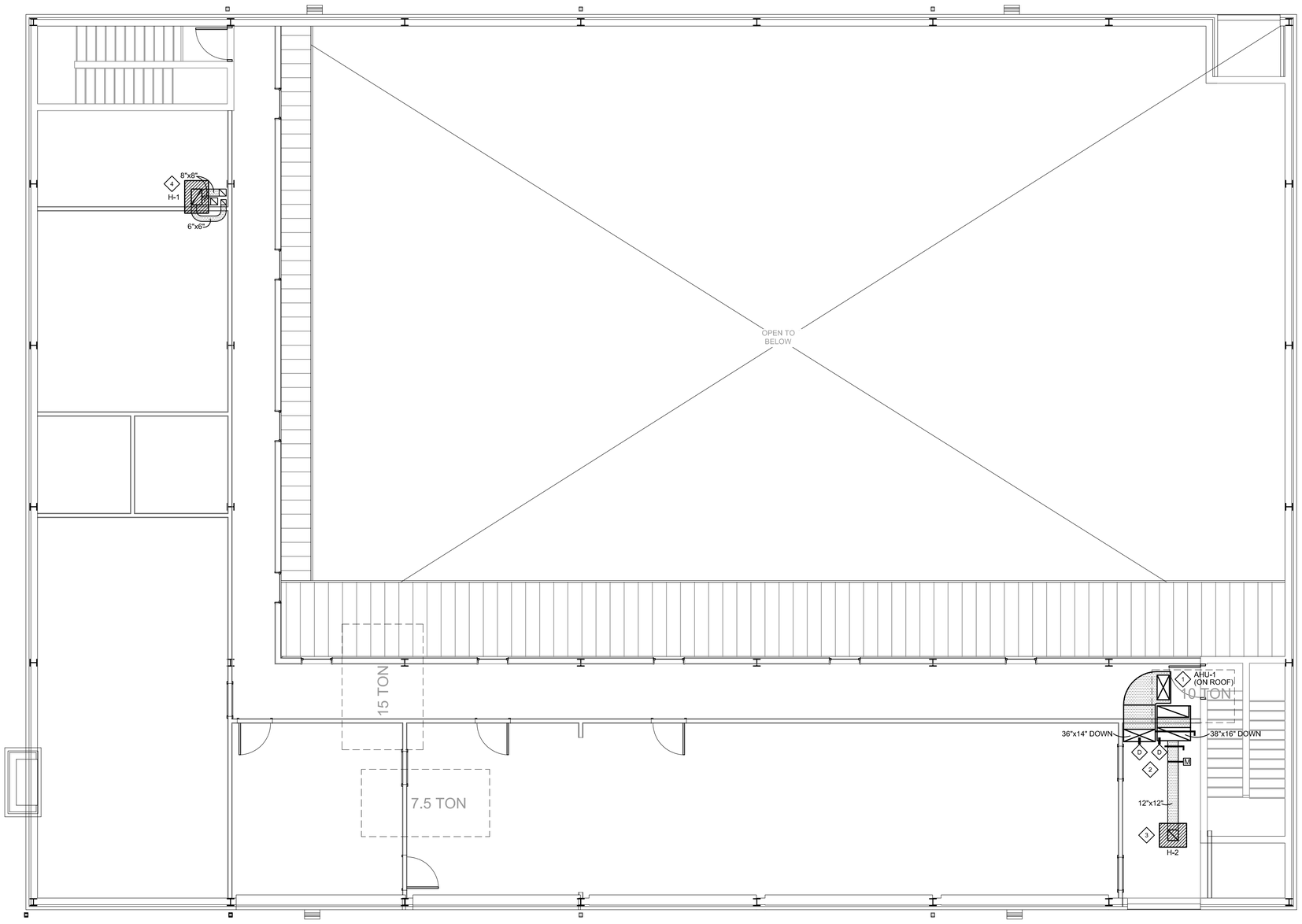
1ST FLOOR
MECHANICAL PLAN



16 2ND FLOOR MECHANICAL PLAN
3/16" = 1'-0"

PLAN NORTH

MECHANICAL KEYNOTES:

1. REMOVE ALL EXISTING SUPPLY AND RETURN DUCTWORK AND INSULATION FOR THE EXISTING 10-TON PACKAGED ROOFTOP A/C UNIT. CONNECT NEW SUPPLY AND RETURN DUCT TO THE EXSTING ROOFTOP A/C UNIT, OFFSET AT MAXIMUM HEIGHT ABOVE FUTURE 2ND FLOOR CEILING HEIGHT, AND DROP DOWN IN CHASE TO 1ST FLOOR BELOW. OFFSET/ROTATE DUCT DROPS AS REQUIRED TO AVOID FLOOR JOISTS. PROVIDE NEW DUCT INSULATION. REFER TO SHEET M-201 FOR CONTINUATION ABOVE 1ST FLOOR CEILING.
2. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL DUCT SMOKE DETECTORS (120-1-60 ELEC SERVICE) IN SUPPLY AND RETURN DUCT DROPS. PROVIDE REMOTE AUDIBLE AND VISUAL INDICATORS FOR DUCT DETECTORS NEXT TO THE THERMOSTAT ON THE 1ST FLOOR WITH LABELS TO INDICATE DUCT SMOKE DETECTOR ALARM. REFER TO DETAIL 7 ON SHEET M-301. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
3. PROVIDE NEW OUTSIDE AIR INTAKE HOOD ON ROOF WITH INSULATED ROOF CURB. COORDINATE INSTALLATION WITH ROOFING CONTRACTOR. RUN OUTSIDE AIR DUCT BELOW ROOF AND CONNECT TO RETURN DUCT. PROVIDE MOTORIZED OUTSIDE AIR DAMPER (120-1-60 ELEC SERVICE) INTERLOCKED TO OPEN WHEN A/C UNIT IS RUNNING AND SHUT WHEN A/C UNIT IS OFF. PROVIDE MANUAL BALANCING DAMPERS IN OUTSIDE AIR DUCT AND RETURN DUCT. RETURN DAMPER SHALL BE BELOW OUTSIDE AIR DAMPER CLOSER TO 1ST FLOOR. BALANCE AS SCHEDULED.
4. PROVIDE NEW EXHAUST HOOD ON ROOF WITH INSULATED ROOF CURB. COORDINATE INSTALLATION WITH ROOFING CONTRACTOR. DROP DOWN IN CHASE WITH INSULATED EXHAUST DUCTS TO 1ST FLOOR BELOW. REFER TO SHEET M-201 FOR CONTINUATION ON 1ST FLOOR.

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SHEET NUMBER
M-202
2ND FLOOR
MECHANICAL PLAN

PACKAGED A/C UNIT SCHEDULE

UNIT					FAN						COOLING							HEATING					
UNIT No.	SERVICE	UNIT MOP	ELECTRIC SERVICE	SEER	MIN CFM	CFM FA	STATIC PRES EXT	STATIC PRES TOTAL	FAN HP	TOTAL BTUH CAPACITY	SENSIBLE BTUH CAPACITY	ENT (F) DB	ENT (F) WB	LAT (F) DB	LAT (F) WB	AMB TEMP F	EVAP TEMP F	HEATING INPUT (BTUH)	HEATING OUTPUT (BTUH)	FUEL TYPE	ENT AIR (F)	LEAV AIR (F)	REMARKS
AHU-1	1ST FLOOR - PHASE 1	60A	208-230/60/3	--	4000	500	0.8"	--	2	120,000	90,000	76.6	65.3	54.8	53.9	95	45	210,000	168,000	NATURAL GAS	64.4	103.2	EXISTING DAIKIN DBG1203VH00001SAA TO REMAIN
																							BALANCE SUPPLY, RETURN, AND OUTSIDE AIR.

FAN SCHEDULE

No	SERVICE	MIN CFM	EXT. SP	RPM	SONES	FAN HP	TYPE	DRIVE	ELECTRIC SERVICE	CONTROL	REMARKS
EF-1	WOMEN'S RR	200	0.5"	1401	5.5	60W	CENT	ECM	120-1-60	(1)	COOK GCVF-180 OR APPROVED EQUAL (2,3)
EF-2	MEN'S RR	150	0.5"	1198	4.0	35W	CENT	ECM	120-1-60	(1)	COOK GCVF-180 OR APPROVED EQUAL (2,3)
EF-3	JANITOR	75	0.5"	975	2.0	15W	CENT	ECM	120-1-60	(1)	COOK GCVF-100 OR APPROVED EQUAL (2,3)

(1) PROVIDE CEILING MOUNTED OCCUPANCY CONTROL SENSOR WITH 5 MINUTE TIMER INDEPENDENT OF LIGHTSWITCH. (PROVIDED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR)
(2) PROVIDE ECM CONTROLLER AND BALANCE TO CFM SCHEDULED.
(3) PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST FANS.

GRILLE SCHEDULE

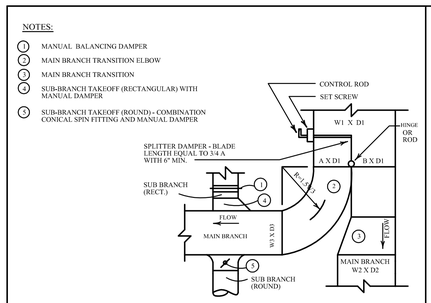
SYMBOL	SIZE	SERVICE	LOCATION	FINISHED	REMARKS
A	12"X12"	SUPPLY	CEILING	WBE	TITUS TDC-AA, FRAME 6, B3 PATTERN OR APPROVED EQUAL (2)
B	24"X24" / 8"Ø	SUPPLY	CEILING	WBE	TITUS TMS-3 OR APPROVED EQUAL (1)
C	24"X24" / 10"Ø	SUPPLY	CEILING	WBE	TITUS TMS-3 OR APPROVED EQUAL (1)
D	12"X12"	RETURN	SIDEWALL	WBE	TITUS 350FL OR APPROVED EQUAL (1)
E	24"X12"	RETURN	CEILING	WBE	TITUS 50F-3 WITH REMOVABLE CORE OR APPROVED EQUAL
F	24"X24"	RETURN	CEILING	WBE	TITUS 50F-3 WITH REMOVABLE CORE OR APPROVED EQUAL

(1) PROVIDE FACTORY INSULATION ON TOP OF DIFFUSER TAPED AT PERIMETER
(2) PROVIDE INSULATED SQUARE TO ROUND ADAPTER.

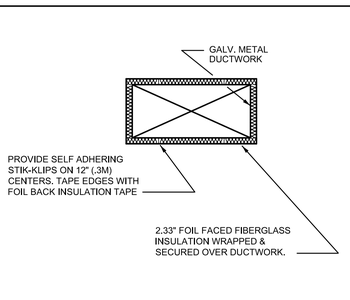
ROOF HOOD SCHEDULE

No	SERVICE	CFM	THROAT SIZE	S.P. DROP	REMARKS
H-1	**EXHAUST**	**425**	**12"x18"**	**0.02"**	**COOK MODEL GR OR APPROVED EQUAL *, **, *****
H-2	**OUTSIDE AIR**	**500**	**12"x18"**	**0.02"**	**COOK MODEL GI OR APPROVED EQUAL *, **, *****

* PROVIDE BIRD SCREEN, REMOVABLE INSECT SCREEN, AND BACKDRAFT DAMPER. TRANSITION DUCT TO HOOD INLET SIZE.
** PROVIDE INSULATED ROOF CURB. ROOF CURB EXTERNAL SHALL BE COMPATIBLE WITH ROOF WARRANTY. COORDINATE WITH ROOFING CONTRACTOR.
*** PROVIDE KYNAR FINISH FOR HOOD AND CURB. MATCH ROOF COLOR.



1 DAMPER DETAIL
NO SCALE



2 EXTERNAL DUCT INSULATION DETAIL
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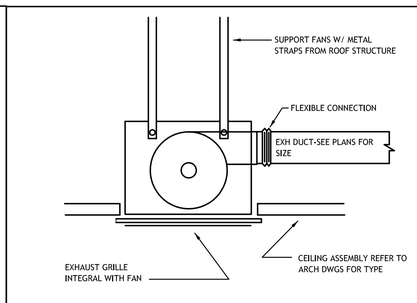
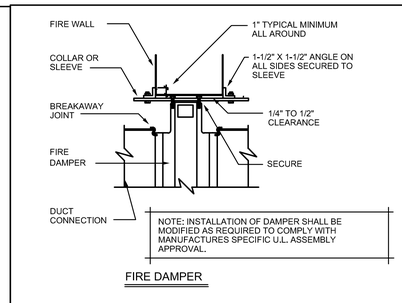
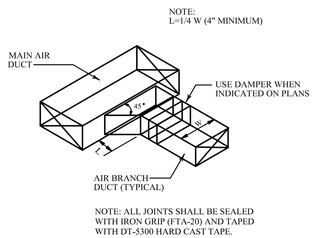


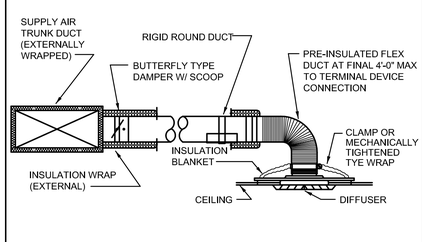
3 CEILING MOUNTED EXHAUST FAN DETAIL
NO SCALE



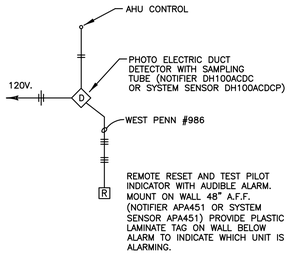
4 FIRE DAMPER INSTALLATION DETAIL
NO SCALE



5 SUPPLY OR RETURN AIR DUCT DETAIL
NO SCALE



6 DIFFUSER/DUCT INSTALL DETAIL
NO SCALE



7 DUCT DETECTOR DETAIL
NO SCALE

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RENOVATION
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PROJECT NO.
22029
PROJECT MANAGER

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03-31-2023

REVISED

SHEET NUMBER
M-301
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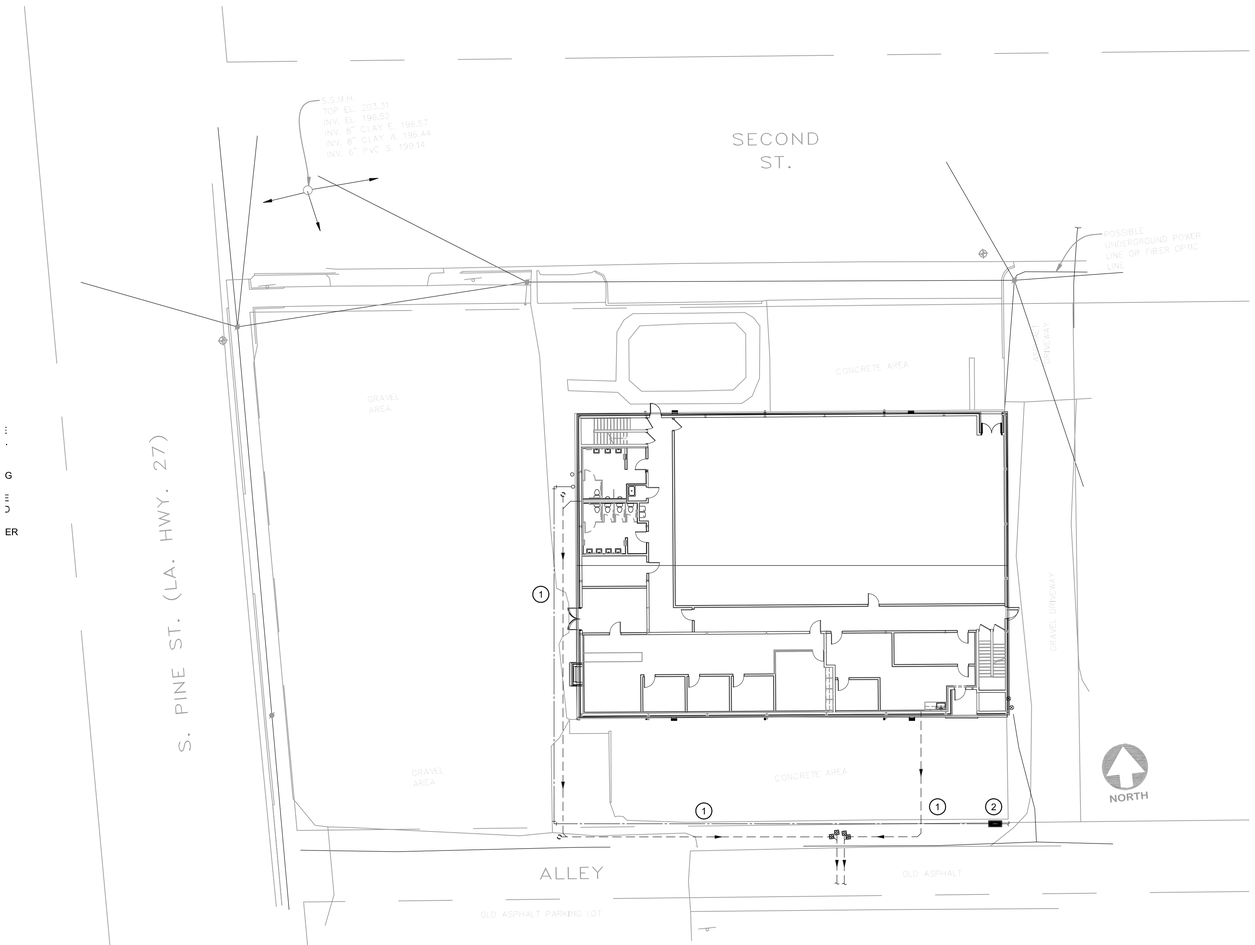
Project No. 23061



16 PLUMBING SITE PLAN
1" = 20'

PLUMBING KEYNOTES:

1. LOCATIONS OF EXISTING SEWER AND WATER LINES BELOW GRADE ARE APPROXIMATE/ASSUMED BASED ON CONVERSATIONS WITH THE OWNER'S STAFF (NOT CONFIRMED) AND ARE FOR REFERENCE ONLY. FIELD VERIFY WITH PROBING AND DIGGING AS REQUIRED.

2. PROVIDE NEW 2" DOUBLE CHECK VALVE ABOVE GRADE FOR EXISTING 2" WATER LINE DOWNSTREAM FROM THE WATER METER. (WILKINS 950XLT2 LEAD FREE DOUBLE CHECK VALVE ASSEMBLY WITH BRONZE STRAINER OR APPROVED EQUAL.) RISE UP/DROP DOWN BELOW GRADE AND CONNECT TO EXISTING WATER LINE. PROVIDE HEATED AND INSULATED ENCLOSURE WITH CONCRETE SLAB TO COVER THE NEW BACKFLOW PREVENTER. (SAFE-T-COVER OR APPROVED EQUAL WITH 90W HEATER CABLE, 120-1-60 ELEC SERVICE AND THERMOSTAT.)

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4/12/23

RENOVATION
BPPJ ANNEX BUILDING
FOR
BPPJ
219 WEST 2ND ST. DERIDDER, LA 70634

PROJECT NO.
22029
PROJECT MANAGER

DATE ISSUED
03-31-2023
REVISED

SHEET NUMBER
P-100
PLUMBING SITE PLAN

ADG ENGINEERING
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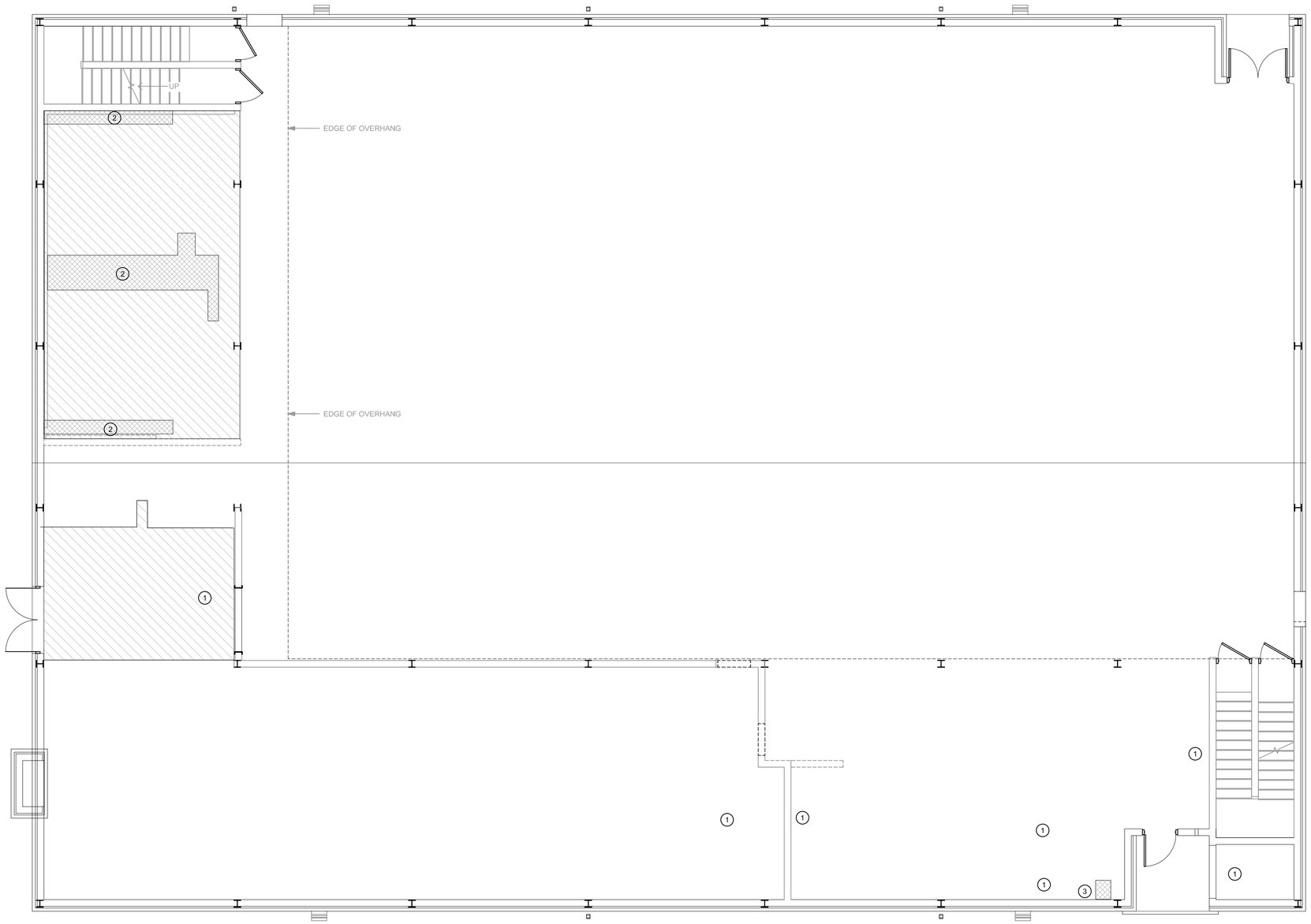
Project No. 23061

PLUMBING DEMOLITION KEYNOTES:

1. REMOVE EXISTING SEWER WASTE, SEWER VENT, DOMESTIC WATER, NATURAL GAS PIPING, PLUMBING FXTURES, DRAINS, NOT USED FOR NEW CONSTRUCTION AND CAP EXISTING SERVICES BEHIND NEW FINISHED SURFACES. FIELD VERIFY EXTENT OF PLUMBING DEMOLTION REQUIRED.
2. REFER TO SHEET P-201 FOR MODIFICATION OF EXISTING SEWER SERVICES BELOW SLAB.
3. EXISTING SEWER WASTE AND VENT STACK TO REMAIN FOR NEW SINK SHOWN ON SHEET P-201.



16 1ST FLOOR PLUMBING DEMOLITION PLAN
3/16" = 1'-0"

PLAN NORTH

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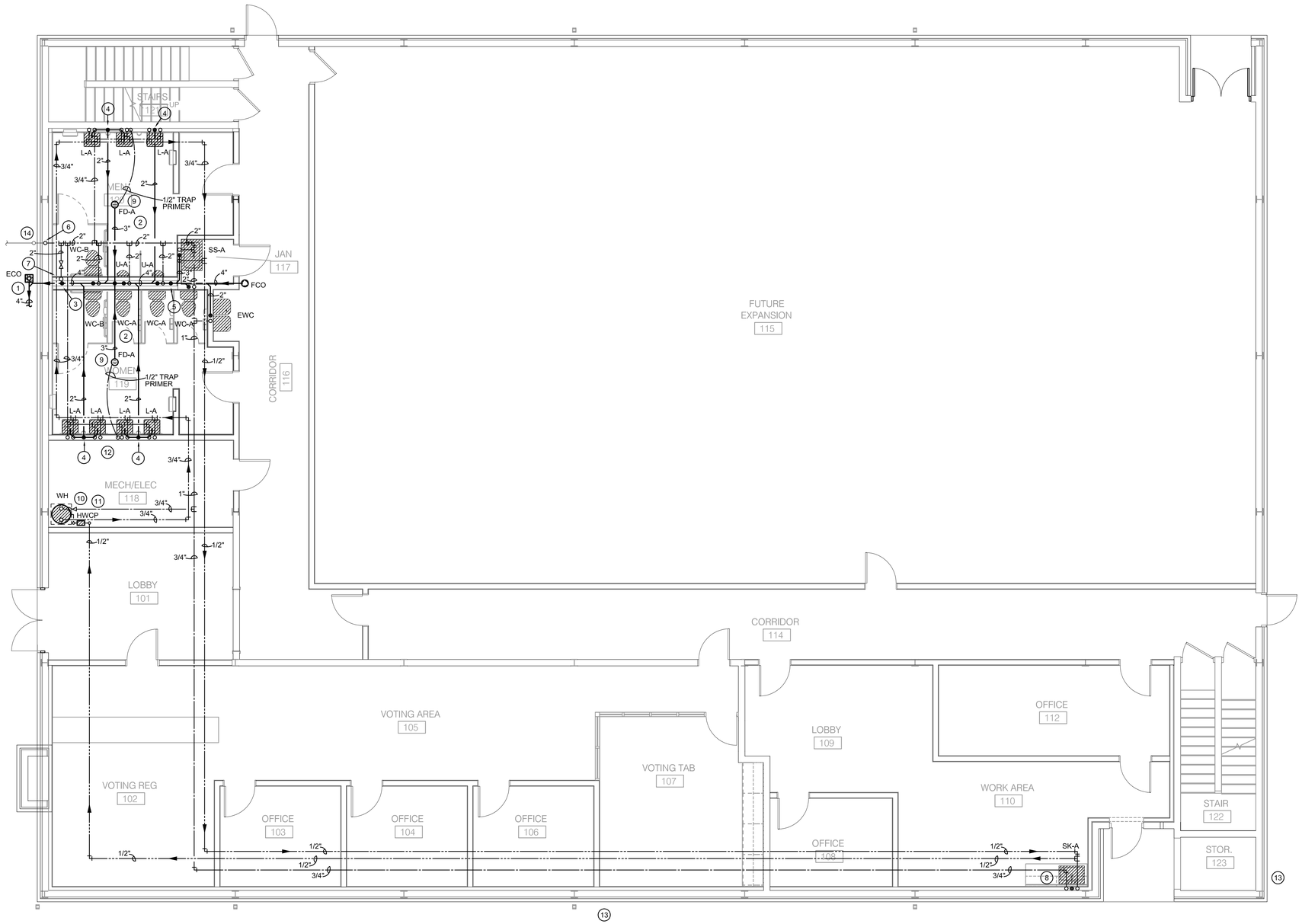
1ST FLOOR
PLUMBING DEMO



16 1ST FLOOR PLUMBING PLAN
3/16" = 1'-0"

PLAN NORTH

PLUMBING KEYNOTES:

1. CONNECT TO EXISTING SEWER LINE OUTSIDE OF BUILDING. VERIFY INVERT IN FIELD PRIOR TO ROUGH-IN. REPLACE EXISTING DAMAGE/CORRODED CAST IRON PIPE AND CLEANOUT WITH NEW.
2. RUN NEW SEWER LINES BELOW SLAB IN BUILDING AS SHOWN. VERIFY EXISTING INVERTS IN FIELD PRIOR TO ROUGH-IN. SOME EXISTING SEWER ALREADY INSTALL BUT MAY NOT MATCH THE NEW LAYOUT. BREAK AND PATCH SLAB TO MATCH EXISTING AS REQUIRED FOR NEW FIXTURE INSTALLATION.
3. PROVIDE 4" DROP CAPPED ABOVE 2ND FLOOR FOR FUTURE 2ND FLOOR RESTROOMS.
4. PROVIDE 2" DROP CAPPED ABOVE 2ND FLOOR FOR FUTURE 2ND FLOOR RESTROOMS. RISE UP TO ROOF AND PROVIDE NEW 3" VENT THROUGH ROOF.
5. RISE UP TO 2ND FLOOR WITH 4" VENT IN THIS LOCATION AND RISE UP THROUGH ROOF WITH 4" VENT. CONNECT ALL NEW VENTS ON 1ST FLOOR TO THIS LOCATION PRIOR TO RISING UP THROUGH ROOF. COORDINATE ROOF PENETRATION AND LEAD FLASHING FLASHING WITH ROOFING CONTRACTOR.
6. CONNECT NEW 2" WATER LINE TO EXISTING 2" WATER LINE IN WALL. RISE UP TO ABOVE CEILING WITH INSULATED WATER LINE AND CONTINUE ABOVE CEILING WITH NEW WATER LINES WITH HANGERS AS SHOWN.
7. RISE UP TO 2ND FLOOR WITH 2" CAPPED WATER LINE FOR FUTURE 2ND FLOOR RESTROOMS.
8. CONNECT NEW SINK TO EXISTING SEWER WASTE AND VENT STACK. VERIFY FUNCTION OF EXISTING SEWER WASTE AND VENT STACK PRIOR TO CONNECTION. PROVIDE NEW HOT AND COLD WATER SERVICES.
9. TAP OFF LAVATORY P-TRAP WITH 1/2" CHROME LINE TO WALL AND CONTINUE IN WALL WITH 1/2" SOFT COPPER LINE TO BELOW GRADE TO TRAP PRIMER CONNECTION ON FLOOR DRAIN. ALL EXPOSED SUPPLY LINE SHALL BE CHROME (DEARBORN 831-1 OR EQUAL P-TRAP TYPE).
10. PROVIDE HOT WATER HEATER AS SCHEDULED ON MIN. 18" GALVANIZED STEEL STAND (MAINLINE MLWH2121 OR APPROVED EQUAL) IN DRAIN PAN. RUN COPPER WATER HEATER RELIEF LINE AND DRAIN PAN DRAIN LINE THROUGH EXTERIOR WALL. SEAL WALL PENETRATIONS WEATHER TIGHT.
11. PROVIDE HOT WATER CIRCULATOR. PROVIDE CUTOFF VALVE, CHECK VALVE, TIMER AND AQUASTAT. REFER TO DETAIL.
12. AVOID RUNNING NEW DOMESTIC COLD AND HOT WATER LINES ABOVE ELECTRICAL GEAR AND DATA RACKS IN THIS SPACE.
13. CONNECT NEW 3/4" WATER LINES CONCEALED IN NEW WALLS TO EXISTING HOSE BIBBS ON EXTERIOR WALLS. PROVIDE CUTOFF VALVE ABOVE ACCESSIBLE CEILING.
14. PROVIDE NEW 1-1/2" INSULATION WITH ALUMINUM JACKET FOR EXPOSED WATER RISE AND HOSE BIBB ABOVE GRADE.

NOTE:

THE OWNER HAS SOME EXISTING NEW FIXTURES ON SITE THAT THE PLUMBING CONTRACTOR SHALL USE AND INSTALL. PROVIDE VALVES, FAUCETS, FLUSH VALVES, SUPPLIES, TRAPS, FITTINGS, ETC. FOR A COMPLETE WORKING INSTALLATION. THE PLUMBING CONTRACTOR SHALL PROVIDE ADDITIONAL NEW PLUMBING FIXTURES TO COVER QUANTITIES SHOWN ON THIS PLAN AS SCHEDULED ON SHEET P-301. EXISTING NEW FIXTURE LIST AVAILABLE FOR USE AS FOLLOWS:

1. Sloan Regal Flushometer – Model 186 Product Code 3082675 – 4 total
2. Bemis Elongated Plastic Toilet Seat – 7B1955CT – 50073088025437 – 6 total
3. Fast Fit Undersink plping cover – LAVGuard2 – 102EZ - 8 total
4. Johni-Ring Wax Gasket – 90210 – 3262890210 – 7 total
5. Original Johni Bolt – 90124- 3262890124 – 5 Total
6. Single Handle Bathroom Centerset Faucet – 54195 – 3444958161 – 3 total
7. Two Handle Washerless Laundry Faucet – 86371 – 1 total
8. American Standard Madera EL top spud bowl – 2234001.020 – 3305683091 – 4 total
9. American Standard Madera RLT Top Spud Bowl – 3043001.020 – 3305683095 – 2 total
10. American Standard Lucerne wall hung lavy – 20" x 18" – 0355012.020 – 3305604399 – 4 total
11. American Standard Washbrook Flowise Wall Hung Urinal – 6590001.020 – 33056 85294 – 3 total

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SHEET NUMBER
P-201
1ST FLOOR
PLUMBING PLAN

PLUMBING FIXTURE SCHEDULE

MARK DESCRIPTION	MFGRS & MODEL NUMBERS	SERVICES (INCHES) WASTE	VENT	HW	CW	REMARKS
WC-A WATER CLOSET FLOOR MOUNT	AMERICAN STANDARD MADERA 15" SLOAN - REGAL 111-1.6 BEMIS 1955	4"	3"	--	1"	WHITE, VITREOUS CHINA, ELONGATED BOWL, SIPHON JET 1.6 GAL FLUSH FLOOR MOUNT WATER CLOSET WITH ELONGATED BOWL AND 1-1/2" TOP SPUD AND BOLT CAPS, WHITE OPEN FRONT SEAT/LESS COVER WITH STAINLESS STEEL CHECK HINGE, AND 1.6 GALLON FLUSH VALVE WITH VACUUM BREAKER AND STOP. INSTALL FLUSH VALVE HANDLE ON WIDE SIDE OF STALL.
WC-B WATER CLOSET FLOOR MOUNT ADA	AMERICAN STANDARD MADERA 16-1/2" SLOAN - REGAL 111-1.6 BEMIS 1955	4"	3"	--	1"	WHITE, VITREOUS CHINA, ADA COMPLIANT, ELONGATED BOWL, SIPHON JET 1.6 GAL FLUSH FLOOR MOUNT WATER CLOSET WITH ELONGATED BOWL AND 1-1/2" TOP SPUD AND BOLT CAPS, WHITE OPEN FRONT SEAT/LESS COVER WITH STAINLESS STEEL CHECK HINGE, AND 1.6 GALLON FLUSH VALVE WITH VACUUM BREAKER AND STOP. INSTALL FLUSH VALVE HANDLE ON WIDE SIDE OF STALL.
U-A URINAL ADA	AMERICAN STANDARD WASHBROOK SLOAN REGAL 186-1.0 WADE W-401	2"	2"	--	3/4"	WHITE, VITREOUS CHINA, SIPHON JET ACTION URINAL W/ 3/4" TOP SPUD. BEEHIVE STRAINER, 1.0 GALLON FLUSH VALVE WITH VACUUM BREAKER AND STOP. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS TO COMPLY WITH ADA REQUIREMENTS. PROVIDE FLOOR MOUNTED CARRIER.
L-A LAVATORY WALL HUNG ADA	AMERICAN STANDARD LUCERNE DELTA 501-DST TRUEBRO 102 ACORN - ST70	2"	2"	1/2"	1/2"	WHITE VITREOUS CHINA WALL HUNG LAVATORY WITH 8" CENTERS. WIDESPREAD FAUCET WITH LEVER HANDLES, AND GRID DRAIN W/ PERFORATED STRAINER AND TAILPIECE AND 1-1/4" 17 GA. P-TRAP WITH CLEANOUT AND 3/8" ANGLE SUPPLIES WITH STOPS. INSULATE P-TRAP, HOT AND COLD WATER WITH TRUEBRO 102 LAVGUARD. PROVIDE CONCEALED ARM FLOOR MOUNTED CARRIER. PROVIDE TRAP PRIMER WHERE INDICATED ON PLANS. PROVIDE ASSE 1070 MIXING VALVE.
SK-A DROP-IN SINK SINGLE COMP. ADA	ELKAY - LRAD-1919 LK-99 ELKAY - LKD2442C	2"	2"	1/2"	1/2"	18 GAUGE TYPE 304-SS, SELF RIMMING 19-1/2"X19"X6" DEEP SINGLE COMPARTMENT SINK WITH SINGLE HOLE, PULL DOWN KITCHEN SINK FAUCET, DRAIN WITH STRAINER, WITH CAST BRASS CONTINUOUS WASTE AND P-TRAP, ANGLE SUPPLIES WITH STOPS.
EWC ELECTRIC WATER COOLER ADA	ELKAY EMABFTL8WSLK	2"	2"	--	1/2"	BARRIER-FREE HI-LO WATER COOLER, WALL HUNG, STAINLESS STEEL FINISH, 8.0 GPH OF 50 DEGREE OUTLET WATER AT 80 DEGREE INLET WATER TEMP. AT 90 DEGREE AMBIENT TEMP., 335 W, 120 VOLT. PROVIDE -SK5 SKIRT KIT FOR UPPER UNIT. PROVIDE BOTTLE FILLER. MOUNT TO COMPLY WITH ADA REQUIREMENTS AND ARCHITECTURAL DRAWINGS.
FD-A FLOOR DRAIN	WADE - 1100STD6	3"	2"	--	--	CAST IRON FLOOR DRAIN W/ FLANGE, INTEGRAL CLAMPING COLLAR, SEEPAGE OPENING, ADJUSTABLE 6" DIA. NICKEL BRONZE STRAINER W/ SQUARE PERFORATIONS, P-TRAP. PROVIDE TRAP PRIMER CONNECTION.
FCO FLOOR CLEANOUT	WADE - 6000	LINE SIZE	--	--	--	CAST IRON FLOOR DRAIN CLEANOUT W/ ROUND ADJUSTABLE SCORIATED SECURED NICKELED BRONZE TOP.
ECO EXTERIOR CLEANOUT	JONES STEPHENS - S36-008	LINE SIZE	--	--	--	CAST IRON FRAME AND COVER MARKED "SEWER CLEANOUT". PROVIDE AS DETAILED IN CONCRETE SLAB.
SS-A SERVICE SINK MOLDED STONE (FLOOR MODEL)	FIAT - MSB-2424 830-AA 832-AA 889-CC MSG-2424	3"	2"	3/4"	3/4"	24"X24"X10" DEEP MOLDED STONE MOP SERVICE BASIN WITH FACTORY INSTALL STAINLESS STEEL DRAIN BODY W/ FLAT STRAINER CHROME PLATED FAUCET WITH VACUUM BREAKER, INTEGRAL STOPS, ADJUSTABLE WALL BRACE, PAIL HOOK, 3/4" HOSE THREAD ON SPOUT, 30" LONG HEAVY DUTY RUBBER HOSE AND HOSE BRACKET, MOP HANGER, STAINLESS STEEL WALL GUARDS, AND SILICON SEALANT.

ELECTRIC WATER HEATER SCHEDULE

UNIT No	LOCATION	STORAGE GAL	HEATING ELEMENTS KW	ELEC. SERVICE	MFGR
WH	MECH/ELEC	30	4.5	208-1-60	RUUD ELDS30-TB OR APPROVED EQUAL (1)

(1) ELEMENTS SHALL BE WIRED FOR NON-SIMULTANEOUS USE.

PUMP SCHEDULE

UNIT No	SERVICE	TOTAL GPM	HEAD FT H_2O	MOTOR HP	ELECTRIC SERVICE	REMARKS
HWCP		1	18'	1/25	120/1/60	GRUNDFOS UP-15-58FC WITH CORD, PLUG, TIMER AND AQUASTAT KIT.

NOTE:

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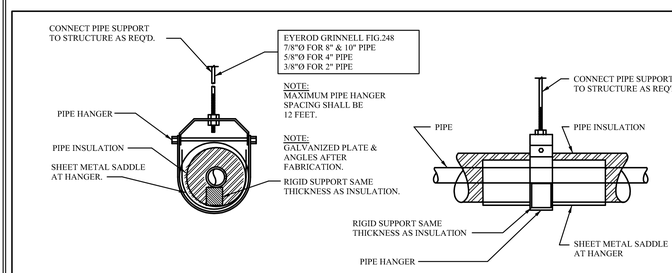
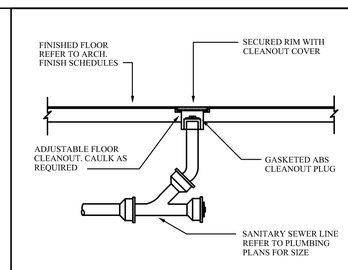
10. American Standard Lucerne wall hung lavy – 20" x 18" – 0355012.020 – 3305604399 – 4 total
11. American Standard Washbrook Flowise Wall Hung Urinal – 6590001.020 – 33056 85294 – 3 total

PLUMBING LEGEND

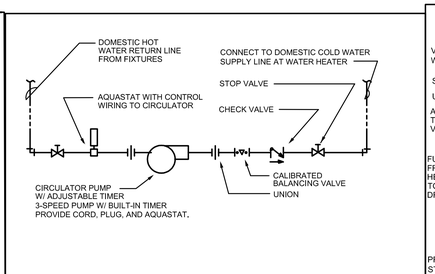
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SANITARY SEWER LINE		WATER HAMMER ARRESTOR (SEE PLUMBING RISER DIAGRAMS)
V	SANITARY SEWER VENT LINE	DCO	DOUBLE CLEANOUT
	DOMESTIC COLD WATER LINE	V.T.R.	VENT THRU ROOF
	DOMESTIC HOT WATER LINE		BALL VALVE
A.F.F.	ABOVE FINISHED FLOOR		UNION



1 **INSULATED PIPE HANGER DETAIL**
NO SCALE

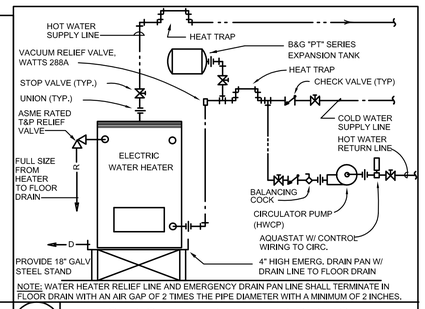


2 **FLOOR CLEANOUT DETAIL**
NO SCALE



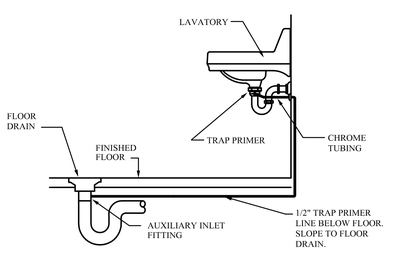
NOTE: SET TIMER TO OPERATE PUMP AT HOURS AS DIRECTED BY OWNER.

3 **HOT WATER CIRCULATION SYSTEM PIPING DIAGRAM (HWCP)**
NO SCALE

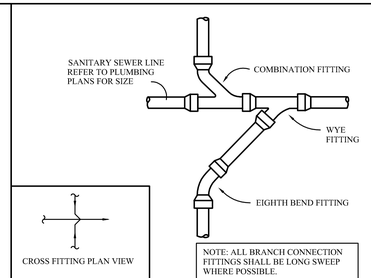


NOTE: WATER HEATER RELIEF LINE AND EMERGENCY DRAIN PAN LINE SHALL TERMINATE IN FLOOR DRAIN WITH AN AIR GAP OF 2 TIMES THE PIPE DIAMETER WITH A MINIMUM OF 2 INCHES.

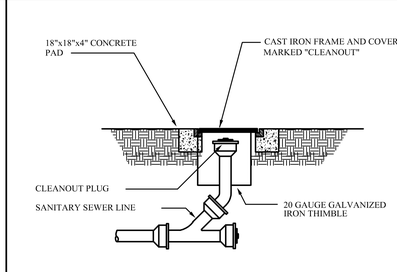
4 **ELECTRIC WATER HEATER PIPING DIAGRAM**
NO SCALE



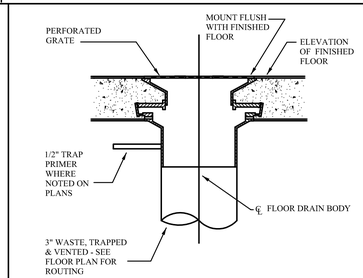
5 **TRAP PRIMER DETAIL**
NO SCALE



6 **SANITARY SEWER CROSS INSTALLATION METHOD CONNECTION DETAIL (TYPICAL)**
NO SCALE



7 **EXTERIOR CLEANOUT DETAIL**
NO SCALE



8 **FLOOR DRAIN "FD-A" DETAIL**
NO SCALE

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PROJECT NO.
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PROJECT MANAGER

DATE ISSUED
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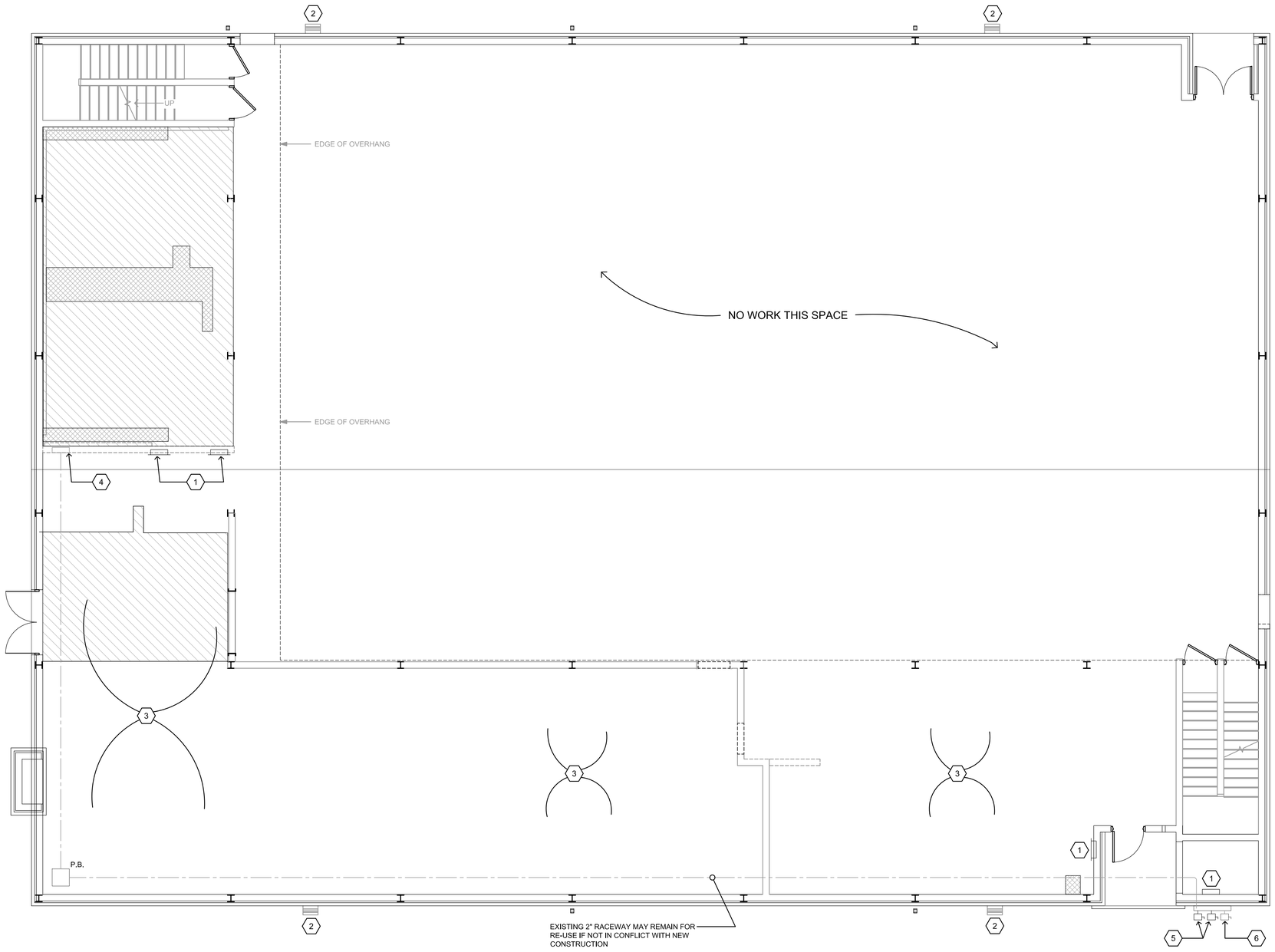
SHEET NUMBER
P-301
PLUMBING SCHEDULES

ELECTRICAL KEYNOTES:

1. EXISTING ELEC PANEL TO BE DISCONNECTED AND REMOVED.
2. EXISTING FLOODLIGHT TO BE DISCONNECTED AND REMOVED. SEE E-201 FOR NEW WORK.
3. DISCONNECT AND REMOVE ALL EXISTING ELECTRICAL DEVICES, BACKBOXES AND BRANCH CIRCUITRY. ALL WORK SHALL BE NEW - SEE E-201 AND 202 FOR NEW WORK.
4. EXISTING ELECTRICAL PANEL MAY REMAIN FOR RE-USE (120/240V 1P 3W+G; 200A MCB; 9-20/1 BRANCH BREAKERS)
5. EXISTING 200A FDS TO BE DISCONNECTED AND REMOVED TO ACCOMMODATE NEW GEAR (SEE E-202 FOR NEW WORK)
6. EXISTING 400A FDS TO REMAIN (FEEDS ROOF TOP HVAC UNITS)



16 1ST FLOOR ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"

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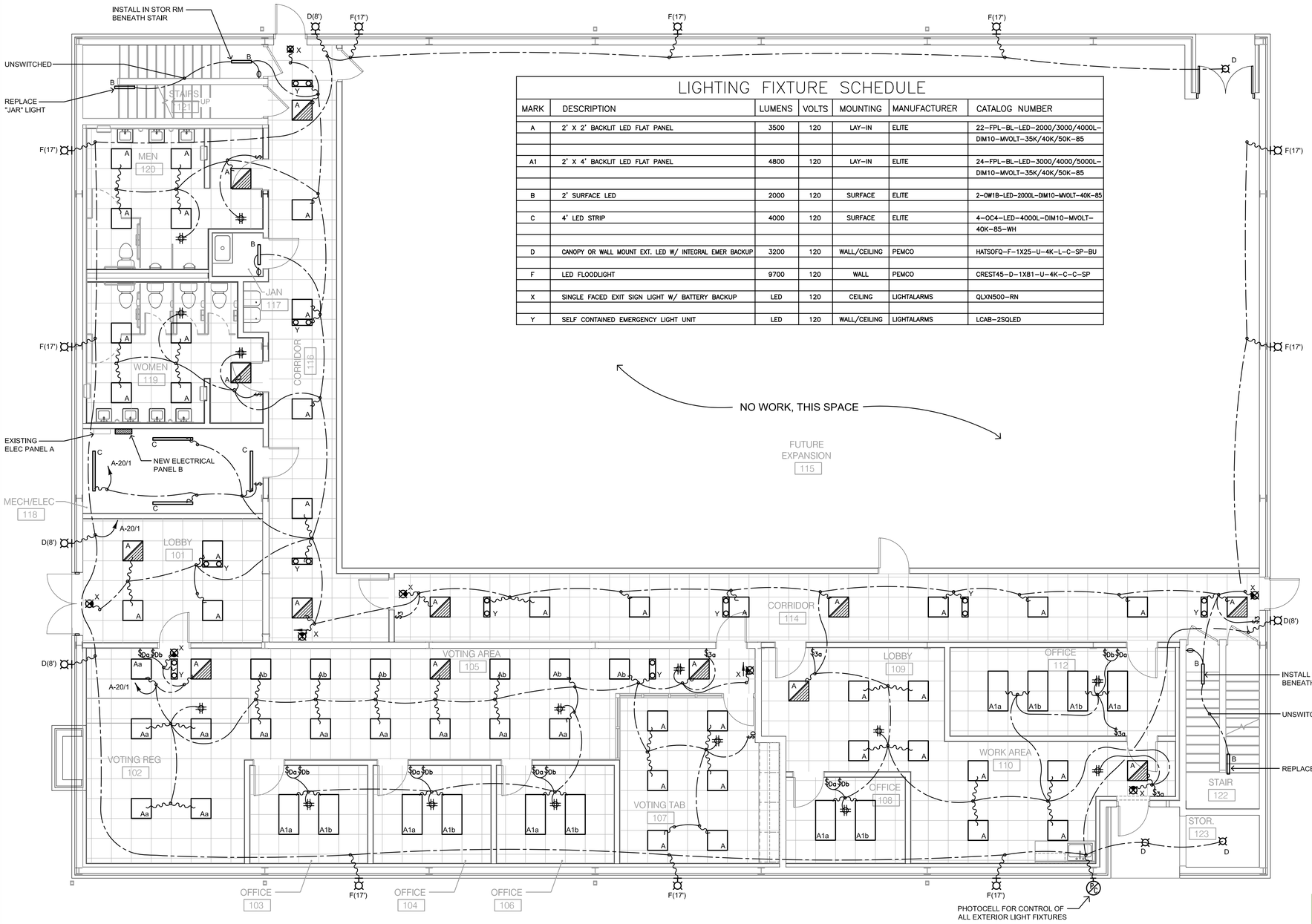
SHEET NUMBER
E-101
1ST FLOOR
ELECTRICAL DEMO

ELECTRICAL GENERAL NOTES:

1. ALL EXIT SIGN LIGHTS, SELF CONTAINED EMERGENCY LIGHTS AND CROSSHATCHED LUMINAIRES SHALL BE UNSWITCHED AND CONNECTED TO THE LOCAL ROOM LIGHTING CIRCUIT.
2. EXTERIOR WALL LIGHTS CONTAINING BACKUP BATTERY PACKS SHALL BE CONTROLLED VIA PHOTOCELL - BUT UPON LOSS OF POWER BATTERY SHALL PROVIDE POWER UNTIL RESTORATION OF POWER. PHOTOCELL TO OPERATE "DUSK-TO-DAWN" IN NORMAL POWER MODE.
3. ELECTRICAL CONTRACTOR SHALL FURNISHED AND INSTALL 12-TYPE 'C' STRIP LIGHTS THROUGHOUT 2ND FLOOR (POSITION AS DIRECTED BY OWNER). RUN 3-#12MC TO A SPARE C.B. IN NEW PANEL B. CONNECT TO 2 NEW 3 WAY SWITCHES - ONE NEAR EACH STAIR.

LIGHTING FIXTURE SCHEDULE

MARK	DESCRIPTION	LUMENS	VOLTS	MOUNTING	MANUFACTURER	CATALOG NUMBER
A	2' X 2' BACKLIT LED FLAT PANEL	3500	120	LAY-IN	ELITE	22-FPL-BL-LED-2000/3000/4000L-DIM10-MVOLT-35K/40K/50K-85
A1	2' X 4' BACKLIT LED FLAT PANEL	4800	120	LAY-IN	ELITE	24-FPL-BL-LED-3000/4000/5000L-DIM10-MVOLT-35K/40K/50K-85
B	2' SURFACE LED	2000	120	SURFACE	ELITE	2-0W1B-LED-2000L-DIM10-MVOLT-40K-85
C	4' LED STRIP	4000	120	SURFACE	ELITE	4-OC4-LED-4000L-DIM10-MVOLT-40K-85-WH
D	CANOPY OR WALL MOUNT EXT. LED W/ INTEGRAL EMER BACKUP	3200	120	WALL/CEILING	PEMCO	HATSOFQ-F-1X25-U-4K-L-C-SP-BU
F	LED FLOODLIGHT	9700	120	WALL	PEMCO	CREST45-D-1X81-U-4K-C-C-SP
X	SINGLE FACED EXIT SIGN LIGHT W/ BATTERY BACKUP	LED	120	CEILING	LIGHTALARMS	QLXN500-RN
Y	SELF CONTAINED EMERGENCY LIGHT UNIT	LED	120	WALL/CEILING	LIGHTALARMS	LCAB-2SQLED



16 1ST FLOOR LIGHTING PLAN
3/16" = 1'-0"

PLAN NORTH

ADG ENGINEERING
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Project No. 23061

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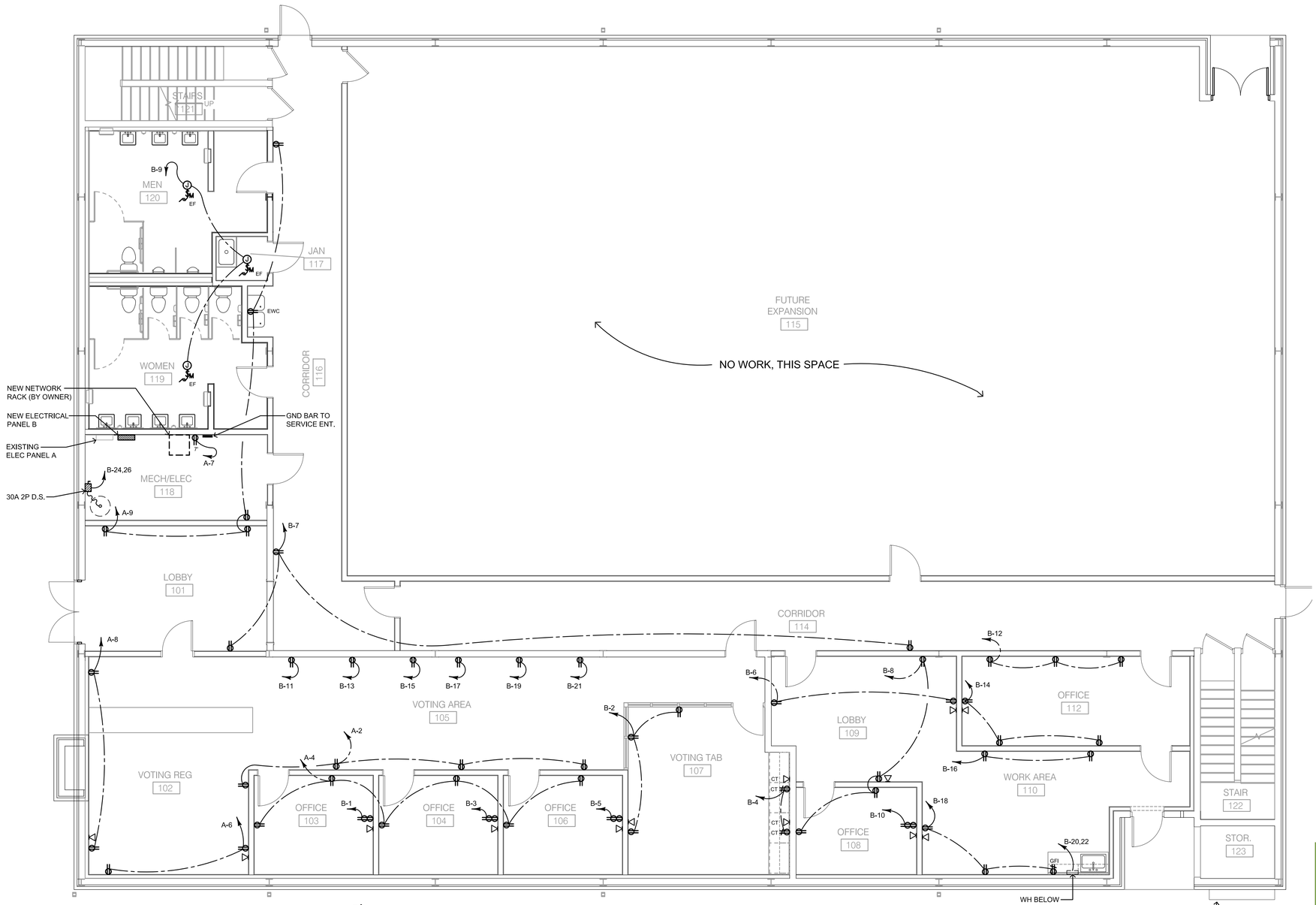
STATE OF LOUISIANA
DAVID B. STELLY
License No. 26070
03/31/2023
PROFESSIONAL ENGINEER

RENOVATION FOR
BPPJ ANNEX BUILDING
219 WEST 2ND ST. DERIDDER, LA 70634

PROJECT NO.
22029
PROJECT MANAGER

DATE ISSUED
03-31-2023
REVISED

SHEET NUMBER
E-201
1ST FLOOR LIGHTING PLAN



16 1ST FLOOR POWER AND SPECIAL SYSTEMS PLAN
3/16" = 1'-0"

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03/31/2023
PROFESSIONAL ENGINEER

RENOVATION
BPPJ ANNEX BUILDING
FOR
BPPJ
219 WEST 2ND ST. DERIDDER, LA 70634

PROJECT NO.
22029
PROJECT MANAGER
DATE ISSUED
03-31-2023
REVISED

SHEET NUMBER
E-202
1ST FLOOR POWER AND SPECIAL SYSTEM PLAN

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Project No. 23061

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	LIGHTING FIXTURE – SEE FIXTURE SCHEDULE
	LIGHTING FIXTURE – SEE FIXTURE SCHEDULE
	EXIT SIGN FIXTURE – SEE FIXTURE SCHEDULE
$	SINGLE POLE TOGGLE SWITCH (48" A.F.F. TO TOP OF BACKBOX)
$a	SUBSCRIPT DENOTES FIXTURE BEING CONTROLLED
$3	THREE-WAY TOGGLE SWITCH (48" A.F.F. TO TOP OF BACKBOX)
$D	DIMMER SWITCH – COMPATIBLE WITH LOAD TYPE BEING CONTROLLED (48" A.F.F. TO TOP OF BACKBOX)
	DUPLEX CONVENIENCE OUTLET (18" A.F.F. TO TOP OF BACKBOX)
	COUNTER TOP MOUNTING HEIGHT (CLEAR BACK SPLASH)
J	JUNCTION BOX
	JUNCTION BOX W/FLEXIBLE CONDUIT
	ELECTRIC MOTOR
	ELECTRICAL PANELBOARD
	DISCONNECT SWITCH
	CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING
	HOMERUN TO ELECTRIC PANELBOARD
	CONDUIT RUN CONCEALED BELOW FLOOR OR IN SLAB
CT	COUNTER-TOP-HEIGHT MOUNTED
GFI	GROUND FAULT INTERRUPTER PROTECTED
WP	WEATHERPROOF
	DATA/COMMUNICATIONS OUTLET (18" A.F.F. TO TOP OF BACKBOX).
	PHOTOELECTRIC CONTROL
	OCCUPANCY SENSOR – CEILING MOUNTED
	OCCUPANCY SENSOR – WALL MOUNTED (48" A.F.F. TO TOP OF BACKBOX)
*	ROUGH-IN SHALL CONSIST OF DOUBLE GANG BACKBOX WITH SINGLE GANG PLASTER RING AND TWO 3/4" C STUBBED ABOVE CEILING AND APPROPRIATE COVERPLATE.

PANEL **A** [EXISTING PANEL]

VOLTAGE ☐ 120/208V, 1ø, 3W ■ 120/240V, 1ø, 3W

200 AMP ■ FACTORY MAIN CIRCUIT BREAKER ☐ SHUNT TRIP MAIN CB ☐ MAIN LUGS ONLY ☐ UL LISTED FEED-THRU LUGS

NEUTRAL ■ 100% ☐ 200%

MOUNTING ■ SURFACE ☐ RECESSED ☐ FREE STANDING (FRONT ACCESS ONLY) ☐ FREE STANDING (FRONT AND REAR ACCESS)

ENCLOSURE ☐ NEMA 1 (TOOL-LESS DOOR-IN-DOOR CONSTRUCTION) ☐ NEMA 3R ☐ NEMA 4X 320 STAINLESS STEEL ☐ LOCKABLE COVER

FEED ■ TOP ☐ BOTTOM

BRANCHES ☐ BOLT-ON, PANELBOARD CONSTR. ☐ FUSIBLE SWITCHES, FURNISH ALL FUSES, RK5 ☐ PLUG-ON, LOADCENTER CONSTR.

AIC RATING 10K ■ FULLY RATED ☐ SERIES RATED

■ FURNISH GROUND BAR KIT ☐ FURNISH ADDITIONAL ISOLATED GROUND BAR KIT ☐ SERVICE ENTRANCE LABEL

ALL COPPER BUSSING

CKT. #	TRIP AMPS	WIRE	GND	COND.	LOAD DESCRIPTION	NOTES	A	B	NOTES	LOAD DESCRIPTION	COND.	GND	WIRE	TRIP AMPS	CKT. #
1	20	2–10	10	MC	NEW LIGHTS	--			--	NEW REC – RM 102	MC	12	2–12	20	2
3	20	2–10	10	MC	NEW LIGHTS	--			--	NEW REC – RM 102	MC	12	2–12	20	4
5	20	2–10	10	MC	NEW LIGHTS	--			--	NEW REC – RM 102	MC	12	2–12	20	6
7	20	2–10	10	MC	NETWORK RACK	--			--	NEW REC – RM 102	MC	12	2–12	20	8
9	20	2–10	10	MC	NEW RECEPT	--									10

NOTES:

TOTAL LOAD = 8.5 KVA
TOTAL AMPS = 41 AMPS

PANEL **B** [NEW PANEL]

VOLTAGE ☐ 120/208V, 1ø, 3W ■ 120/240V, 1ø, 3W

125 AMP ■ FACTORY MAIN CIRCUIT BREAKER ☐ SHUNT TRIP MAIN CB ☐ MAIN LUGS ONLY ☐ UL LISTED FEED-THRU LUGS

NEUTRAL ■ 100% ☐ 200%

MOUNTING ■ SURFACE ☐ RECESSED ☐ FREE STANDING (FRONT ACCESS ONLY) ☐ FREE STANDING (FRONT AND REAR ACCESS)

ENCLOSURE ■ NEMA 1 ☐ NEMA 3R ☐ NEMA 4X 320 STAINLESS STEEL ☐ LOCKABLE COVER

FEED ■ TOP ☐ BOTTOM

BRANCHES ☐ BOLT-ON, PANELBOARD CONSTR. ☐ FUSIBLE SWITCHES, FURNISH ALL FUSES, RK5 ■ PLUG-ON, LOADCENTER CONSTR.

AIC RATING 10K ■ FULLY RATED ☐ SERIES RATED

■ FURNISH GROUND BAR KIT ☐ FURNISH ADDITIONAL ISOLATED GROUND BAR KIT ☐ SERVICE ENTRANCE LABEL

ALL COPPER BUSSING

CKT. #	TRIP AMPS	WIRE	GND	COND.	LOAD DESCRIPTION	NOTES	A	B	NOTES	LOAD DESCRIPTION	COND.	GND	WIRE	TRIP AMPS	CKT. #
1	20	2–12	12	MC	NEW REC – RM 103	--			--	NEW REC – RM 107	MC	12	2–12	20	2
3	20	2–12	12	MC	NEW REC – RM 104	--			--	NEW REC – RM 107	MC	12	2–12	20	4
5	20	2–12	12	MC	NEW REC – RM 106	--			--	NEW REC – RM 109	MC	12	2–12	20	6
7	20	2–12	12	MC	NEW REC – CORR	--			--	NEW REC – RM 109	MC	12	2–12	20	8
9	20	2–12	12	MC	NEW EXH FANS	--			--	NEW REC – RM 108	MC	12	2–12	20	10
11	20	2–12	12	MC	NEW VOTING MACH	--			--	NEW REC – RM 112	MC	12	2–12	20	12
13	20	2–12	12	MC	NEW VOTING MACH	--			--	NEW REC – RM 112	MC	12	2–12	20	14
15	20	2–12	12	MC	NEW VOTING MACH	--			--	NEW REC – RM 110	MC	12	2–12	20	16
17	20	2–12	12	MC	NEW VOTING MACH	--			--	NEW REC – RM 110	MC	12	2–12	20	18
19	20	2–12	12	MC	NEW VOTING MACH	--			--	WH	MC	12	2–12	20	20
21	20	2–12	12	MC	NEW VOTING MACH	--									22
23	20	–	–	–	SPARE C.B.	--			--	WH	MC	10	2–10	20	24
25	20	–	–	–	SPARE C.B.	--									26
27	20	–	–	–	SPARE C.B.	--			--	SPARE C.B.	–	–	–	20	28
29	20	–	–	–	SPARE C.B.	--			--	SPARE C.B.	–	–	–	20	30
31	20	–	–	–	SPARE C.B.	--			--	SPARE C.B.	–	–	–	20	32
33	20	–	–	–	SPARE C.B.	--			--	SPARE C.B.	–	–	–	20	34
35	20	–	–	–	SPARE C.B.	--			--	SPARE C.B.	–	–	–	20	36
37	20	–	–	–	SPARE C.B.	--			--	SPARE C.B.	–	–	–	20	38
39															40
41															42

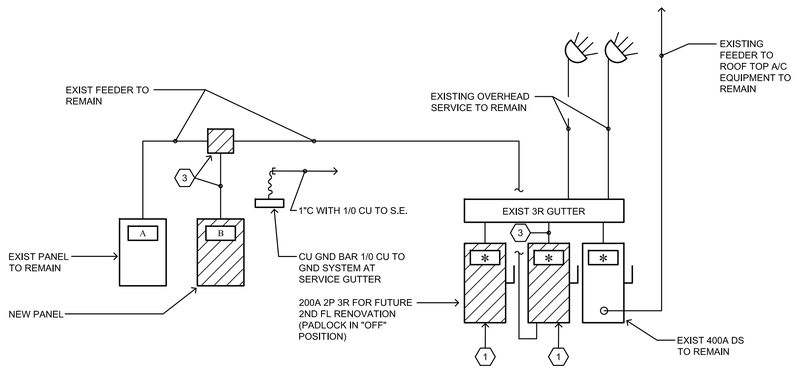
NOTES:

TOTAL LOAD = 26.9 KVA
TOTAL AMPS = 112 AMPS

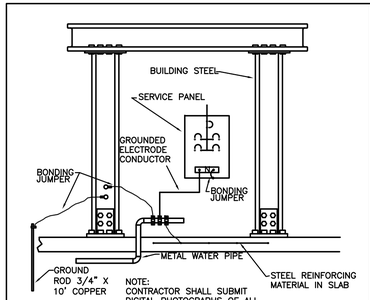
RISER KEYNOTES:

1. DISCONNECT AND REMOVE EXISTING DISCONNECT SWITCH. PROVIDE AND INSTALL NEW 200A 2P S/N 3R 240V S.E. RATED FDS.
2. TAP EXISTING FEEDS TO SERVE NEW FDS WITH 3-3/0, #6G, 2"C.
3. INTERCEPT EXISTING FEEDER - PROVIDE NEW JUNCTION BOX - TAP WITH 3-#1, #6G, 1-1/4"C AND FEED NEW PANEL B.

* PROVIDE AND INSTALL LAMINATED PHENOLIC I.D. TO PROPERLY IDENTIFY LOAD(S) BEING SERVED.



16 ELECTRICAL RISER DIAGRAM
N.T.S.



1 GROUNDING TO BLDG. STEEL DETAIL
NO SCALE

TYPICAL PANELBOARD PLAQUE

(INDICATE PANEL DESIGNATION)
__ /__ VOLTS __ PHASE __ WIRE
__ AMPS MAIN __
FED FROM
(INDICATE FEEDER ORIGINATION I.D.)
(PANEL AND CIRCUIT NO.)

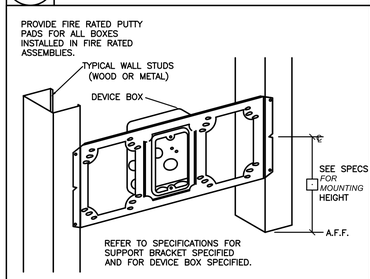
SEE SPECIFICATIONS FOR MATERIALS, COLORS SIZE LETTERING, ETC.

(INDICATE EQUIPMENT DESCRIPTION)
FUSED AT__ AMPERES
FED FROM
(INDICATE FEEDER ORIGINATION I.D.)
(PANEL AND CIRCUIT NO.)

ATTACH PLAQUES USING INDUSTRIAL GRADE DOUBLE FACE ADHESIVE.

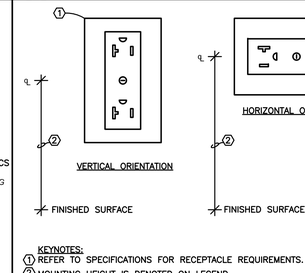
TYPICAL DISCONNECT PLAQUE

2 ELECTRICAL EQUIP. SIGNAGE DETAIL
NO SCALE



*NOTE: DEVICES FOR ADJACENT ROOMS SHOULD NOT BE INSTALLED IN THE SAME STUD SPACE.

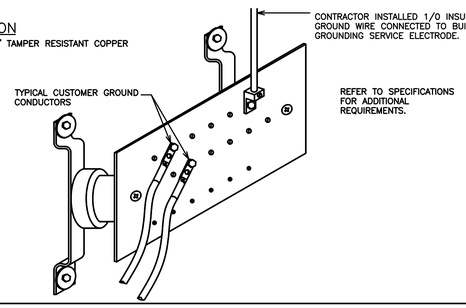
3 BOX MOUNTING BRACKET DETAIL
NO SCALE



KEYNOTES:
1. REFER TO SPECIFICATIONS FOR RECEPTACLE REQUIREMENTS.
2. MOUNTING HEIGHT IS DENOTED ON LEGEND

4 TYPICAL RECEPTACLE INSTALLATION REQUIREMENTS
NO SCALE

ANDREWS CORPORATION
NO. MTC 9674TS 1/4" X 2" X 10" TAMPER RESISTANT COPPER BUS BAR KIT OR EQUIVALENT.



5 TELE/DATA/CATV – GROUND DETAIL (BACK BOARD AND EVERY CLOSET)
NO SCALE

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RENOVATION
ANNEX BUILDING
FOR
BPPJ
219 WEST 2ND ST. DERIDDER, LA 70634

PROJECT NO.
22029
PROJECT MANAGER
DATE ISSUED
03-31-2023
REVISED

SHEET NUMBER
E-301
ELECTRICAL DETAILS, SCHEDULES AND RISER

ADVERTISEMENT FOR BIDS

Issued By

Beauregard Parish Police Jury
202 W. 2nd Street
DeRidder, LA 70634

General Notice

Separate sealed Bids for Parish Annex Building Renovations (Phase I), Beauregard Parish Police Jury; M.A. Project No. H1-22029-DA will be received by the Police Jury, at the Beauregard Parish Police Jury, 202 W. 2nd Street, DeRidder, LA 70634 until 10:00 AM Central Time Zone, on April 27, 2023, and then at said time and at said office publicly opened and read aloud. Work consists of removal and disposal of debris in laterals and drainage ways..

Work Classification

Work Classification: Municipal and Public Works Construction; Highway, Street and Bridge Construction; Building Construction

Obtaining the Bidding Documents

Electronic copies of the Bidding Documents may be obtained from the Issuing Office of Meyer & Associates, Inc. (337) 625-8353, located at 600 N. Cities Service Hwy., Sulphur, LA 70663. A Bidding Document deposit is not required. In order to submit a bid, Bidders must obtain an original set of electronic Bidding Documents from Meyer & Associates, Inc. or the approved electronic bid website defined herein said advertisement.

Access to electronic bidding is available through the Bidding Documents Website https://www.centralbidding.com.

Pre-bid Conference

A **Non-mandatory** pre-bid conference will be held on April 13, 2023, at 2:30 P.M., at Beauregard Parish Police Jury, 202 W. 2nd Street, DeRidder, LA 70634.

Run Dates

Friday, March 31, 2023
Friday, April 14, 2023
Friday, April 21, 2023

/s/ Bryan McReynolds, Administrator