

SECTION 16010  
BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Basic electrical requirements specifically applicable to division 16 sections, in addition to division 1—general requirements.

1.02 INTENT

- A. It is the intention of these specifications and drawings to call for finished work, tested, and ready for operation. Wherever the word "provide" is used, it shall mean "furnish and install complete and ready for use."
- B. Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

1.03 SURVEYS AND MEASUREMENTS

- A. Base all measurements, both horizontal and vertical from established bench marks. All work shall agree with these established lines and levels. Verify all measurements at site and check the correctness of same as related to the work. All material take-offs for the site shall be field measured prior to bids.

1.04 DRAWINGS

- A. Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. Drawings are not to be scaled. The architectural drawings and details shall be examined for exact location of fixtures and equipment. Where they are not definitely located, this information shall be obtained from the architect.
- B. If directed by the architect or engineer, the contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.
- C. At the time of each shop drawing submission, the contractor shall call the engineer's attention (in writing) to, and plainly mark on shop drawings, any deviations from the contract documents.
- D. Samples, drawings, specifications, catalogs, submitted for approval, shall be properly labeled indicating specific service for which material or equipment is to be used, location, section and article number of specifications governing, contractor's name, and name of job. All equipment shall be labeled to match labeling on contract documents.
- E. Catalogs, pamphlets, or other documents submitted to describe items on which approval is being requested, shall be specific and identification in catalog, pamphlet,

etc. Of item submitted shall be clearly made in ink. Data of a general nature will not be accepted.

- F. Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.
- G. All shop drawings shall be submitted to the a/e by contractor no later than 30 days from the day of contract award.
- H. Failure of the contractor to submit shop drawings in ample time for checking shall not entitle him to an extension of contract time, and no claim for extension by reason of such default will be allowed.
- I. Submit all division 16 submittals at one (1) time in one (1) integral group. Piece-by-piece submission of individual items will not be acceptable. Engineer may check contents of each submittal set upon initial delivery; if not complete as set forth herein, submittal sets may be returned to contractor without review and approval and will not be accepted until made complete.
- J. At the close of the job, prior to final review, five (5) bound copies of the following shall be submitted by transmittal letter to the engineer for review and acceptance.
  - 1. Equipment warranties
  - 2. Contractor's warranty
  - 3. Parts list and manuals for all equipment
  - 4. Operating instructions (in writing)
  - 5. Written instructions on maintenance and care of the system

#### 1.05 REFERENCES

- A. NFPA 70—National Electrical Code.
- B. Florida Building Code.
- C. American Society For Testing & Materials (ASTM)
- D. National Electric Manufacturers Association (NEMA)
- E. Underwriters Laboratories, Inc. (UL)
- F. Institute Of Electrical & Electronic Engineers (IEEE)
- G. National Fire Protection Association (NFPA).
- H. Local and state fire marshal rules and regulations.
- I. Applicable county, state, and local building code and ordinances.

#### 1.06 SUBMITTALS

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- A. Submit 6 copies of all project submittal data and shop drawings unless otherwise increased by the requirements of division 1.
- B. Proposed products list: include products specified in the following sections, but not limited to:
  - 1. Section 16440 - Disconnect Switches.
- C. Review of shop drawings by the engineer does not supersede the requirement to provide a complete and functioning system in compliance with the contract documents.

#### 1.07 SUBSTITUTIONS

- A. Materials and equipment are specified herein by a single or by multiple manufacturers to indicate quality and performance required. The drawings are based upon equipment scheduled on drawings and specified. If another manufacturer is considered for substitution during the bidding process, the electrical contractor shall be responsible for coordinating all electrical, mechanical, structural, or architectural changes. Comparable equipment manufacturers which are listed as equals shall be considered as substitutes. Manufacturers other than the basis of design shall submit a catalog information and 1/4" scale plan and section drawings showing proper fit and all clearances for maintenance items.
- B. Substitutions of other manufacturer's will be considered for use if, in the engineers opinion, the item requested for substitution is equal to that specified. The contractor shall provide to the engineer a typed comparative list of the basis of design and the proposed substitute. Request for approval of substitutions or equals prior to bid must be made in writing. The approval of any substitutions or equals prior to bid shall not be construed as a shop drawing approval. The substitute or equal must be submitted as described in the specifications and meet all the requirements of the specifications and drawings.
- C. All requests for substitutions shall specifically indicate any and all differences or omissions between the product specified as basis of design and the product proposed for substitution.
- D. Where the contractor proposes to use an item of equipment other than that specified or detailed on the drawing, which requires any redesign of the structure, partitions, foundations, piping, wiring, or any other part of the mechanical or electrical, all such redesign, and all new drawings and detailing required therefore, shall be prepared by the subcontractor at his own expense and submitted to the architect/engineer for approval.
- E. If changes to the contractor documents are required by the owner or by any legal authority to depict the substituted material or equipment, the contractor shall pay for all time and material costs incurred by the engineer/architect. Cost shall be based on the current prevailing hourly rates and material charges in effect at the time work is requested.
- F. Where such approved deviation requires quantity and arrangement of equipment from that specified or indicated on the drawings, any other additional equipment required by the system, at no additional cost to the owner.

1.08 COOPERATION WITH OTHER TRADES

- A. Give full cooperation to other trades and furnish in writing to the general contractor, with copies to the architect, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.
- B. When work installed under this division will be in close proximity to, or will interfere with work of other trades, assist in working out space conditions to make a satisfactory adjustment. If so directed by the engineer/architect, prepare composite working drawings and sections at a suitable scale not less than 1/4" = 1'0", clearly showing how work is to be installed in relation to the work of other trades. If the work is installed before coordinating with other trades, or so as to cause any interference with work of other trades, make all the necessary changes in work to correct the condition without extra charge.
- C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

1.09 PROTECTION

- A. Protect all work and material provided under this division from damage. All damaged equipment or material provided under this division shall be replaced with new.
- B. Protect all work and equipment until inspected, tested, and accepted. Protect work against theft, injury, or damage; and carefully store material and equipment received on site which are not immediately installed. Close open ends of work with temporary covers or plugs during storage and construction to prevent entry of obstructing material.

1.10 SCAFFOLDING, RIGGING, AND HOISTING

- A. Provide all scaffolding, rigging, hoisting, and services necessary for erection and delivery into the premises of any equipment and apparatus furnished. Remove same from premises when no longer required.

1.11 REMOVAL OF RUBBISH

- A. This contractor shall at all time keep premises free from accumulations of waste materials or rubbish caused by his employees or work. At completion of work he shall remove all his tools, scaffolding, materials, and rubbish from the building and site. He shall leave the premises and his work in a clean, orderly, and acceptable condition.

1.12 SUPERVISION

- A. This contractor shall provide a competent, experienced, full time superintendent who is acceptable to the architect/engineer and owner, and who is authorized to make decisions on behalf of the contractor.

1.13 MATERIAL AND WORKMANSHIP

- A. All materials and apparatus required for the work, except as specifically specified otherwise, shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building spaces. Where no specific kind or quality of material is given, a first-class standard article as approved by the engineer shall be furnished. Refer to substitutions in this section.
- B. Unless otherwise specifically indicated on the plans or specifications, all equipment and materials shall be installed with the approval of the architect and engineer in accordance with the recommendations of the manufacturer. This includes the performance of such tests as the manufacturer recommends.

#### 1.14 FOUNDATIONS, SUPPORTS, PIERS, ATTACHMENTS

- A. This contractor shall furnish and install all necessary foundations, supports, pads, bases and piers required for all equipment furnished under this division, and shall submit drawings to the architect and engineer for approval before purchase, fabrication or construction of same.
- B. For all floor mounted equipment, provide 4" high concrete pads which extend six inches (6") beyond equipment base in all directions with top edge chamfered. Inset six inches (6") steel dowel rods into floors to anchor pads. Shop drawings of all foundations and pads shall be submitted to the architect and engineer for approval before same are constructed.
- C. Construction of foundations, supports, pads, bases, and piers where mounted on the floor, shall be the same materials and same quality of finish as the adjacent and surrounding flooring material.
- D. All equipment, unless shown otherwise, shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are, in the opinion of the architect and the engineer, not strong enough shall be replaced as directed.

#### 3. Permits, fees and inspections

- A. The contractor shall give all necessary notices, obtain all permits and pay all government fees, sales taxes and other costs, including utility connections or extensions, in connection with this work; file all necessary approvals of all governmental departments having jurisdiction.
- B. Obtain all required certificates of inspection for his work and deliver to the owner/engineer the same certificates before request for acceptance and final payment for the work.
- C. The contractor shall include in the work, without extra cost to the owner, any labor, materials, services, apparatus and drawings required to comply with all applicable laws, ordinances, rules and regulations.
- D. The contractor shall inform the engineer of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.

1.15 PROJECT/SITE CONDITIONS

- A. Install work in locations shown on drawings, unless prevented by project conditions.
- B. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections. Obtain permission of architect/engineer before proceeding.
- C. The contractor shall inform the engineer of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.
- D. The scope of the work included under this division of the specifications shall include complete electrical systems as shown on the plans and as specified herein. The general conditions and special conditions of these specifications shall form a part and be included under this section of the specifications. Provide all supervision, labor, material, equipment, machinery, factory trained personnel, and any and all other items necessary to complete the electrical systems. All items of equipment are specified in the singular; however, provide and install the number of items of equipment as indicated on the drawings, and as required for complete systems.

1.16 SEQUENCING AND SCHEDULING

- A. Construct work in sequence under provisions of division 1.

1.17 LICENSE

- A. The subcontracting firm for the electrical and systems installation shall be licensed by the state and the local authorities, regularly engaged in the installation of electrical systems and other related equipment. The subcontracting firm shall be familiar with all local conditions including interpretations, codes and shall have at least 5 years of successful installation experience on similar projects of the same magnitude and scope.
- B. The subcontracting firm shall list at least three projects it has successfully completed over the last five years for proof of experience of this caliber. This list shall be included with submittals for review by architect/engineer. The subcontracting firm shall hold a florida state certified electrical contractor license for this project. The subcontracting firm for the fire alarm system shall be a certified "ef" installer.

1.18 AS-BUILT DRAWINGS

- A. This contractor shall provide as-built drawings before final payment will be issued. As-built drawings shall include all deviations from the contract documents.

\*\*\* END OF SECTION \*\*\*

SECTION 16060  
ELECTRICAL DEMOLITION FOR REMODELING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical Demolition.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual Sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify field measurements and circuiting arrangements are as shown on drawings.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities.
- C. Demolition drawings are based on casual field observation and existing record documents. Report discrepancies to the Architect/Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems for all equipment scheduled for removal.
- B. Coordinate utility service outages with utility company, general contractor, and Owner/Tenant.
- C. Provide temporary wiring and connections to temporary equipment. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service and Distribution System: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from the Owner/Tenant at least one week before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.
- E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Notify the Owner/Tenant at least one week before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas

adjacent to work area. Relocate system annunciator to temporary staffed location as required. Extend all existing and temporary fire alarm circuit and control wiring to this location. Provide fire-watch personnel during all times when system is inactive.

- F. Furnish, install, and maintain temporary power and lighting for all areas and for trades. Lighting levels shall equal the existing condition prior to demolition work.

### 3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Demolish and extend existing electrical work under provisions of Division 1 and this Section.
- B. If any conflicts arise in the field as to which equipment, ductwork, etc., is to be removed, then this Contractor shall notify the Owner/Engineer in writing and shall include a sketch and description of the field conflict for further direction.
- C. In areas where demolition is required of this Contractor, then this Contractor shall be responsible for all phases of demolition, including, but not limited to, removal, storage, and reinstallation of items to remain.
- D. Remove, relocate, and extend existing installations to accommodate new construction.
- E. Remove abandoned wiring to source of supply.
- F. Remove exposed, abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors and patch surfaces.
- G. Disconnect and remove abandoned panelboards and distribution equipment.
- H. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- I. Repair adjacent construction and finishes damaged during demolition and extension work.
- J. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- K. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.
- L. Coordinate with roofer and assist in removal of all roof mounted electrical conduit devices, equipment, etc., to be removed as indicated on the roofing drawings and HVAC drawings.

\*\*\* END OF SECTION \*\*\*

SECTION 16111  
CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal Conduit.
- B. Flexible Metal Conduit.
- C. Liquid-tight Flexible Metal Conduit.
- D. Electrical Metallic Tubing.
- E. Nonmetal Conduit.
- F. Fittings and Conduit Bodies.

1.02 RELATED SECTIONS

- A. Section 16130.....Boxes.
- B. Section 16190.....Supporting Devices.
- C. Section 16195.....Electrical Identification.

1.03 REFERENCES

- A. NFPA 70—National Electrical Code.
- B. ANSI C80.1—Rigid Steel Conduit, Zinc Coated.
- C. ANSI C80.3—Electrical Metallic Tubing, Zinc Coated.
- D. ANSI/NEMA FB 1—Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- E. NECA "Standard of Installation."
- F. NEMA TC 2—Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
- G. NEMA TC 3—PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.04 DESIGN REQUIREMENTS

- A. Conduit Size: ANSI/NFPA 70.

1.05 PROJECT RECORD DOCUMENTS

- A. Accurately record actual routing of conduits larger than 1-1/4 inches on as-built documents.

- B. Accurately record actual routing of all underground conduits on as-built documents.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle Products to site under provisions of Section 16010.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

#### 1.07 PROJECT CONDITIONS

- A. Verify routing and termination locations of conduit prior to rough-in.
- B. Conduit routing shown on Drawings in approximated unless dimensioned. Route as required to coordinate with other trades and building construction.

### PART 2 PRODUCTS

#### 2.01 CONDUIT REQUIREMENTS

- A. Underground Installations:
  - 1. Use Rigid Non-Metallic Conduit, Schedule 40 PVC.
  - 2. Minimum Size: 3/4".
  - 3. Install rigid steel, long radius elbows for conduits larger than 1". Paint under slab conduit or poured-in concrete with a coat of Bitumastic, continuously and up through penetration of concrete slabs.
- B. Wet and Damp Locations: Use rigid steel and liquid-tight flexible metal conduit.
- C. Dry Locations:
  - 1. Exposed and subject to physical damaged (from floor to 10'-0" A.F.F.): Use rigid steel or intermediate metal conduit.
  - 2. Exposed (above 10'-0" A.F.F.) or concealed: Use rigid steel, intermediate metal conduit, or electrical metallic tubing.

#### 2.02 METAL CONDUIT

- A. Rigid Metallic Conduit: ANSI C80.1.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; all steel fittings.

#### 2.03 FLEXIBLE METAL CONDUIT

- A. Description: Interlocked steel construction.
- B. Fittings: ANSI/NEMA FB 1.

#### 2.04 LIQUID-TIGHT FLEXIBLE METAL CONDUIT

- A. Description: Interlocked steel construction with PVC jacket.
- B. Fittings: ANSI/NEMA FB 1.

#### 2.05 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: ANSI C80.3; galvanized tubing.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel set screw type.

#### 2.06 NONMETALLIC CONDUIT

- A. Description: NEMA TC 2; Schedule 40 PVC.
- B. Fittings and Conduit Bodies: NEMA TC 3.

### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. Install conduit in accordance with NECA "Standard of Installation."
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.
- C. Arrange supports to prevent misalignment during wiring installation.
- D. Support conduit using coated steel straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- E. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.
- F. Fasten conduit supports to building structure and surfaces under provisions of Section 16190.
- G. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- H. Do not attach conduit to ceiling support wires.
- I. Arrange conduit to maintain headroom and present neat appearance.
- J. Route conduit parallel and perpendicular to walls.
- K. Provide minimum 2" cover on all conduits installed within slabs. Do not cross conduits in slab.

- L. Maintain minimum six inch (6") clearance between conduit and piping.
- M. Maintain 12" clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).
- N. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- O. Bring conduit to shoulder of fittings; fasten securely.
- P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting.
- Q. Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- R. Install no more than equivalent of four 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic bender or factory elbows for bends in metal conduit larger than 2 inch size.
- S. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- T. Provide fittings designed to accommodate expansion and deflection where conduit crosses, control, and expansion joints.
- U. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- V. Identify conduit under provisions of Section 16195.
- X. Install rigid steel long radius elbows, size 1" and larger, in below grade and first floor slab conduit runs.
- Y. Exterior conduit stub-ups shall be rigid galvanized coated with Bitumastic 1" and larger. Encase with minimum 3" coverage from beginning of 90 degree elbow stub up to 3" above grade.
- Z. Maintain Manufacturer's recommended minimum bending radius on flexible conduit.
- AA. Flexible metal conduit shall not be over six feet (6') long. Connections to motors shall not exceed three feet (3') long.
- AB. Flexible metal conduit shall be used for a flexible connection only, not raceways.
- AC. Liquid tight flexible conduit shall be used in damp and wet location only.
- AD. Install insulated bushing on all conduits.
- AE. Install grounded metal insulated bushing with lug on all mains, sub-feeders, switchboards, panelboards, transformers, chillers, disconnects, and equipment rated at 100 amps and above.
- AF. Install and seal boxes and conduit in acoustical treated walls and ceilings per architectural acoustics specifications.

3.02 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods that are UL listed and tested.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation specified under Division 7.

\*\*\* END OF SECTION \*\*\*

SECTION 16120  
BUILDING WIRE AND CABLE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building Wire and Cable.
- B. Remote Control and Signal Cable.
- C. Power Limited Fire Protective Signaling Cable.
- D. Wiring Connectors and Connections.

1.02 RELATED SECTIONS

- A. Section 16111.....Conduit.
- B. Section 16130.....Boxes.
- C. Section 16195.....Identification.

1.03 REFERENCES

- A. NFPA 70—National Electrical Code.
- B. NEMA WC5—Thermoplastic-insulated wire and cable for the transmission and distribution of electrical energy.

1.04 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. All conductors shall be copper unless otherwise noted.
- C. Conductor sizes are based on copper.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.05 COORDINATION

- A. Coordinate work under provisions of Section 16010.
- B. Determine required separation between cable and other work.
- C. Determine cable routing to avoid interference with other work.

PART 2 PRODUCTS

2.01 BUILDING WIRE AND CABLE

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- A. Description: Single conductor or stranded, insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70, Type THHN/THWN material rated 90°C.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.

#### 3.02 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

#### 3.03 WIRING METHODS

- A. Concealed Dry Interior Locations: Use only building wire and cable (all types) in raceway.
- B. Exposed Dry Interior Locations: For feeders, branch circuits, and class 1 remote control circuits, use only building wire in raceway. For class 2 or 3 control cable and power limited fire protective signaling cables run in raceway.
- C. Above Accessible Ceilings: For feeders, branch circuits and class 1 remote control cables use only building wire in raceway. For class 2 or 3 remote control cables run exposed. For power limited fire protective signaling cables run in raceway.
- D. Wet or Damp Interior Locations: For feeders, branch circuits and class 1 remote control cables use only building wire in raceway. For class 2 or 3 remote control cable and power limited fire protective signaling cables run in raceway.
- E. Exterior Locations: For feeders, branch circuits and class 1 remote control cables use only building wire run in raceway. For class 2 or 3 remote control cables and fire protective signaling cables run in raceway.
- F. Underground Installations: For feeders, branch circuits and class 1 remote control cables use only building wire run in raceway. For class 2 or 3 remote control cables and for power limited fire protective signaling cables run in raceway.
- G. Use wiring methods indicated on Drawings.

#### 3.04 INSTALLATION

- A. Install products in accordance with manufacturers' instructions.
- B. Use solid conductor for branch circuits 10 AWG and smaller.

- C. Use stranded conductors for control circuits and for feeder and branch circuits No. 8 and larger.
- D. Use conductor not smaller than 12 AWG for power and lighting circuits.
- E. Use conductor not smaller than 14 AWG for control circuits.
- F. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 100 feet.
- G. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.
- H. All phase conductors size #10 and smaller shall have color coded insulation. Conductor size #8 and larger shall be color coded by the use of colored plastic tape applied within 6" of each conductor end. All color coding shall be with the same color being used with its respective phase or bus through the entire length of conductor with enclosures, boxes, cabinets, wireways, panels, switchboards as follows:

PHASE	120/240 VOLTS	120/208 VOLTS	277/480 VOLTS
Phase A	Black	Black	Brown
Phase B	Orange (Hi-Leg)	Red	Orange
Phase C	Blue	Blue	Yellow
Neutral	White	White	Gray
Ground	Green	Green	Green
Isolated Ground	Green w/ Yellow Stripe	Green w/ Yellow Stripe	Green w/ Yellow stripe

- I. Grounding conductors shall be identified with a continuous outer finish that is either green, or green with one or more yellow stripe.
- J. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- K. Protect exposed cable from damage.
- L. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure. Do not rest cable on ceiling panels.
- N. Use suitable cable fittings and connectors.
- O. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- P. Clean conductor surfaces before installing lugs and connectors.
- Q. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

- R. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- S. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
- T. Terminate spare conductors with electrical tape.
- U. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- V. Splice only in accessible junction boxes.
- W. Splices in feeders are not permitted.
- X. Make arrangements with Utility Company to obtain permanent electric service to the Project and to maintain existing electrical service.
- Y. Underground: Install service entrance conduits and feeders from the transformer location to building service entrance equipment. Install primary conduits and coordinate routing.
- Z. Make arrangements with the Utility Company for extending and relocating primary feeder and transformer. The Electrical Contractor shall pay all costs incurred. Coordinate these requirements prior to bidding.
- AA. Furnish and install concrete pad for pad mounted utility transformer in accordance with Utility Company's standards.

### 3.05 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 16195.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.

### 3.06 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 16010.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- D. Verify continuity of each branch circuit conductor.
- E. Verify continuity of each control circuit conductor.
- F. Verify proper phasing of conductors.

MANATEE COUNTY-WATER TREATMENT LAB  
CHILLER AND FAN REPLACEMENT

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\*\*\* END OF SECTION \*\*\*

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BUILDING WIRE AND CABLE  
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SECTION 16130  
BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall and Ceiling Outlet Boxes.
- B. Floor Boxes.
- C. Pull and Junction Boxes.
- D. In-ground Cast Concrete Boxes.
- E. FD Cast Device Boxes.

1.02 RELATED SECTIONS

- A. Section 16010.....Basic Electrical Requirements.
- B. Section 16195.....Electrical Identification.

1.03 REFERENCES

- A. NFPA 70—National Electrical Code.
- B. ANSI/NEMA OS 1—Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- C. NEMA 250—Enclosures for Electrical Equipment (1000 Volts Maximum).

1.04 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Verify locations of floor boxes and outlets to rough-in.
- C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose.

PART 2 PRODUCTS

2.01 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel.
  - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
  - 2. Concrete Ceiling Boxes: Concrete type.

- B. Cast Boxes: NEMA FB 1, Type FD, cast ferrous deep type. Provide gasketed cover by box manufacturer. Provide threaded hubs.

## 2.02 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Surface-Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface-mounted junction box.
  - 1. Material: Cast aluminum.
  - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- C. In-Ground Cast Concrete Box: NEMA 250, Type 6, inside flanged, recessed cover box for flush mounting:
  - 1. Material: Cast concrete or polymer concrete reinforced.
  - 2. Cover: Nonskid cover with stainless steel cover screws capable of light vehicular traffic.
  - 3. Cover Legend: Electric, telephone, fire alarm, CATV, etc.
  - 4. Cut conduit openings using tools and methods recommended by the manufacturer.
  - 5. In-ground pull boxes shall have solid bottoms with weep holes as manufactured by Quazite 'PG' series or approved equal.
  - 6. Substitutions: Under provisions of Section 16010.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Boxes shall not be installed more than 4 feet above finished ceiling. Use 3/8" threaded rod for box support. Double nut all support points.
- D. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire. Openings shall be a minimum 24" x 24" hinged door with cylinder cam.
- E. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods that are UL listed and tested.

- F. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.
- G. Use flush mounting outlet boxes in finished areas.
- H. Do not install flush mounting boxes back-to-back in walls; provide minimum 12 inch separation. Provide minimum 24 inches separation in acoustic rated walls.
- I. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- J. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- K. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- L. Use adjustable steel channel fasteners for hung ceiling outlet box.
- M. Do not fasten boxes to ceiling support wires.
- N. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.
- O. Use gang box where more than one device is mounted together. Do not use sectional box. Provide barriers to separate different voltage systems.
- P. Use gang box with plaster ring for single device outlets.
- Q. Use cast outlet box in exterior locations exposed to the weather and wet locations.
- R. Set floor boxes level.
- S. Large Pull Boxes: Boxes larger than 100 cubic inches (1 600 cubic centimeters) in volume or 12 inches (300 mm) in any dimension.
  - 1. Interior Dry Locations: Use hinged enclosure under provisions of Section 16160.
  - 2. Other Locations: Use surface-mounted cast metal box.
- T. Identify boxes under provision or Section 16195.

### 3.02 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations and sizes of required access doors with General Contractor and other trades.
- B. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- C. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.

- D. Position outlet boxes to locate luminaires as shown on reflected ceiling plan.
- E. Outlet boxes for exit lights shall be wall-mounted where possible and installed no higher than 24 inches above door frame. Where exit lights are suspending the box and/or light fixture shall be rigidly secured.

3.03 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closure in unused box opening.

\*\*\* END OF SECTION \*\*\*

SECTION 16190  
SUPPORTING DEVICES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Conduit and Equipment Supports and seismic restraint.
- B. Fastening Hardware.

1.02 COORDINATION

- A. Coordinate size, shape and location of concrete pads.

1.03 QUALITY ASSURANCE

- A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 PRODUCTS

2.01 MATERIAL/FINISH

- A. General Locations: Steel equipment hangers, miscellaneous steel supports, hardware, bolts, washers, nuts, screws, etc., not specified to be plated or coated shall be hot dipped galvanized with a minimum of 1.50 oz/ft. on all sides and all field cuts shall be zinc coated.
- B. Located In or Around Cooling Tower Yards: Pipe hangers, equipment supports, miscellaneous structure components, hardware, bolts, washers, nuts, screws, etc., shall be non-metallic polyester resin, vinyl ester resin, fiberglass, glass reinforced polyurethane, or 316 stainless steel.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors, beam clamps, or spring steel clips.
- B. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.
- C. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.
- D. Do not use powder-actuated anchors.
- E. Do not drill structural steel members.

- F. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.
- G. In wet locations install free-standing electrical equipment on concrete pads.
- H. Install surface-mounted cabinets and panelboards with minimum of four anchors. Provide steel channel supports to stand cabinet one inch off wall.
- I. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.
- J. Provide seismic restraints on all newly installed or modified electrical conduit or equipment in accordance with FEMA document 412, "Installing Seismic Restraints for Electrical Equipment".

\*\*\* END OF SECTION \*\*\*

SECTION 16195  
ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Nameplates and Tape Labels.
- B. Wire and Cable Markers.
- C. Conduit System Junction Box and Pull Box Color Coding.

1.02 SUBMITTALS

- A. Include schedule for nameplates and tape labels.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Nameplates: Engraved three-layer laminated plastic, black letters on a white background.
- B. Wire and Cable Markers: Cloth markers, split sleeve or tubing type.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Degrease and clean surfaces to receive nameplates.
- B. Install nameplates parallel to equipment lines.
- C. Secure nameplates to equipment fronts using screws or rivets.
- D. Provide typed panel schedules for all new panel boards. Provide new typed panel schedule in all existing panel boards where changes have occurred.

3.02 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as indicated on schematic and interconnection diagrams or equipment manufacturer's shop drawings for control wiring.

3.03 NAMEPLATE ENGRAVING SCHEDULE

- A. Provide nameplates of minimum letter height as scheduled below.

- B. Panelboards, Switchboards, and Motor Control Centers: 1/4 inch; identify equipment designation. 1/8 inch; identify voltage rating and source feeding equipment.
- C. Individual Circuit Breakers, Switches, and Motor Starters in Distribution Panelboards, Switchboards, and Motor Control Centers: 1/8 inch; identify load served.

3.04 JUNCTION BOX, AND PULL BOX COLOR CODING SCHEDULE

- A. Fire Alarm System: Red.
- B. Emergency Distribution System: Orange.
- C. 480 Volt, Single and Three Phase System: Blue.
- D. 208 Volt, Single and Three Phase System: Black.
- E. Motor and Other Control Systems: Purple.

\*\*\* END OF SECTION \*\*\*

SECTION 16440  
DISCONNECT SWITCHES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Disconnect Switches.
- B. Fuses.
- C. Enclosures.

1.02 REFERENCES

- A. ANSI/UL 198C—High-Intensity Capacity Fuses; Current Limiting Types.
- B. ANSI/UL 198E—Class R Fuses.
- C. FS W-F-870—Fuseholders (For Plug and Enclosed Cartridge Fuses).
- D. FS W-S-865—Switch, Box, (Enclosed), Surface-Mounted.
- E. NEMA KS 1—Enclosed Switches.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 16010.
- B. Include outline drawings with dimensions, and equipment ratings for voltage, capacity, horsepower, and short circuit.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS—DISCONNECT SWITCHES

- A. Square D.
- B. Siemens.
- C. Cutler Hammer.
- D. General Electric.
- E. Substitutions: Under provisions of Section 16010.

2.02 DISCONNECT SWITCHES

- A. Fusible Switch Assemblies: NEMA KS 1; Type HD, FS W-S-865; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: FS W-F- 870.

- B. Non-fusible Switch Assemblies: NEMA KS 1; Type HD; FS W-S-865; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- C. Enclosures:
  - 1. Exterior: NEMA Type 3R.
  - 2. Interior: NEMA Type 1.
  - 3. Areas Subject to Wash down: NEMA type 4X.
  - 4. Exterior (Within 50' of a Cooling Tower): NEMA Type 4X, stainless steel
- D. Duty Rating:
  - 1. Use Heavy Duty rated switches only on service entrance.
  - 2. General Duty switches are acceptable in all locations except service entrance.

#### 2.03 ACCEPTABLE MANUFACTURERS-FUSES

- A. Bussmann.
- B. Ferraz-Shawmut.
- C. Littelfuse.
- D. Substitutions: Not permitted.

#### 2.04 FUSES

- A. Fuses 600 Amperes and Less (Feeders and Transformers): UL Class J, dual element, current limiting, time delay, one-time fuse, 250 or 600 volt.
- B. Fuses 600 Amperes and Less (Motor Loads): UL Class RK5, dual element, current limiting, time delay, one-time fuse, 250 or 600 volt.
- C. Fuses 600 Amperes and Less (All other loads): UL Class RK1, dual element, current limiting, time delay, one-time fuse, 250 or 600 volt.
- D. Fuses 601 Amperes and more: UL Class L, time delay, one-time fuse, 250 or 600 volt.
- E. Interrupting Rating: 200,000 rms amperes.

### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. Install disconnect switches where indicated on Drawings.

- B. Install disconnect switches plumb and level with building elements.
- C. Install fuses in fusible disconnect switches.
- D. All fuses shall be by the same manufacturer.
- E. All fusible switches which contain current limiting fusing shall have UL Class "R" rejection clips.
- F. Provide three (3) spare fuses for each different size and class of fuse specified on the drawings. Spare fuses to be given to Owner.

\*\*\* END OF SECTION \*\*\*



**MECHANICAL LEGEND**

	TO BE REMOVED
	NEW POINT OF CONNECTION
	EXISTING CONDENSER WATER RETURN LINE
	NEW CONDENSER WATER RETURN LINE
	EXISTING CONDENSER WATER SUPPLY LINE
	NEW CONDENSER WATER SUPPLY LINE
	EXISTING CHILLED WATER RETURN LINE
	NEW CHILLED WATER RETURN LINE
	EXISTING CHILLED WATER SUPPLY LINE
	NEW CHILLED WATER SUPPLY LINE
	EXISTING CONDENSATE LINE
	NEW CONDENSATE LINE
	ISOLATION VALVE (BALL OR BUTTERFLY)
	EQUIPMENT TAG
	BUTTERFLY VALVE
	TRIPLE DUTY VALVE
	Y-STRAINER
	NEW WORK
	EXISTING WORK

**MECHANICAL NOTES**

MECHANICAL SPECIFICATIONS

1. GENERAL RESPONSIBILITIES OF THE CONTRACTORS

PRIOR TO STARTING THE PROJECT, THE MECHANICAL CONTRACTOR SHALL PROVIDE THE SERVICES OF A STRUCTURAL PROFESSIONAL ENGINEER WHO SHALL CERTIFY THE INSTALLATION AND ATTACHMENT OF ALL ITEMS REQUIRING STRUCTURAL SUPPORT OR WIND LOADING ARE ACCEPTABLE AND MEET THE CODE REQUIREMENTS. ALL DETAILS SHOWN ARE ONLY INTENDED TO BE USED BUDGETING PURPOSES.

THE GENERAL MECHANICAL AND ELECTRICAL CONTRACTORS SHALL PROVIDE THE LABOR, MATERIALS, AND EQUIPMENT REQUIRED FOR THE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM(S) AS DESCRIBED IN THE COMPLETE SET OF CONSTRUCTION DOCUMENTS. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2014 FLORIDA BUILDING CODE AND 2014 FLORIDA ENERGY CODE, 2011 NATIONAL ELECTRIC CODE, NFPA NATIONAL FIRE CODES, AND ALL OTHER STATE AND LOCAL CODES.

THE OWNER SHALL NOT BE RESPONSIBLE FOR ANY PORTION OF THE SCOPE OF WORK UNLESS SPECIFICALLY NOTED IN THE CONSTRUCTION DOCUMENTS.

THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION SCHEDULES OF ALL TRADES. FIXED WORK SUCH AS DUCTWORK AND SANITARY AND STORM PIPING SHALL BE INSTALLED PRIOR TO ANY TRADE WORK THAT CAN BE EASILY RELOCATED OR OFFSET SUCH AS ELECTRICAL CONDUIT AND FIRE PROTECTION AND WATER PIPING. ALL ELECTRICAL CONDUIT AND WATER PIPING SHALL BE INSTALLED AS CLOSE TO WALLS AND AS CLOSE TOGETHER AS POSSIBLE TO ALLOW FOR MAXIMUM DUCT ACCESSIBILITY.

ALL CONTRACTORS SHALL COORDINATE THE SCOPE OF THEIR WORK AND THEIR CONSTRUCTION SCHEDULES WITH THE OWNER TO PREVENT ANY INTERRUPTIONS UNACCEPTABLE TO THE OWNER. THIS MAY REQUIRE WORK AFTER NORMAL OPERATING HOURS AND/OR ON WEEKENDS.

2. BIDS, SHOP DRAWINGS, EQUIPMENT SUBMITTALS, AND CHANGE ORDERS

EACH PROSPECTIVE CONTRACTOR SHALL EVALUATE THE SCOPE OF WORK THOROUGHLY PRIOR TO SUBMITTING A BID. SOME CONDUIT, PIPING, AND OTHER OBSTACLES MAY NEED TO BE RELOCATED AND SUCH RELOCATION SHOULD BE INCLUDED IN EACH PROSPECTIVE MECHANICAL CONTRACTOR'S BID.

EACH PROSPECTIVE MECHANICAL CONTRACTOR SHALL PROVIDE A DETAILED COST BREAKDOWN FOR EACH TASK IN THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS, INCLUDING EQUIPMENT, MATERIALS, AND LABOR. ANY PROPOSED VALUE-ENGINEERING, INCLUDING SUBSTITUTIONS FOR SCHEDULED EQUIPMENT, SHALL BE PRESENTED SEPARATELY AS AN ALTERNATE WITH A SIMILAR COST BREAKDOWN. THE SCOPE OF WORK SHALL BE BID WITH THE SCHEDULED EQUIPMENT AND ANY PROPOSED VALUE-ENGINEERING OR EQUIPMENT SUBSTITUTIONS SHALL BE IDENTIFIED AS ALTERNATES SUBMITTED TO THE CONTRACTOR'S BASE BID. ANY CHANGE ORDERS MUST BE SUBMITTED WITH BOTH THE ORIGINAL COST BREAKDOWN AND THE NEW COST BREAKDOWN FOR COMPARISON.

EACH PROSPECTIVE MECHANICAL CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE DETAILING THE START DATE, DURATION, ASSIGNED MAN-HOURS, AND FINISH DATE OF EACH TASK IN THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS. IF ANY PROPOSED VALUE-ENGINEERING OR EQUIPMENT SUBSTITUTIONS AFFECT THIS SCHEDULE, THEN THOSE IMPACTS SHALL BE IDENTIFIED SEPARATELY.

PRIOR TO STARTING THE PROJECT, THE MECHANICAL CONTRACTOR SHALL STUDY THE COMPLETE SET OF CONSTRUCTION DOCUMENTS AND COORDINATE WITH THE OTHER TRADES AS REQUIRED WITH PROVIDE SHOP DRAWINGS TO SUBMIT TO THE MECHANICAL ENGINEER FOR APPROVAL. THE SHOP DRAWINGS MAY BE SUBMITTED AS HAND-DRAWN NOTES UPON A COPY OF THE CONSTRUCTION DOCUMENTS IF PERMISSION IS OBTAINED FROM THE MECHANICAL ENGINEER. THE CONSTRUCTION DOCUMENTS ARE DIAGRAMMATIC IN NATURE AND INTENDED SOLELY TO CLARIFY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. THE CONSTRUCTION DOCUMENTS ARE NOT INTENDED TO ALERT THE CONTRACTOR(S) OF ALL OBSTACLES. THE SHOP DRAWINGS SHALL SHOW THE COORDINATION OF DUCTWORK AND MECHANICAL EQUIPMENT INSTALLATION WITH EXISTING AND NEW OBSTACLES INCLUDING, BUT NOT LIMITED TO, ELECTRICAL CONDUITS, FIRE PROTECTION PIPING, RAIN LEADERS, SANITARY DRAINS, STRUCTURAL MEMBERS, AND WATER PIPING, AS WELL AS THE MECHANICAL EQUIPMENT MANUFACTURERS' RECOMMENDED. THE MECHANICAL CONTRACTOR SHALL ALSO SHOW THE EXISTING CONDITIONS ON THE SHOP DRAWINGS WHERE THE EXISTING CONDITIONS ARE DIFFERENT FROM THOSE SHOWN ON THE CONSTRUCTION DOCUMENTS.

PRIOR TO STARTING THE PROJECT, THE MECHANICAL CONTRACTOR SHALL STUDY THE COMPLETE SET OF CONSTRUCTION DOCUMENTS AND COORDINATE WITH THE MANUFACTURER(S) AS REQUIRED TO PROVIDE EQUIPMENT SUBMITTALS TO SUBMIT TO THE MECHANICAL ENGINEER FOR APPROVAL. THE EQUIPMENT SUBMITTALS SHALL INCLUDE DIMENSIONS, WEIGHTS, SPECIFIED ACCESSORIES AND REQUIRED CLEARANCES, AS WELL AS FAN CURVES, SOUND LEVELS, CONSTRUCTION DETAILS, WARRANTY INFORMATION, AND ALL OTHER RELEVANT DATA PRESENTED IN THE SAME FORMAT AS THE EQUIPMENT SCHEDULES ON THE CONSTRUCTION DOCUMENTS.

THE BASE PRICE SHALL USE ALL EQUIPMENT AS SPECIFIED. ALL VALUE ENGINEERING ALTERNATES SHALL BE LISTED AS ALTERNATES TO THE OWNERS CONSIDERATION. IF ALTERNATE PRICING IS NOT ACCEPTED BY THE OWNER AND ENGINEER, THEN THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AS SPECIFIED. THE OWNER WILL CONSIDER A CHEAPER PIECE OF EQUIPMENT IF THE DEDUCT IS ENOUGH AND THE PERFORMANCE IS STILL ACCEPTABLE. THE OWNER WILL CONSIDER A MORE EXPENSIVE PIECE OF EQUIPMENT IF BETTER PERFORMANCE WOULD JUSTIFY THE ADDITIONAL UPFRONT COST. PLEASE PROVIDE ALL ALTERNATES THAT WOULD BE USEFUL FOR THE OWNER TO CONSIDER TO SAVE MONEY OR IMPROVE PERFORMANCE. ALTERNATES MUST MEET THE SPECIFICATION REQUIREMENTS AND THE CONTRACTOR ASSUMES FULL RESPONSIBILITY OF COORDINATING WITH OTHER TRADES FOR ALL CHANGES AND COST REQUIRED.

ALTERNATIVES TO THE SCHEDULED EQUIPMENT AND MATERIALS MUST BE EQUAL TO OR EXCEED THOSE SCHEDULED. IF SUBSTITUTIONS FOR SCHEDULED EQUIPMENT AND MATERIALS ARE TO BE MADE, THEN THE MECHANICAL CONTRACTOR SHALL FIRST SUBMIT TO THE MECHANICAL ENGINEER COMPARATIVE LITERATURE CLEARLY SHOWING THE EQUIVALENT OPERATING CAPABILITIES AND OTHER PROPERTIES OF THE SUBSTITUTIONS. ALL DEVIATIONS MUST BE CLEARLY IDENTIFIED AND A REQUEST MUST BE MADE SPECIFIC FOR ALL DEVIATIONS. WHEN SUBSTITUTIONS ARE MADE, THE CONTRACTOR ASSUMES FULL RESPONSIBILITY OF COORDINATING WITH OTHER TRADES ON ANY CHANGES REQUIRED FOR THE SUBSTITUTION, INCLUDING COSTS, ASSOCIATED WITH DUCTWORK, PIPING, ELECTRICAL, AND STRUCTURAL TO IMPLEMENT THE SUBSTITUTED ITEM(S).

ANY CHANGE ORDER SUBMITTED BY THE GENERAL, MECHANICAL, OR ELECTRICAL CONTRACTORS FOR WORK WITHIN THE SCOPE OF THIS PROJECT SHALL NOT EXCEED THE VALUES LISTED IN THE MOST CURRENT VERSIONS OF THE MEANS COST DATA BOOKS FOR THE APPLICABLE TRADES. EVERY CHANGE ORDER SHALL BE ACCOMPANIED BY A DETAILED COST BREAKDOWN FOR EACH TASK, INCLUDING EQUIPMENT, MATERIALS, AND LABOR. THE MECHANICAL ENGINEER MAY, AT HIS DISCRETION, REQUIRE THE CONTRACTOR(S) TO PROVIDE A FINAL, VERIFIABLE ACCOUNTING OF EQUIPMENT, MATERIALS, AND LABOR AFTER THE WORK IS COMPLETE AND PRIOR TO THE MECHANICAL ENGINEER'S APPROVAL OF THE CONTRACTOR'S FINAL PAY APPLICATION(S). LABOR RATES FOR CHANGE ORDERS SHALL NOT EXCEED \$50/HOUR (\$75/HR OVERTIME) FOR ANY CHANGE ORDERS INCLUDING ALL OVERHEAD AND PROFIT UNLESS APPROVED BY THE ENGINEER OF RECORD. MATERIAL RATES FOR PIPING SHALL NOT EXCEED A 0.35 MULTIPLIER FOR NIBCO MATERIALS UNLESS APPROVED BY ENGINEER OF RECORD.

3. MECHANICAL EQUIPMENT INSTALLATION

ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED AS REQUIRED BY THE MANUFACTURERS' INSTALLATION AND MAINTENANCE MANUALS. THOSE MANUALS WILL TYPICALLY PROVIDE MORE DETAIL THAN THE CONSTRUCTION DOCUMENTS. IF THERE IS A CONFLICT BETWEEN THE INSTALLATION AND MAINTENANCE MANUALS AND THE CONSTRUCTION DOCUMENTS, THEN THE MECHANICAL CONTRACTOR SHALL SUBMIT A REQUEST-FOR-INFORMATION TO THE MECHANICAL ENGINEER.

ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED SUCH THAT SUFFICIENT CLEARANCES ARE PROVIDED FOR MAINTENANCE. ALL MECHANICAL EQUIPMENT AT A HEIGHT GREATER THAN SIXTEEN (16) FEET SHALL HAVE A PERMANENT MEANS OF ACCESS. ALL COMPRESSORS SHALL HAVE A MINIMUM OF THIRTY (30) INCHES OF CLEAR SPACE ON THE SERVICE SIDE(S).

THE GENERAL AND MECHANICAL CONTRACTORS SHALL PROVIDE A CONCRETE HOUSEKEEPING PAD UNDER ALL MECHANICAL EQUIPMENT. THE HOUSEKEEPING PAD SHALL BE AT THE REQUIRED HEIGHT TO PROVIDE THE REQUIRED P-TRAP HEIGHT AND SHALL EXTEND 6" BEYOND THE MECHANICAL EQUIPMENT ON ALL SIDES.

THE MECHANICAL CONTRACTOR SHALL PROVIDE VIBRATION ISOLATION AS RECOMMENDED BY THE MANUFACTURER(S) AND/OR REQUIRED BY THE MECHANICAL ENGINEER TO ENSURE QUIET OPERATION OF THE MECHANICAL EQUIPMENT. NO UNDUCE VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE STRUCTURE OR ANY OCCUPIED SPACES WITHIN THE STRUCTURE.

THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL STARTERS, CONTACTORS, RELAYS, CONTROLS,

AND ACCESSORIES NECESSARY TO PROVIDE A COMPLETE AND WORKING POWER AND CONTROL SYSTEM FOR THE MECHANICAL EQUIPMENT WITHIN THE SCOPE OF WORK. THE ELECTRICAL CONTRACTOR WILL PROVIDE ALL DISCONNECT SWITCHES, CONDUIT, AND WIRING FOR THE MECHANICAL EQUIPMENT WITHIN THE SCOPE OF WORK. ALL ELECTRICAL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER OPERATION OF THE COMPLETE SYSTEM AND SHALL ENSURE THAT WIRING DIAGRAMS ARE PROVIDED TO THE OWNER. NO WIRING OF ANY KIND SHALL BE EXPOSED IN FINISHED AREAS.

THE MECHANICAL CONTRACTOR SHALL ENSURE THAT ALL MECHANICAL EQUIPMENT IS STARTED, TESTED, ADJUSTED, AND PLACED IN SATISFACTORY OPERATING CONDITION PRIOR TO SUBSTANTIAL COMPLETION. THE MECHANICAL CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP, MATERIALS, AND MECHANICAL EQUIPMENT TO BE FREE OF DEFECTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER AND SHALL REPAIR ANY DEFECTS OCCURRING WITHIN THAT TIME WITHOUT COST TO THE OWNER. ALL MECHANICAL EQUIPMENT IN THE SCOPE OF WORK SHALL BE COVERED FOR THE DURATION OF THE MANUFACTURER'S WARRANTIES AND THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ORIGINALS OF ALL MANUFACTURER'S GUARANTEES AND WARRANTIES. ALL COMPRESSORS SHALL BE PROVIDED WITH A MINIMUM FIVE (5) YEAR WARRANTY. THE CONTRACTOR SHALL PROVIDE THE COST OF ALL WARRANTIES TO THE OWNER AND GIVE THE OWNER THE OPTION TO DEDUCT THIS COST FROM THE CONTRACTOR PRICE AND PURCHASE THE WARRANTIES DIRECTLY.

THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL MECHANICAL EQUIPMENT VOLTAGE REQUIREMENTS WITH THE VOLTAGE AVAILABLE AT THE PROJECT SITE PRIOR TO ORDERING ANY MECHANICAL EQUIPMENT.

THE MECHANICAL CONTRACTOR SHALL RETURN ANY EXISTING MECHANICAL EQUIPMENT IN THE SCOPE OF WORK AS REQUESTED BY THE OWNER. THIS MAY INCLUDE MAKING PROVISIONS TO RECLAIM THE REFRIGERANT. THE MECHANICAL CONTRACTOR SHALL REMOVE EXISTING MECHANICAL EQUIPMENT NOT REQUESTED BY THE OWNER FROM THE PROJECT SITE AND DISPOSE OF IT IN ACCORDANCE WITH ALL APPLICABLE LAWS.

4. CONDENSER, CHILLED, PIPING

WATER LINES WITH DIAMETERS OF TWO (2) INCHES OR LESS SHALL BE CONSTRUCTED OF COPPER (TYPE 'L' OR HEAVIER). WATER LINES WITH DIAMETERS OF MORE THAN TWO (2) INCHES SHALL BE CONSTRUCTED OF STEEL (MINIMUM SCHEDULE 40). ALL WATER LINES SHALL BE PITCHED UP ONE (1) INCH PER FORTY (40) LINEAR FEET IN THE DIRECTION OF WATER FLOW. THE MECHANICAL CONTRACTOR SHALL PROVIDE DRAIN VALVES AT ALL LOW POINTS AND MANUAL AIR VENTS AT ALL HIGH POINTS IN ALL WATER LINES.

ALL CONTROL VALVES SHALL BE TWO-WAY CONTROL VALVES UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DOCUMENTS. THE MECHANICAL CONTRACTOR SHALL SUBMIT CONTROL VALVE Cv AND PRESSURE DROPS TO THE MECHANICAL ENGINEER FOR APPROVAL.

THE MECHANICAL CONTRACTOR SHALL SLEEVE AND SEAL ALL WATER LINES AND OTHER PIPING PASSING THROUGH FLOORS, WALLS, AND ROOFS UNLESS NOTED OTHERWISE ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL PROVIDE FIRE-RATED SLEEVES FOR ALL WATER LINE OR OTHER PIPING PENETRATIONS OF FIRE-RATED OR FIRE-SMOKE-RATED ASSEMBLIES. THE CONCENTRIC ANNULAR SPACE BETWEEN EACH SLEEVE AND WATER LINE OR PIPE SHALL BE PACKED WITH FIRE-SAFING MATERIAL.

EVERY PENETRATION FOR WATER LINES OR OTHER PIPING, CONDUITS, OR ANY OTHER PURPOSE THROUGH AN ASSEMBLY WITH A REQUIRED FIRE RESISTANCE RATING SHALL BE SEALED IN AN APPROVED MANNER TO MAINTAIN THE REQUIRED FIRE RESISTANCE RATING OF THE ASSEMBLY AS FOLLOWS:

A. WHERE HOLES FOR PENETRATIONS ARE CIRCULAR OR CORE-BORED, THE MECHANICAL CONTRACTOR SHALL SEAL EACH PENETRATION WITH FIRE-SEAL BRAND SMOKE AND FIRE STOP FITTINGS MANUFACTURED BY O-Z GEDLEY, LINK SEAL BRAND SMOKE AND FIRE STOP FITTINGS MANUFACTURED BY THUNDER LINE, OR AN EQUAL APPROVED BY THE MECHANICAL ENGINEER.

B. WHERE HOLES FOR PENETRATIONS ARE IRREGULAR (NON-CIRCULAR), THE MECHANICAL CONTRACTOR SHALL PROTECT EACH PENETRATION WITH DOWN CORNING 346SR, SILICONE-FOAM, 3M FIRE BARRIER PENETRATION SEAL SYSTEM, OR AN EQUAL APPROVED BY THE MECHANICAL ENGINEER.

THE MECHANICAL CONTRACTOR SHALL INSULATE ALL CHILLED WATER LINES WITH CLOSED CELLULAR GLASS INSULATION. INTERIOR CHILLED WATER LINES WITH DIAMETERS OF TWO (2) INCHES OR LESS SHALL BE PROVIDED WITH 1-1/2" OF INSULATION. INTERIOR CHILLED WATER LINES WITH DIAMETERS OF MORE THAN TWO (2) INCHES SHALL BE PROVIDED WITH 2" OF INSULATION, AND ALL EXTERIOR CHILLED WATER LINES (TO INCLUDE THOSE IN UNCONDITIONED INTERIOR SPACES) SHALL BE PROVIDED WITH 2-1/2" OF INSULATION. INTERIOR CHILLED WATER LINES SHALL BE FINISHED WITH VINYL-FOL LAMINATE SERVICE JACKETS AND EXTERIOR CHILLED WATER LINES SHALL BE FINISHED WITH ALUMINUM SERVICE JACKETS. ALL INSULATION AND SERVICE JACKETS FOR ELBOWS OR OTHER PIPE FITTINGS SHALL BE PRE-FORMED TO ELIMINATE VOIDS.

THE MECHANICAL CONTRACTOR SHALL CLEARLY LABEL ALL PIPING TO INDICATE CONTENT AND DIRECTION OF FLOW.

THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY CHEMICAL WATER TREATMENT SYSTEM COMPONENTS. AFTER EACH WATER SYSTEM IS INSTALLED AND CLEANED AND BEFORE SUBSTANTIAL COMPLETION, THE MECHANICAL CONTRACTOR SHALL INITIATE A CHEMICAL WATER TREATMENT PROGRAM AND PROVIDE ANY NECESSARY TRAINING IN CHEMICAL WATER TREATMENT TO THE OWNER. THE CONTRACTOR SHALL USE THE OWNER CHEMICAL TREATMENT VENDOR FOR ALL REQUIRED CHEMICAL TREATMENT SERVICES.

ALL NEW CHILLED WATER PIPE SHALL BE FLUSHED AT A MINIMUM OF 6 FPS. PROVIDE BOTTOM MOUNTED STRAINERS (WITH OPENING NO LARGER THAN 0.45 INCHES) WITH BLOWDOWNS EVERY 300 FEET. PROVIDE RENTAL PUMP AND TEMPORARY PIPING AS REQUIRED. USE PIPE CLEANING COMPOUND SIMILAR TO MALCO 2567. TO REMOVE ORGANIC SOIL, HYDROCARBONS, FLUX, PIPE MILL, VARNISH, PIPE COMPOUNDS, IRON OXIDE, AND LIKE DELETERIOUS SUBSTANCES - WITH OR WITHOUT INHIBITOR, SUITABLE FOR SYSTEM METALS WITHOUT DELETERIOUS EFFECTS, CLEANER SHALL CONTAIN NO TRISODIUM PHOSPHATE. PROVIDE BY-PASS TYPE BATCH FEEDER TO RECEIVE CHEMICALS IN LIQUID OR PELLET FORM. REMOVE FEEDER FROM ME ROOM WHEN PROCESS IS COMPLETED. ALL FLUSHING AND CLEANING SHALL BE PERFORMED BY A COMPANY THAT SPECIALIZES IN CHEMICAL WATER TREATMENT.

ALL PIPING SHALL BE LABELED TO ANSIA/SME A13.1 SHALL BE FABRICATED IN THE USA.

6. CONTROLS

THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONTRACTING WITH THE EXISTING CONTROLS CONTRACTOR AND DETERMINING WHAT IS REQUIRED TO INCORPORATE NEW MECHANICAL EQUIPMENT AND CONTROLS INTO THE EXISTING CONTROL SYSTEM(S) AND INCLUDING ALL COSTS ASSOCIATED WITH INCORPORATING NEW MECHANICAL EQUIPMENT AND CONTROLS INTO THE EXISTING CONTROL SYSTEM(S) IN HIS/HER BID. THE CONTROLS CONTRACTOR SHALL PROVIDE A COMPLETE DESCRIPTION OF THE ENTIRE CONTROL SYSTEM, INCLUDING SCHEMATIC DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL CONTROLS AND SUB-CONTRACT TO THE ELECTRICAL CONTRACTOR ALL CONTROLS POWER AND TRANSFORMERS NOT IDENTIFIED IN THE ELECTRICAL PORTION OF THE CONSTRUCTION DOCUMENTS.

7. TESTING AND BALANCING THE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM

THE CONTRACTOR SHALL PROVIDE THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY TO TEST, BALANCE, AND CERTIFY THE PERFORMANCE OF THE COMPLETE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM, TO INCLUDE SUPPLY, RETURN, OUTSIDE / MAKE-UP, AND EXHAUST AIR SYSTEMS, AS WELL AS CONDENSER, CHILLED, AND HEATING HOT WATER SYSTEMS. THE TEST AND BALANCE CONTRACTOR SHALL PERFORM ALL TESTING, ADJUSTING, BALANCING, AND DATA RECORDING NECESSARY TO ESTABLISH THE CAPACITY AND QUALITY OF THE SYSTEMS AND CONFIRM THE SATISFACTORY COMPLETION OF ALL ASPECTS OF THE SCOPE OF WORK. THIS WILL INCLUDE NOT ONLY THE NEW SYSTEMS, BUT ALSO ALL OF THE EXISTING SYSTEMS THAT HAVE BEEN MODIFIED.

THE TEST AND BALANCE CONTRACTOR SHALL BE AN APPROVED MEMBER OF THE ASAC OR NEBB AND SHALL SPECIALIZE IN THE TESTING AND BALANCING OF HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS. THE FOLLOWING TEST AND BALANCE CONTRACTORS ARE PRE-APPROVED: THE PHOENIX AGENCY, SITA, TEST AND BALANCE CORPORATION AND SPEC TECH CONSULTANTS. THE CONTRACTOR SHALL SUBMIT ANY NON-PRE-APPROVED TEST AND BALANCE CONTRACTOR TO THE MECHANICAL ENGINEER FOR APPROVAL PRIOR TO SUBMITTING A BID.

CONTROLS CONTRACTOR SHALL PROVIDE REQUIRED BAS HARDWARE, SOFTWARE, PERSONNEL AND ASSISTANCE TO TAB AGENCY AS REQUIRED TO BALANCE THE SYSTEMS. CONTROLS CONTRACTOR SHALL ALSO PROVIDE TRENDRING REPORT TO DEMONSTRATE THAT SYSTEMS ARE COMPLETE.

MECHANICAL CONTRACTOR SHALL PROVIDE TAB AGENCY ONE COMPLETE SET OF CONTRACT DOCUMENTS, CHANGE ORDERS, AND APPROVED SUBMITTALS. MECHANICAL CONTRACTOR SHALL COORDINATE MEETINGS AND ASSISTANCE FROM SUPPLIERS AND CONTRACTORS AS REQUIRED BY TAB AGENCY. MECHANICAL CONTRACTOR SHALL PROVIDE ADDITIONAL VALVES, DAMPERS, SHEAVES AND BELTS AS REQUIRED BY TAB AGENCY. MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS TO ALL DAMPERS, VALVES, TEST PORTS, NAMEPLATES AND OTHER APPURTENANCES AS REQUIRED BY TAB AGENCY. MECHANICAL CONTRACTOR SHALL REPLACE OR REPAIR INSULATION AS REQUIRED BY TAB AGENCY.

THE TEST AND BALANCE CONTRACTOR SHALL, UPON COMPLETION OF ALL NECESSARY TESTING AND BALANCING AND AT LEAST ONE (1) WEEK PRIOR TO SUBSTANTIAL COMPLETION, SUBMIT THREE (3) BOUND COPIES OF THE TEST AND BALANCE REPORT TO THE MECHANICAL ENGINEER.

THE MECHANICAL CONTRACTOR SHALL INCLUDE IN HIS/HER BID THE COST OF ANY SHEAVE CHANGES REQUIRED FOR REBALANCING THE SYSTEM. WHEN BALANCING AN AIR HANDLER EQUIPPED WITH A VARIABLE FREQUENCY DRIVE, THE TEST AND BALANCE AND MECHANICAL CONTRACTORS SHALL PROVIDE A FAN MOTOR SHEAVE THAT CREATES THE MAXIMUM AIRFLOW POSSIBLE WITHOUT OVERLOADING THE FAN MOTOR WHEN THE VARIABLE FREQUENCY DRIVE IS IN FULL BYPASS MODE. THE VARIABLE FREQUENCY DRIVE SHALL THEN BE USED TO BALANCE THE AIR HANDLER TO PROVIDE THE DESIGN AIRFLOW. THE TAB SHALL OPEN THE DAMPERS TO THE CRITICAL PATH DUCTWORK AND OPERATE THE VFD AT THE LOWEST SPEED POSSIBLE TO ACHIEVE DESIGN AIRFLOW.

THE BALANCING VALVES AT THE PUMP AND AT THE CHILLER SHOULD BE FULLY OPEN AND CBV TO THE CRITICAL AHU LOOPS SHOULD BE FULLY OPEN WITH THE PUMP TO ACHIEVE THIS REQUIRED WATER FLOW WITH THE MINIMUM VFD SPEED. ANY USE OF THE CHILLER OR PUMP CBVS MUST GET THE APPROVAL FROM THE ENGINEER OF RECORD.

THE TEST AND BALANCE CONTRACTOR SHALL BALANCE THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS AND RETURN AREAS OUTSIDE OF THE SCOPE OF WORK AND SERVED BY SYSTEMS NOT WITHIN THE SCOPE OF WORK TO THE ORIGINAL DESIGN AIRFLOWS OR RE-BALANCE THE ORIGINAL DESIGN AIRFLOWS IN LOCATIONS WHERE THE EXISTING SYSTEM MAY NOT BE BALANCED PROPERLY.

8. SUBSTANTIAL AND FINAL COMPLETION

THE MECHANICAL CONTRACTOR SHALL MAINTAIN A SET OF CONTINUOUSLY UPDATED, REPRODUCIBLE AS-BUILT DRAWINGS DURING CONSTRUCTION AND PROVIDE A COMPLETE SET OF THOSE DRAWINGS IN BOTH ELECTRONIC AND HARDCOPY FORMATS TO THE OWNER UPON FINAL COMPLETION.

9. COMMISSIONING

THE FLORIDA ENERGY CONSERVATION CODE 2014 C408.2 REQUIRES MECHANICAL COMMISSIONING WHERE TOTAL MECHANICAL COOLING CAPACITY EXCEEDS 480 MBH OR MECHANICAL HEATING CAPACITY EXCEEDS 600 MBH. THIS SCOPE, AS DETERMINED NECESSARY BY THE AUTHORITY HAVING JURISDICTION, MUST BE INCLUDED IN THE BASE BID. THE TEST AND BALANCE CONTRACTOR SHALL PERFORM COMMISSIONING PER C408.2 AND SUBMIT A REPORT TO THE ENGINEER FOR REVIEW. THE FOLLOWING SHALL BE PERFORMED AND INCLUDED IN THE REPORT:

- ALL ITEMS AS SPECIFIED UNDER TEST AND BALANCE SECTION ABOVE
- CONFIRMATION OF ALL SEQUENCES OF OPERATION AS SPECIFIED ON PLANS
- CONFIRMATION OF ALL SYSTEM PERFORMANCE AND FUNCTION AS SPECIFIED ON PLANS
- CONFIRMATION OF FUNCTION OF ALL ACTUATED DEVICES SUCH AS DAMPERS, ECONOMIZERS AND VALVES CONSISTENT WITH CONTROL SEQUENCES OF OPERATION
- CALIBRATION OF ALL SENSORS, THERMOSTATS, ETC
- DOCUMENTATION OF ANY AS-BUILT CONDITIONS THAT DIFFER FROM CONSTRUCTION DOCUMENTS WHICH MAY AFFECT SYSTEM PERFORMANCE.

10. SCHEDULE

THE CONTRACTORS SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH MANATEE COUNTY TO MINIMIZE DISRUPTION OF LABORATORY OPERATIONS. DOWNTIME SHALL PREFERABLY OCCUR OVER A WEEKEND DURING UN-OCCUPIED HOURS. THE LABORATORY CLOSURES AT 1PM ON SATURDAYS AND SUNDAYS. THE SIGNIFICANT PERIODS OF DOWNTIME WILL BE:

- THE INSTALLATION OF NEW CHILLED WATER VALVES AND AUXILIARY CONNECTIONS TO START UP THE RENTAL CHILLER
- THE REPLACEMENT OF THE CHILLED WATER PUMP.
- DISCONNECT OF TEMPORARY CHILLER AND STARTUP OF NEW CHILLER.

ALL BUILDING HVAC SYSTEMS SHALL BE RUNNING AND OPERATIONAL BEFORE START OF NEXT BUSINESS DAY. CONSTRUCTION MAY OCCUR DURING BUSINESS HOURS, BUT OPERATIONS THAT CREATE EXCESSIVE NOISE MAY NEED TO OCCUR AFTER BUSINESS HOURS.

**MECHANICAL SHEET INDEX**

CH-M0.1	MECHANICAL SPECIFICATIONS
CH-M1.1	MECHANICAL PLAN: DEMOLITION
CH-M1.2	MECHANICAL PLAN
CH-M2.1	MECHANICAL PIPING FLOW DIAGRAM
CH-M3.1	MECHANICAL SCHEDULES
CH-M3.2	MECHANICAL DETAILS
EF-M1.0	MECHANICAL RENOVATION PLAN
EF-M2.0	MECHANICAL SCHEDULES & DETAILS

**REVISIONS**

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△	
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Advanced Systems Engineering, Inc.

Job No. 14079.06DE  
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Manager: JRW  
CA-8488  
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**MECHANICAL SPECIFICATIONS**

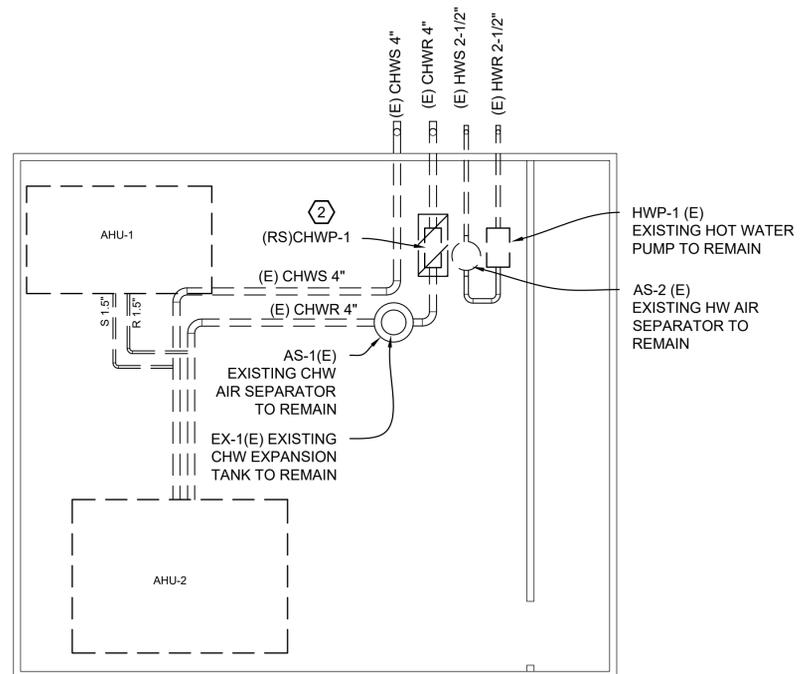
**MANATEE COUNTY - WATER TREATMENT LAB**

**CHILLER & EXHAUST FAN REPLACEMENT**

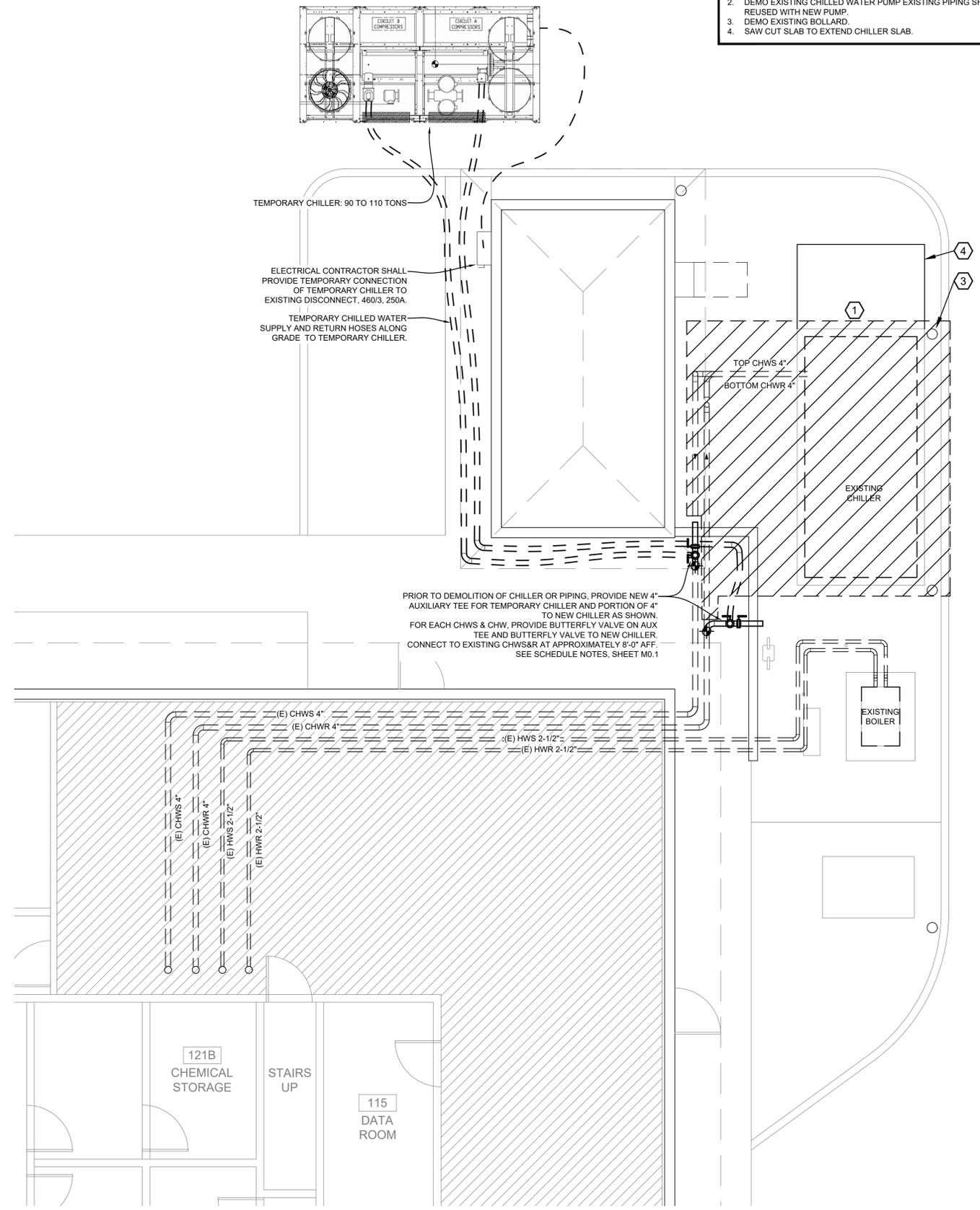
4751 65th STREET WEST  
BRADENTON, FL 34210

JOB NO:	14079.06DE
PROJ. MNGR:	JRW
DRAWN BY:	JRW
ISSUE DATE:	07.24.2017

SHEET NUMBER	<b>CH-M0.1</b>
BID SET	



1 MECHANICAL ROOM DEMOLITION PLAN  
SCALE: 3/16"=1'-0"



2 MECHANICAL DEMOLITION PLAN  
SCALE: 1/4"=1'-0"



- DEMOLITION KEYED NOTES**
1. DEMO EXISTING CHILLER AND ALL ASSOCIATED PIPING IN THIS AREA.
  2. DEMO EXISTING CHILLED WATER PUMP EXISTING PIPING SHALL BE REUSED WITH NEW PUMP.
  3. DEMO EXISTING BOLLARD.
  4. SAW CUT SLAB TO EXTEND CHILLER SLAB.

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**MECHANICAL DEMOLITION PLAN**  
**MANATEE COUNTY - WATER TREATMENT LAB**  
 CHILLER & EXHAUST FAN REPLACEMENT  
 4751 65th STREET WEST  
 BRADENTON, FL 34210

JOB NO:	14079.06DE
PROJ. MNGR:	JRW
DRAWN BY:	JRW
ISSUE DATE:	07.24.2017

SHEET NUMBER  
**CH-M1.1**  
 BID SET

**RENOVATION KEYED NOTES**

1. FIELD VERIFY SERVICE CLEARANCES WITH FIELD CONDITIONS AND MANUFACTURERS LITERATURE.
2. PROVIDE NEW BOLLARD TO CORNER OF NEW EXTENDED CHILLER PAD THIS LOCATION.
3. RECONNECT NEW CHWP-1 TO EXISTING PIPING AS SHOWN. SEE DETAIL 3 ON SHEET M3.2.
4. EXTEND CHILLER PAD APPROXIMATELY 5'-6" (FIELD VERIFY) TO ACCOMMODATE CHILLER FOOT PRINT AND SERVICE CLEARANCES.

**REVISIONS**

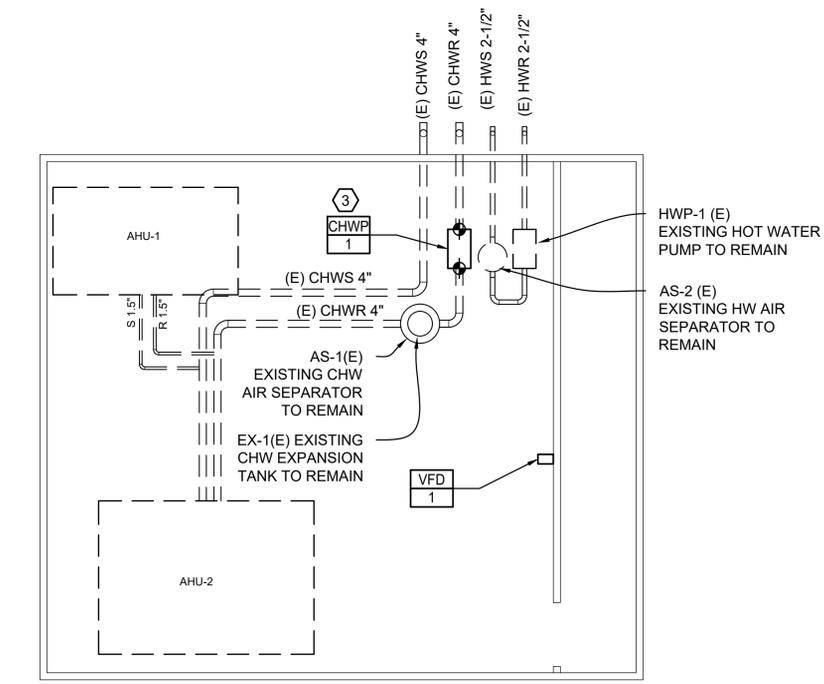

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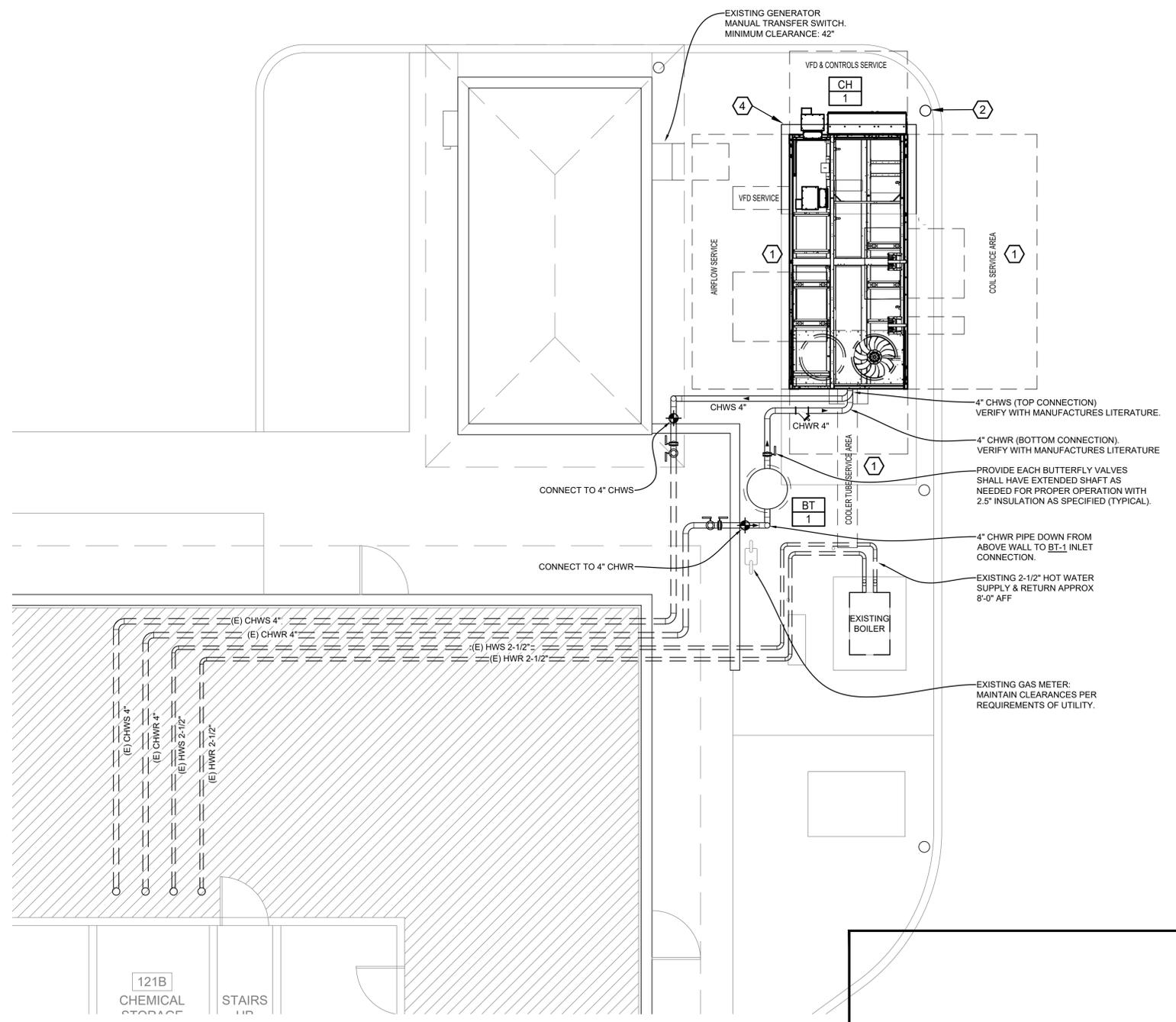
**MECHANICAL PLAN**  
**MANATEE COUNTY - WATER TREATMENT LAB**  
**CHILLER & EXHAUST FAN REPLACEMENT**  
 4751 65th STREET WEST  
 BRADENTON, FL 34210

JOB NO: 14079.06DE  
 PROJ. MNGR: JRW  
 DRAWN BY: JRW  
 ISSUE DATE: 07.24.2017

SHEET NUMBER  
**CH-M1.2**  
 BID SET



**1 MECHANICAL ROOM RENOVATION PIPING PLAN**  
 SCALE: 3/16"=1'-0"



**2 MECHANICAL RENOVATION PIPING PLAN**  
 SCALE: 3/16"=1'-0"

**KEY PLAN**  
 SCALE: NOT TO SCALE



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**MECHANICAL FLOW DIAGRAM**  
**MANATEE COUNTY - WATER TREATMENT LAB**  
**CHILLER & EXHAUST FAN REPLACEMENT**  
 4751 65th STREET WEST  
 BRADENTON, FL 34210

JOB NO: 14079.06DE  
 PROJ. MNGR: JRW  
 DRAWN BY: JRW  
 ISSUE DATE: 07.24.2017

SHEET NUMBER  
**CH-M2.1**  
 BID SET

MECHANICAL DIAGRAM LEGEND	
	NEW POINT OF CONNECTION
	EXISTING CHILLED WATER RETURN LINE
	NEW CHILLED WATER RETURN LINE
	EXISTING CHILLED WATER SUPPLY LINE
	NEW CHILLED WATER SUPPLY LINE
	EXISTING CONDENSATE LINE
	NEW CONDENSATE LINE
	ISOLATION VALVE (BALL OR BUTTERFLY)
	EQUIPMENT TAG
	THERMOMETER
	FLOW METER, IMPELLER OR ULTRASONIC TO BMS
	TEMPERATURE SENSOR TO BMS
	3-WAY VALVE
	BUTTERFLY VALVE
	TRIPLE DUTY VALVE
	Y-STRAINER
	NEW WORK
	EXISTING WORK

CONTROLS WORK SHALL BE BY "BOYD BROTHERS SERVICE INC".

THE CONTROLS CONTRACTOR SHALL PROVIDE ALL CONTROLS HARDWARE AND PROGRAMMING TO INTERFACE WITH EXISTING OR NEW NON-PROPRIETARY DDC SYSTEM.

THE MECHANICAL CONTRACTOR, IN CONJUNCTION WITH THE CHILLER MANUFACTURER, SHALL PROVIDE THE PROPER PROTOCOL PANEL FOR CHILLER CONTROL, MONITORING AND INTEGRATION (BACNET, OPEN PROTOCOL, ETC.).

THE BMS SHALL MONITOR CHILLER FUNCTION INCLUDING ALARMS AND MAINTENANCE ALERTS AS COORDINATED WITH OWNER.

THE TEST AND BALANCE CONTRACTOR SHALL BALANCE THE CHILLED WATER SYSTEM AS SHOWN ON THE FLOW DIAGRAM.

AHU-1: 22 GPM  
 AHU-2: 218 GPM  
 DESIGN TOTAL FLOW: 240 GPM

THE LEAVING AIR TEMP SETPOINT FOR AHU-1 (OFFICES) SHALL BE SET TO 55°F.  
 THE LEAVING AIR TEMP SETPOINT FOR AHU-2 (100% OUTSIDE AIR) SHALL BE SET TO 50°F

CHILLER INTERNAL CONTROLS SHALL BE CONFIGURED GLYCOL MIXTURE.

**SEQUENCE OF OPERATIONS: CHILLER AND PUMP**

THE CENTRAL CHILLED WATER PLANT IS A VARIABLE PRIMARY PUMPING ARRANGEMENT, WITH 3 WAY VALVES AT EACH OF TWO EXISTING AIR HANDLERS.

OPERATION OF THE SYSTEM IS CONTINUOUS, 24 HOURS PER DAY, 365 DAYS PER YEAR.

CHILLER CONTROLS SHALL ALTERNATE THE LEAD COMPRESSOR PERIODICALLY. CHILLER CONTROLS SHALL ENGAGE AND MODULATE COMPRESSORS TO MAINTAIN CONSTANT LEAVING WATER TEMPERATURE AS SCHEDULED.

THE CHILLED WATER PUMP VARIABLE FREQUENCY DRIVE (VFD) SHALL BE SET TO A MAXIMUM BASED ON THE DESIGN FLOW RATE AS SCHEDULED. THE "MAXIMUM FLOW RATE" AS SCHEDULED IS PROVISION FOR FUTURE CAPACITY EXPANSION OF THE SYSTEM. THE VFD SHALL HAVE A MINIMUM FLOW RATE CORRESPONDING TO THE MINIMUM FLOW AS DICTATED BY CHILLER MANUFACTURER.

IF THE VFD FAILS, IT SHALL GO TO BYPASS AND A ALARM SHALL BE SENT THROUGH THE BMS.

THE POSITION OF EACH OF THE 3-WAY CHW VALVES AT THE COILS SHALL BE POLED. THE CHILLED WATER PUMP VFD SHALL BE MODULATED DOWN TO MINIMUM SETTING SUCH TO MAINTAIN THAT THE MOST OPEN VALVE BE FULLY OR NEAR FULLY OPEN (85% - ADJUSTABLE).

THE CHILLED WATER PUMP VFD SPEED DESIGN MAXIMUM SPEED SHALL BE RESET UP TOWARD TOWARD 270 GPM IF THE LEAVING AIR TEMPERATURE SETPOINT FOR AHU-2 IS NOT MET WHILE THE CONTROL VALVE IS FULLY OPEN AND THE CHILLER PUMP VFD SPEED IS ALREADY UP TO DESIGN FLOW OF 240 GPM.

LEAVING WATER TEMPERATURE RESET:  
 CHILLER LEAVING WATER TEMPERATURE SETPOINT SHALL BE AS SCHEDULED (42°F - ADJUSTABLE) BUT MAY BE RESET UP TO A MAXIMUM OF (46°F - ADJUSTABLE) AS FOLLOWS: EACH AHU HAS A CONSTANT LEAVING AIR TEMPERATURE SETPOINT AS CONTROLLED BY ANOTHER EXISTING SEQUENCE OF OPERATION.  
 THE CHILLER LEAVING WATER TEMPERATURE SETPOINT SHALL BE RESET UP TOWARD MAXIMUM BY 0.2°F IF ALL OF THE FOLLOWING CONDITIONS ARE MET:

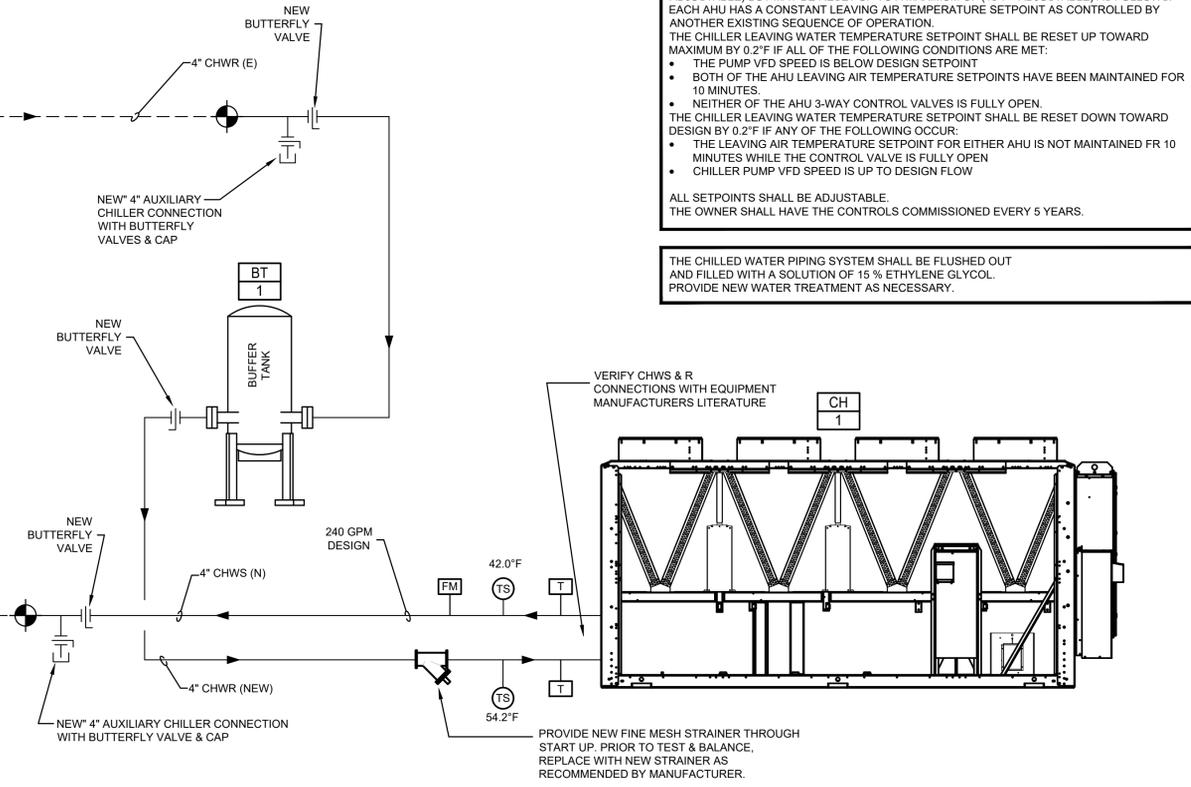
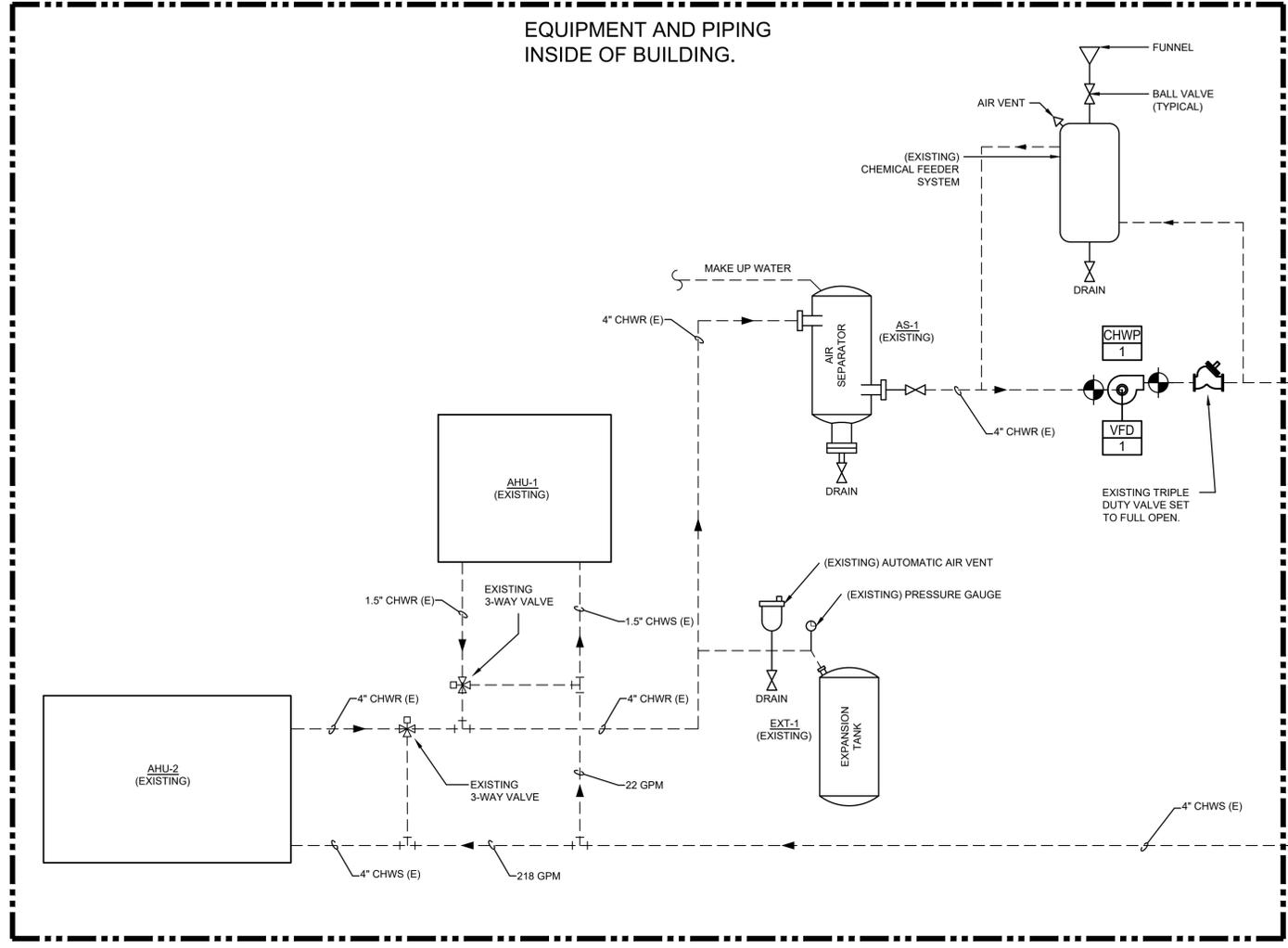
- THE PUMP VFD SPEED IS BELOW DESIGN SETPOINT
- BOTH OF THE AHU LEAVING AIR TEMPERATURE SETPOINTS HAVE BEEN MAINTAINED FOR 10 MINUTES.
- NEITHER OF THE AHU 3-WAY CONTROL VALVES IS FULLY OPEN.

THE CHILLER LEAVING WATER TEMPERATURE SETPOINT SHALL BE RESET DOWN TOWARD DESIGN BY 0.2°F IF ANY OF THE FOLLOWING OCCUR:

- THE LEAVING AIR TEMPERATURE SETPOINT FOR EITHER AHU IS NOT MAINTAINED FR 10 MINUTES WHILE THE CONTROL VALVE IS FULLY OPEN
- CHILLER PUMP VFD SPEED IS UP TO DESIGN FLOW

ALL SETPOINTS SHALL BE ADJUSTABLE.  
 THE OWNER SHALL HAVE THE CONTROLS COMMISSIONED EVERY 5 YEARS.

THE CHILLED WATER PIPING SYSTEM SHALL BE FLUSHED OUT AND FILLED WITH A SOLUTION OF 15% ETHYLENE GLYCOL. PROVIDE NEW WATER TREATMENT AS NECESSARY.



1 MECHANICAL CHILLED WATER FLOW & PIPING DIAGRAM  
 SCALE: NTS

**VFD Schedule - 14079.06D - Manatee water treatment facility pump VFD Engineer: Advanced Systems Engineering**

VFD #	Serving	HP	ABB Model	Voltage	Enclosure	Mounting Location	Disconnect/Circuit or none	Bypass	Minimum Amp Rating
1	CWP-1	10	ACH550-VCR-015A-4+F267	480/3	UL Type 1	Indoors	Circuit Breaker	Yes	15.4

**NOTES:**

- Drive amps shall be rated per National Electrical Code Table 430.250.
- Provide 5% Internal Line Reactor (VFD's that use optional external reactors are not accepted).
- Provide Internal EM/RFI Filter. Drive input current shall not exceed drive output current.
- VFD shall be BTL Listed (Communication "gateways" are not acceptable). VFD shall have Modbus, BACnet, Johnson N2 and Siemens FLN serial communications to interface to BMS system now or in the future.
- The VFD shall be rated for 100KAIC without the need for input fusing.
- All enclosures shall be UL type approved. (self certified NEMA enclosures not acceptable).
- UL type 1 enclosures shall be plenum rated. Drives are mounted indoors, UL Type 1 enclosure
- VFD and Bypass complete assembly shall be Seismically tested and certified to IBC2006 Ip factor of 1.5
- Include on site factory-authorized start-up validating ABB Warranty (Parts and on-site labor including travel), 36 months from date of shipment.

**ADDITIONAL BYPASS NOTES:**

- The Bypass shall have the ability to communicate with the Building Automation System even if the VFD is removed.
- The Bypass shall have a plain English display of Bypass functions / operation. Provide service switch.
- Distinct Annunciation of up to (4) Safety Interlocks in plain English on the Bypass keypad.
- The VFD/Bypass system shall be capable of auto transfer to Bypass on selectable VFD faults.
- The VFD/Bypass system shall have positive contactor control over a +30 / -35 % voltage range. (115 Volt CPT contactor control not allowed).
- The Bypass system shall have single phase protection.
- The VFD/Bypass system shall be UL listed to 100 KAIC short circuit rating as a package.

**PIPE WEIGHTS**

SIZE	PIPE	WATER	TOTAL
0.5"	0.285	0.101	0.386
0.75"	0.445	0.210	0.655
1.0"	0.655	0.358	1.013
1.25"	0.884	0.545	1.429
1.5"	1.14	0.77	1.91
2"	1.75	1.34	3.09
2.5"	5.80	2.073	7.873
3"	7.58	3.201	10.781
4"	10.80	5.516	16.316
6"	19.00	12.52	31.52
8"	28.60	21.68	50.28
10"	40.50	34.16	74.66
12"	53.60	48.50	102.10
14"	63.30	58.64	121.94

CHWS&R PIPE 0-2" TO BE TYPE "L" COPPER  
CHWS&R PIPE 2.5"-12" TO BE SCHEDULE 40 STEEL  
WEIGHTS SHOWN ARE LBS./FT. AS LISTED IN  
2003 ASPE DATA BOOK VOL. 4, TABLE 2-6 & 2-9.

**CHILLER SCHEDULE**

MARK	CH-1
MANUFACTURER	CARRIER
MODEL NUMBER	30XV140
CAPACITY (TONS)	134.3
REFRIGERANT	R-134A
REFRIGERANT CHARGE (LBS)	-
AMBIENT TEMPERATURE (°F) (DB)	92
FULL-LOAD SOUND PRESS. (dBA)	97
OPERATING WEIGHT (LBS)	10695
EVAPORATOR TYPE	VFD SCREW
NUMBER OF PASSES	2
BRINE	15% EG
ENTERING WATER TEMP. (°F)	54.2
LEAVING WATER TEMP - DESIGN (°F)	42.0
LEAVING WATER TEMP - MIN (°F)	35
DESIGN FLOW RATE (GPM)	240
MINIMUM FLOW RATE (GPM)	184
MAXIMUM FLOW RATE (GPM)	270
DESIGN PRESSURE DROP (FWG)	10.6
MAXIMUM PRESSURE DROP (FWG)	10.6
ELECTRICAL SERVICE	460-3-60
IPLV (EER)	19.65
MCA (AMPS)	281.0
RECOMMENDED OCP (AMPS)	350.0
MAXIMUM OCP (AMPS)	350.0

**NOTES:**

- PROVIDE VAPOR-PROOF CHILLED WATER FLOW SWITCH, MICRO-PROCESSOR CONTROLS, AND CONTROLS POWER TRANSFORMER.
- PROVIDE OPEN PROTOCOL BUILDING AUTOMATION SYSTEM COMMUNICATION, BACNET MSTP.
- PROVIDE NEOPRENE ISOLATORS.
- PROVIDE FULL START-UP BY MANUFACTURER'S FACTORY-AUTHORIZED SERVICE PROVIDER.
- CONDENSER COILS SHALL HAVE E-COAT BY LUVATA, DIPPED AND BAKED FOR CORROSION PROTECTION. PROVIDE LINE ITEM ADDITIVE ALTERNATE FOR OWNER CONSIDERATION, FOR ADDITIONAL COATING OPTIONS RECOMMENDED BY MANUFACTURER FOR CASING AND / OR OTHER COMPONENTS.
- PROVIDE WITH VARIABLE SPEED CONDENSER FAN CONTROLS.
- PROVIDE CHILLER WITH INTEGRAL DISCONNECT.
- PROVIDE COUNTY WITH 1 YEAR SUPPLY OF CLEANING FLUID FOR CONDENSER COILS.

**NEW WATER PUMP SCHEDULE**

MARK	CHWP-1
SERVICE	PRIMARY
MANUFACTURER	PENTAIR
MODEL NUMBER	342A
SIZE	4x5x9
PUMP TYPE	IN-LINE
SUCTION DIAMETER (IN)	5
DISCHARGE DIAMETER (IN)	4
MAXIMUM IMPELLER DIAMETER (IN)	9
DESIGN IMPELLER DIAMETER (IN)	9
DESIGN FLOW RATE (GPM)	240
SYSTEM HEAD @ 240 GPM (FT)	59.83
RPM @ 240 GPM	1558
MAXIMUM FLOW RATE (GPM)	270
SYSTEM HEAD @ 270 GPM (FT)	75.72
BHP @ 270 GPM	6.68
RPM @ 270 GPM	1750
BHP MAXIMUM (DEAD HEAD)	9.34
PUMP EFFICIENCY @ 270 GPM	78.9%
WEIGHT (LBS)	382
TYPE	TEFC
HORSEPOWER-NOMINAL	10
RPM	1750
ELECTRICAL SERVICE	460/3/60

**NOTES:**

- BASIS OF DESIGN : PENTAIR (AURORA). APPROVED ALTERNATE MANUFACTURERS, REQUIRE OWNER APPROVAL: B&G, ARMSTRONG, WEINMAN, TACO.
- VERIFY EXISTING PIPING ACCESSORIES, AND PROVIDE NEW WHERE REQUIRED PER DETAIL ON DETAIL SHEET.
- MECHANICAL CONTRACTOR MUST OBTAIN SUBMITTAL APPROVAL FROM ELECTRICAL AND MECHANICAL ENGINEERS BEFORE FINAL ORDER IS MADE.
- PROVIDE HIGH-EFFICIENCY TEFC MOTOR, 1750 OR LESS RPM, VFD COMPATIBLE.
- VERTICAL END SUCTION, UNLESS OTHERWISE DIRECTED.
- FLEXIBLE COUPLING WITH COUPLING GUARD.
- CAST IRON CASING WITH GAGE PORTS AND FLANGED SUCTION AND DISCHARGE.
- BRONZE OR STAINLESS STEEL IMPELLER KEYED TO MOTOR SHAFT.
- BEARINGS: L10 RATED LIFE OF 30,000 HOURS MINIMUM
- CARBON STEEL SHAFT WITH BRONZE KEY.
- SEAL- STAINLESS STEEL.
- THE MECHANICAL CONTRACTOR SHALL PROVIDE IMPELLER PRE-TRIMMED AS SCHEDULED TEST AND BALANCE CONTRACTOR SHALL SUBMIT HEAD PRESSURE MEASUREMENTS TO MECHANICAL ENGINEER TO REVIEW WHETHER FURTHER TRIMMING MAY BE REQUIRED.
- PROVIDE LASER ALIGNMENT FOR ALL PUMPS 20 HP OR LARGER.
- PROVIDE FULL 5 YEAR MANUFACTURER WARRANTY FOR PARTS. PROVIDE LINE ITEM ADDITIVE ALTERNATE FOR 5 YEAR MANUFACTURER WARRANTY ON LABOR.
- PROVIDE PIPING ACCESSORIES PER DETAIL ON DETAIL SHEET.
- MECHANICAL CONTRACTOR MUST OBTAIN SUBMITTAL APPROVAL FROM ELECTRICAL AND MECHANICAL ENGINEERS BEFORE FINAL ORDER IS MADE.

NOTE: PROVIDE LINE ITEM ADDITIVE ALTERNATE TO COUNTY FOR CONSIDERATION, TO PROVIDE SPARE PUMP MOTOR, WRAPPED AND SEALED FOR STORAGE.

**BUFFER TANK SCHEDULE**

MARK	MANUFACTURER	MODEL	SYSTEM	SYSTEM TEMPERATURE		WORKING PRESSURE (PSIG)	TANK SIZE (GALLONS)	SHIPPING WEIGHT (LBS)	OPERATING WEIGHT (LBS)
				MIN. °F	MAX °F				
BT-1	WESSELS CO.	CBT-300	CHW	-	450	125	300	793	3283

**NOTES:**

- PROVIDE INSULATION AND JACKETING PER DETAIL.

REVISIONS

△	
△	
△	
△	
△	

Advanced Systems Engineering, Inc.

Job No: 14079.06DE  
Project Engineer: JRW  
Manager: JRW  
CADD: JRW  
CA-8488

1955 Automobile Boulevard, Suite 350, Clearwater, FL 34625 • Office: 727.540.9388 • Fax: 727.540.8276  
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**MECHANICAL SCHEDULES**

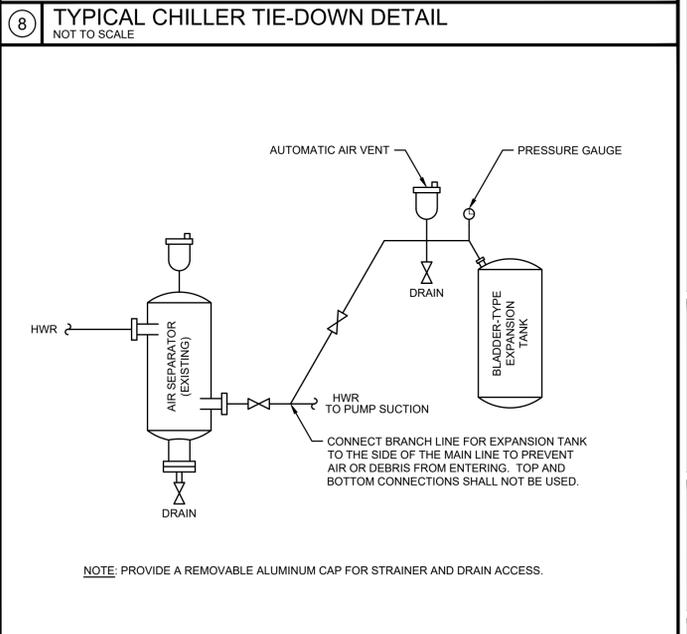
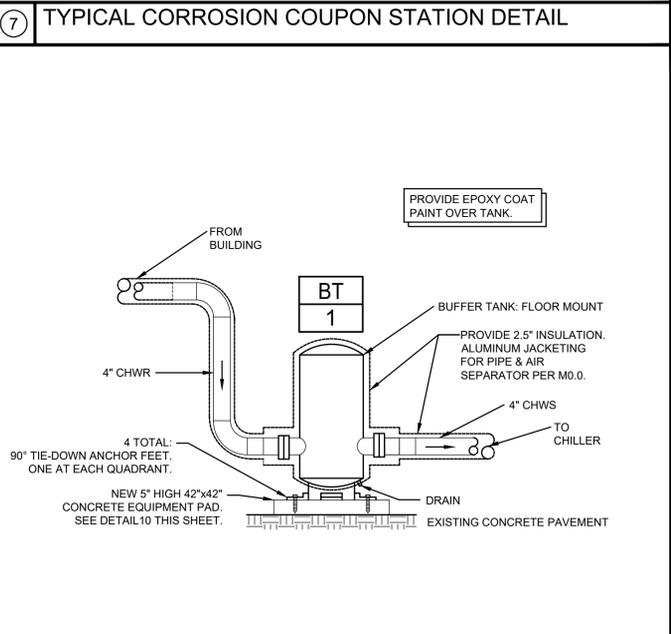
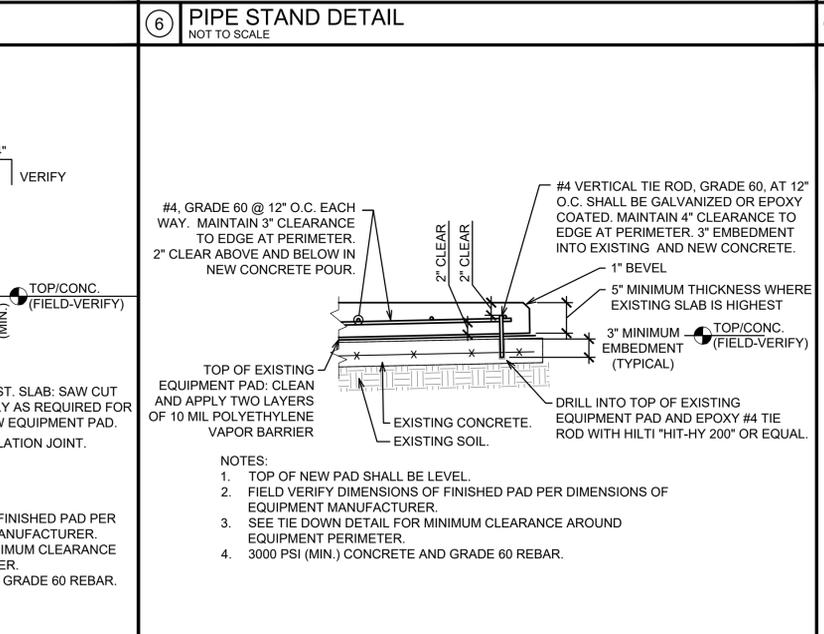
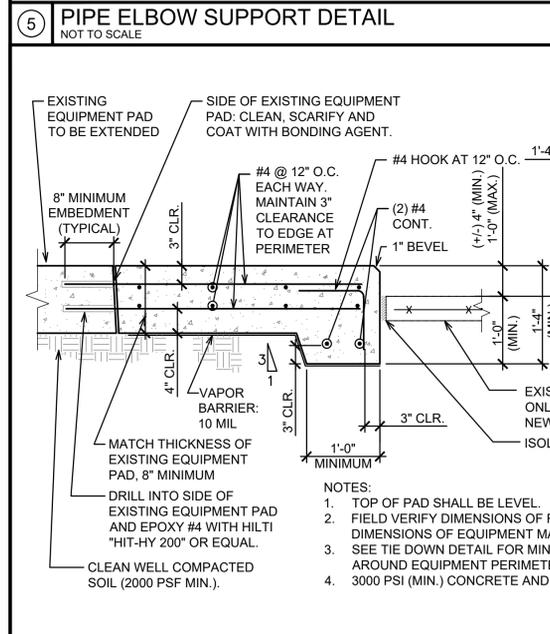
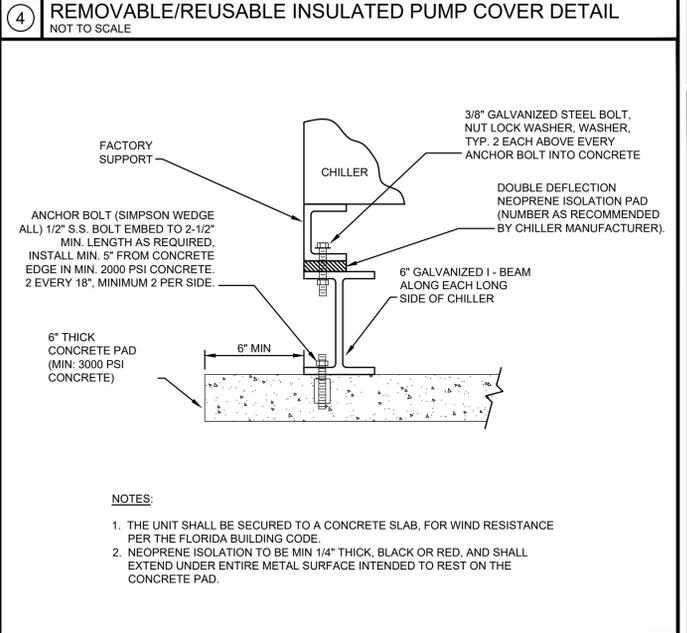
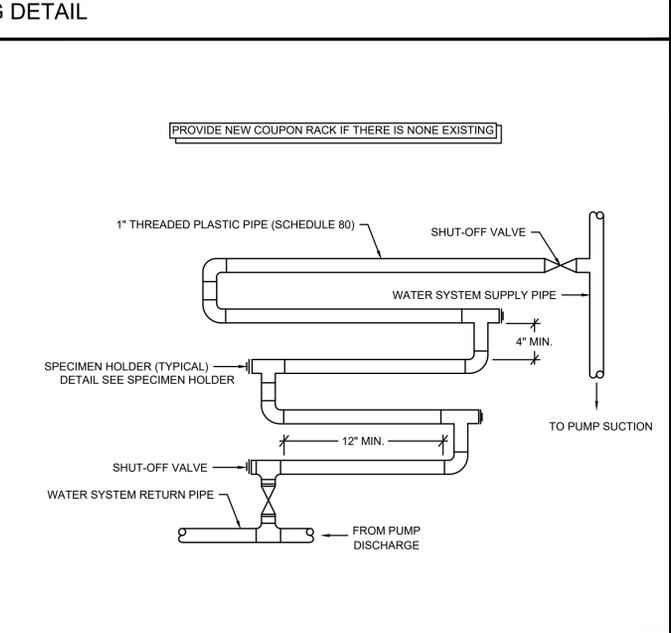
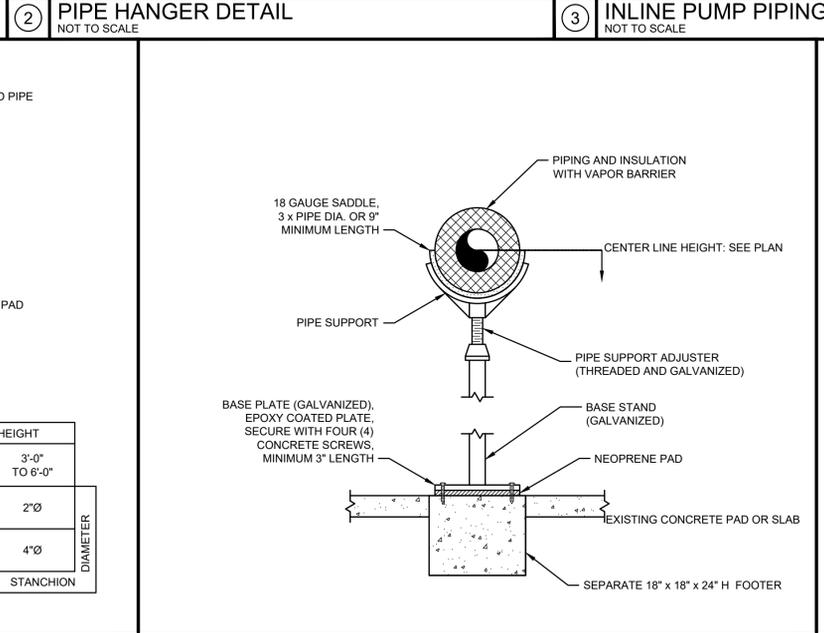
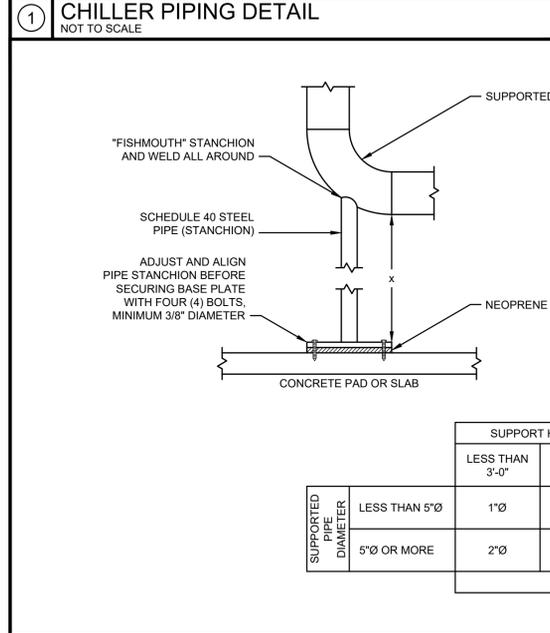
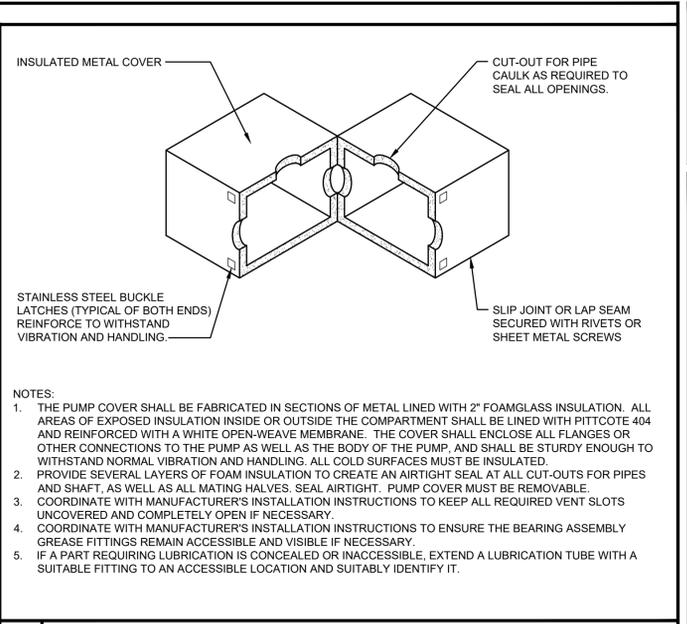
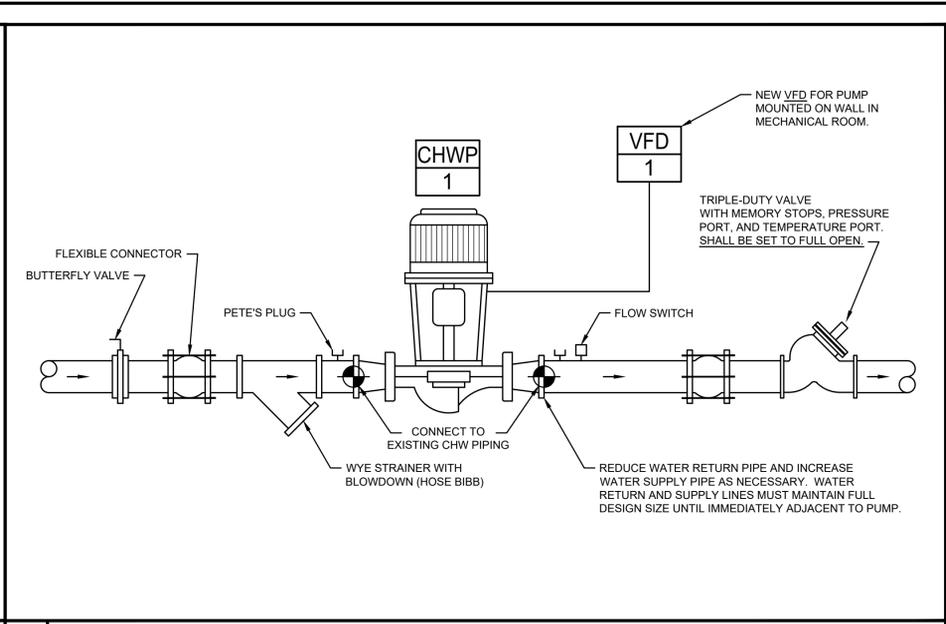
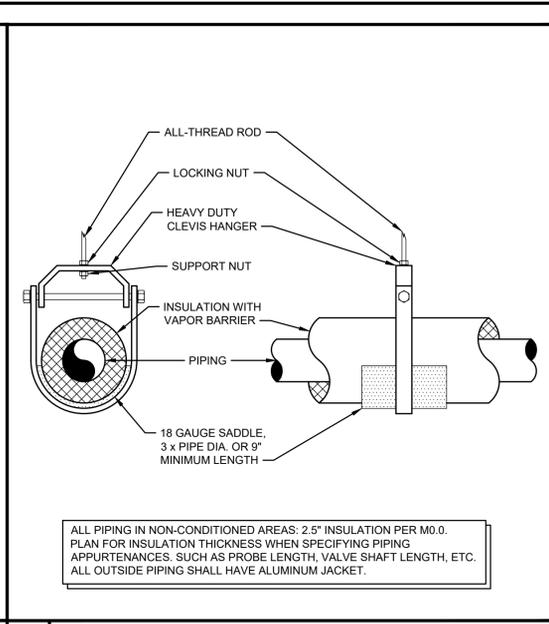
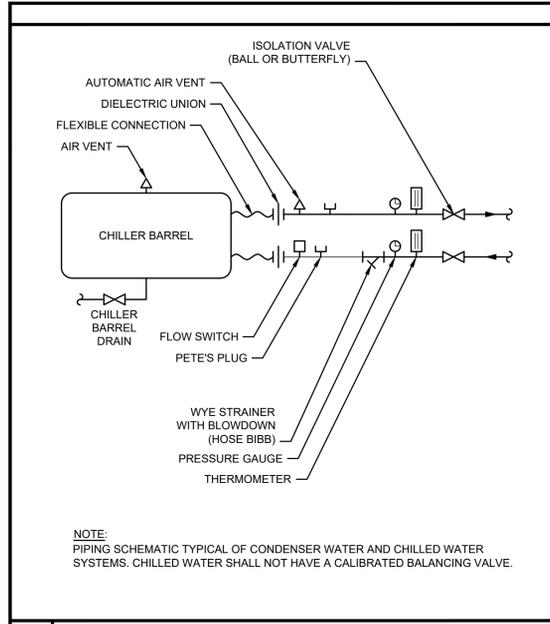
**MANATEE COUNTY - WATER TREATMENT LAB**

**CHILLER & EXHAUST FAN REPLACEMENT**

4751 65th STREET WEST  
BRADENTON, FL 34210

JOB NO:	14079.06DE
PROJ. MNGR:	JRW
DRAWN BY:	JRW
ISSUE DATE:	07.24.2017

SHEET NUMBER	CH-M3.1
BID SET	



**9 CHILLER PAD EXPANSION DETAIL**  
NOT TO SCALE

**10 NEW PAD ON EXISTING CONCRETE DETAIL**  
NOT TO SCALE

**11 BUFFER TANK DETAIL**  
NOT TO SCALE

**12 EXPANSION TANK PIPING DETAIL - ADDITIVE ALTERNATE**  
NOT TO SCALE

REVISIONS


Advanced Systems Engineering, Inc.  
Job No: 14079.06DE  
Manager: JRW  
CAAD: JRW  
CA-8488  
Project Engineer: John R. Wood  
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MECHANICAL DETAILS

**MANATEE COUNTY - WATER TREATMENT LAB**  
CHILLER & EXHAUST FAN REPLACEMENT

4751 65th STREET WEST  
BRADENTON, FL 34210

JOB NO: 14079.06DE  
PROJ. MNGR: JRW  
DRAWN BY: JRW  
ISSUE DATE: 07.24.2017

SHEET NUMBER  
**CH-M3.2**  
BID SET

**MECHANICAL SPECIFICATIONS**

**MECHANICAL SPECIFICATIONS**

**1. GENERAL RESPONSIBILITIES OF THE CONTRACTORS**

PRIOR TO STARTING THE PROJECT, THE MECHANICAL CONTRACTOR SHALL PROVIDE THE SERVICES OF A STRUCTURAL PROFESSIONAL ENGINEER WHO SHALL CERTIFY THE INSTALLATION AND ATTACHMENT OF ALL ITEMS REQUIRING STRUCTURAL SUPPORT OR WIND LOADING ARE ACCEPTABLE AND MEET THE CODE REQUIREMENTS. ALL DETAILS SHOWN ARE ONLY INTENDED TO BE USED FOR BIDDING PURPOSES. THE MECHANICAL CONTRACTOR SHALL PROVIDE A SIGNED AND SEALED LETTER FROM THE STRUCTURAL ENGINEER STATING THAT THE ENTIRE MECHANICAL INSTALLATION MEETS FLORIDA WIND LOAD AND STRUCTURAL SUPPORT REQUIREMENTS.

THE GENERAL CONTRACTORS SHALL PROVIDE THE LABOR, MATERIALS, AND EQUIPMENT REQUIRED FOR THE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS AS DESCRIBED IN THE COMPLETE SET OF CONSTRUCTION DOCUMENTS. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2014 FLORIDA BUILDING CODE AND 2014 FLORIDA ENERGY CODE, 2011 NATIONAL ELECTRIC CODE, NFPA NATIONAL FIRE CODES, AND ALL OTHER STATE AND LOCAL CODES.

THE OWNER SHALL NOT BE RESPONSIBLE FOR ANY PORTION OF THE SCOPE OF WORK UNLESS SPECIFICALLY NOTED IN THE CONSTRUCTION DOCUMENTS.

THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION SCHEDULES OF ALL TRADES. FIXED WORK SUCH AS DUCTWORK AND SANITARY AND STORM PIPING SHALL BE INSTALLED PRIOR TO ANY TRADE WORK THAT CAN BE EASILY RELOCATED OR OFFSET SUCH AS ELECTRICAL CONDUIT AND FIRE PROTECTION AND WATER PIPING. ALL ELECTRICAL CONDUIT AND WATER PIPING SHALL BE INSTALLED AS CLOSE TO WALLS AND AS CLOSE TOGETHER AS POSSIBLE TO ALLOW FOR MAXIMUM DUCT ACCESSIBILITY.

ALL CONTRACTORS SHALL COORDINATE THE SCOPE OF THEIR WORK AND THEIR CONSTRUCTION SCHEDULES WITH THE OWNER TO PREVENT ANY INTERRUPTIONS UNACCEPTABLE TO THE OWNER. THIS MAY REQUIRE WORK AFTER NORMAL OPERATING HOURS AND/OR ON WEEKENDS.

**2. BIDS, SHOP DRAWINGS, EQUIPMENT SUBMITTALS, AND CHANGE ORDERS**

EACH PROSPECTIVE CONTRACTOR SHALL EVALUATE THE SCOPE OF WORK THOROUGHLY PRIOR TO SUBMITTING A BID. SOME CONDUIT, PIPING, AND OTHER OBSTACLES MAY NEED TO BE RELOCATED AND SUCH RELOCATION SHOULD BE INCLUDED IN EACH PROSPECTIVE MECHANICAL CONTRACTOR'S BID.

EACH PROSPECTIVE MECHANICAL CONTRACTOR SHALL PROVIDE A DETAILED COST BREAKDOWN FOR EACH TASK IN THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS, INCLUDING EQUIPMENT, MATERIALS, AND LABOR. ANY PROPOSED VALUE-ENGINEERING, INCLUDING SUBSTITUTIONS FOR SCHEDULED EQUIPMENT, SHALL BE PRESENTED SEPARATELY AS AN ALTERNATE WITH A SIMILAR COST BREAKDOWN. THE SCOPE OF WORK SHALL BE BID WITH THE SCHEDULED EQUIPMENT AND ANY PROPOSED VALUE-ENGINEERING OR EQUIPMENT SUBSTITUTIONS SHALL BE IDENTIFIED AS ALTERNATE DEDUCTIONS FROM THE CONTRACTOR'S BASE BID. ANY CHANGE ORDERS MUST BE SUBMITTED WITH BOTH THE ORIGINAL COST BREAKDOWN AND THE NEW COST BREAKDOWN FOR COMPARISON.

EACH PROSPECTIVE MECHANICAL CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE DETAILING THE START DATE, DURATION, ASSIGNED MAN-HOURS, AND FINISH DATE OF EACH TASK IN THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS. IF ANY PROPOSED VALUE-ENGINEERING OR EQUIPMENT SUBSTITUTIONS AFFECT THIS SCHEDULE, THEN THOSE IMPACTS SHALL BE IDENTIFIED SEPARATELY.

PRIOR TO STARTING THE PROJECT, THE MECHANICAL CONTRACTOR SHALL STUDY THE COMPLETE SET OF CONSTRUCTION DOCUMENTS AND COORDINATE WITH THE OTHER TRADES AS REQUIRED TO PROVIDE SHOP DRAWINGS TO SUBMIT TO THE MECHANICAL ENGINEER FOR APPROVAL. THE SHOP DRAWINGS MAY BE SUBMITTED AS HAND-DRAWN NOT UPON A COPY OF THE CONSTRUCTION DOCUMENTS IF PERMISSION IS OBTAINED FROM THE MECHANICAL ENGINEER. THE CONSTRUCTION DOCUMENTS ARE DIAGRAMMATIC IN NATURE AND INTENDED SOLELY TO CLARIFY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. THE CONSTRUCTION DOCUMENTS ARE NOT INTENDED TO ALERT THE CONTRACTOR(S) OF ALL OBSTACLES. THE SHOP DRAWINGS SHALL SHOW THE COORDINATION OF DUCTWORK AND MECHANICAL EQUIPMENT INSTALLATION WITH EXISTING AND NEW OBSTACLES INCLUDING, BUT NOT LIMITED TO, ELECTRICAL CONDUITS, FIRE PROTECTION PIPING, RAIN LEADERS, SANITARY DRAINS, STRUCTURAL MEMBERS, AND WATER PIPING, AS WELL AS THE MECHANICAL EQUIPMENT MANUFACTURERS' RECOMMENDED CLEARANCES AND THE STRUCTURAL ENGINEER'S RECOMMENDATIONS REGARDING THE INSTALLATION AND ATTACHMENT OF ALL ITEMS REQUIRING STRUCTURAL SUPPORT OR WIND LOADING. THE MECHANICAL CONTRACTOR SHALL ALSO SHOW THE EXISTING CONDITIONS ON THE SHOP DRAWINGS WHERE THE EXISTING CONDITIONS ARE DIFFERENT FROM THOSE SHOWN ON THE CONSTRUCTION DOCUMENTS.

PRIOR TO STARTING THE PROJECT, THE MECHANICAL CONTRACTOR SHALL STUDY THE COMPLETE SET OF CONSTRUCTION DOCUMENTS AND COORDINATE WITH THE MANUFACTURER(S) AS REQUIRED TO PROVIDE EQUIPMENT SUBMITTALS TO SUBMIT TO THE MECHANICAL ENGINEER FOR APPROVAL. THE EQUIPMENT SUBMITTALS SHALL INCLUDE DIMENSIONS, WEIGHTS, SPECIFIED ACCESSORIES AND REQUIRED CLEARANCES, AS WELL AS FAN CURVES, SOUND LEVELS, CONSTRUCTION DETAILS, WARRANTY INFORMATION, AND ALL OTHER RELEVANT DATA PRESENTED IN THE SAME FORMAT AS THE EQUIPMENT SCHEDULES ON THE CONSTRUCTION DOCUMENTS.

THE BASE PRICE SHALL USE ALL EQUIPMENT AS SPECIFIED. ALL VALUE ENGINEERING ALTERNATES SHALL BE LISTED AS ALTERNATES FOR THE OWNERS CONSIDERATION. IF ALTERNATE PRICING IS NOT ACCEPTED BY THE OWNER AND ENGINEER, THEN THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AS SPECIFIED. THE OWNER WILL CONSIDER A CHEAPER PIECE OF EQUIPMENT IF THE DEDUCT IS ENOUGH AND THE PERFORMANCE IS STILL ACCEPTABLE. THE OWNER WILL CONSIDER A MORE EXPENSIVE PIECE OF EQUIPMENT IF BETTER PERFORMANCE WOULD JUSTIFY THE ADDITIONAL UPFRONT COST. PLEASE PROVIDE ALL ALTERNATES THAT WOULD BE USEFUL FOR THE OWNER TO CONSIDER TO SAVE MONEY OR IMPROVE PERFORMANCE. ALTERNATES MUST MEET THE SPECIFICATION REQUIREMENTS AND THE CONTRACTOR ASSUMES FULL RESPONSIBILITY OF COORDINATING WITH OTHER TRADES FOR ALL CHANGES AND COST REQUIRED.

ALTERNATIVES TO THE SCHEDULED EQUIPMENT AND MATERIALS MUST BE EQUAL TO OR EXCEED THOSE SCHEDULED. IF SUBSTITUTIONS FOR SCHEDULED EQUIPMENT AND MATERIALS ARE TO BE MADE, THEN THE MECHANICAL CONTRACTOR SHALL FIRST SUBMIT TO THE MECHANICAL ENGINEER COMPARATIVE LITERATURE CLEARLY SHOWING THE EQUIVALENT OPERATING CAPABILITIES AND OTHER PROPERTIES OF THE SUBSTITUTIONS. ALL DEVIATIONS MUST BE CLEARLY IDENTIFIED AND A REQUEST MUST BE MADE SPECIFIC FOR ALL DEVIATIONS. WHEN SUBSTITUTIONS ARE MADE, THE CONTRACTOR ASSUMES FULL RESPONSIBILITY OF COORDINATING WITH OTHER TRADES ON ANY CHANGES REQUIRED FOR THE SUBSTITUTION, INCLUDING COSTS, ASSOCIATED WITH DUCTWORK, PIPING, ELECTRICAL AND STRUCTURAL TO IMPLEMENT THE SUBSTITUTED ITEM(S).

ANY CHANGE ORDER SUBMITTED BY THE GENERAL, MECHANICAL, OR ELECTRICAL CONTRACTORS FOR WORK WITHIN THE SCOPE OF THIS PROJECT SHALL NOT EXCEED THE VALUES LISTED IN THE MOST CURRENT VERSIONS OF THE MEANS COST DATA BOOKS FOR THE APPLICABLE TRADES. EVERY CHANGE ORDER SHALL BE ACCOMPANIED BY A DETAILED COST BREAKDOWN FOR EACH TASK, INCLUDING EQUIPMENT, MATERIALS, AND LABOR. THE MECHANICAL ENGINEER MAY, AT HIS DISCRETION, REQUIRE THE CONTRACTOR(S) TO PROVIDE A FINAL, VERIFIABLE ACCOUNTING OF EQUIPMENT, MATERIALS, AND LABOR AFTER THE WORK IS COMPLETE AND PRIOR TO THE MECHANICAL ENGINEER'S APPROVAL OF THE CONTRACTOR'S FINAL PAY APPLICATION(S). LABOR RATES FOR CHANGE ORDERS SHALL NOT EXCEED \$50/HOUR (\$75/HR OVERTIME) FOR ANY CHANGE ORDERS INCLUDING ALL OVERHEAD AND PROFIT UNLESS APPROVED BY THE ENGINEER OF RECORD. MATERIAL RATES FOR PIPING SHALL NOT EXCEED A 0.35 MULTIPLIER FOR NBCCO MATERIALS UNLESS APPROVED BY ENGINEER OF RECORD.

**3. MECHANICAL EQUIPMENT INSTALLATION**

ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED AS REQUIRED BY THE MANUFACTURERS' INSTALLATION AND MAINTENANCE MANUALS. THOSE MANUALS WILL TYPICALLY PROVIDE MORE DETAIL

THAN THE CONSTRUCTION DOCUMENTS. IF THERE IS A CONFLICT BETWEEN THE INSTALLATION AND MAINTENANCE MANUALS AND THE CONSTRUCTION DOCUMENTS, THEN THE MECHANICAL CONTRACTOR SHALL SUBMIT A REQUEST-FOR-INFORMATION TO THE MECHANICAL ENGINEER.

ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED SUCH THAT SUFFICIENT CLEARANCES ARE PROVIDED FOR MAINTENANCE. ALL MECHANICAL EQUIPMENT AT A HEIGHT GREATER THAN SIXTEEN (16) FEET SHALL HAVE A PERMANENT MEANS OF ACCESS.

EXHAUST FANS SHALL HAVE A FLORIDA PRODUCT APPROVAL, MIAMI-DADE NOA AND BE RATED FOR HIGH WIND PER THE FLORIDA BUILDING CODE.

THE MECHANICAL CONTRACTOR SHALL PROVIDE VIBRATION ISOLATION AS RECOMMENDED BY THE MANUFACTURER(S) AND/OR REQUIRED BY THE MECHANICAL ENGINEER TO ENSURE QUIET OPERATION OF THE MECHANICAL EQUIPMENT. NO UNDE VIBRATION OR NOISE SHALL BE TRANSMITTED TO THE STRUCTURE OR ANY OCCUPIED SPACES WITHIN THE STRUCTURE.

THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL STARTERS, CONTACTORS, RELAYS, CONTROLS, AND ACCESSORIES NECESSARY TO PROVIDE A COMPLETE AND WORKING POWER AND CONTROL SYSTEM FOR THE MECHANICAL EQUIPMENT WITHIN THE SCOPE OF WORK. THE ELECTRICAL CONTRACTOR WILL PROVIDE ALL DISCONNECT SWITCHES, CONDUIT, AND WIRING FOR THE MECHANICAL EQUIPMENT WITHIN THE SCOPE OF WORK. ALL ELECTRICAL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER OPERATION OF THE COMPLETE SYSTEM AND SHALL ENSURE THAT WIRING DIAGRAMS ARE PROVIDED TO THE OWNER. NO WIRING OF ANY KIND SHALL BE EXPOSED IN FINISHED AREAS.

THE MECHANICAL CONTRACTOR SHALL ENSURE THAT ALL MECHANICAL EQUIPMENT IS STARTED, TESTED, ADJUSTED, AND PLACED IN SATISFACTORY OPERATING CONDITION PRIOR TO SUBSTANTIAL COMPLETION. THE MECHANICAL CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP, MATERIALS, AND MECHANICAL EQUIPMENT TO BE FREE OF DEFECTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER AND SHALL REPAIR ANY DEFECTS OCCURRING WITHIN THAT TIME WITHOUT COST TO THE OWNER. ALL MECHANICAL EQUIPMENT IN THE SCOPE OF WORK SHALL BE COVERED FOR THE DURATION OF THE MANUFACTURERS' WARRANTIES AND THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ORIGINALS OF ALL MANUFACTURERS' GUARANTEES AND WARRANTIES. THE CONTRACTOR SHALL PROVIDE THE COST OF ALL WARRANTIES TO THE OWNER AND GIVE THE OWNER THE OPTION TO DEDUCT THIS COST FROM THE CONTRACTOR PRICE AND PURCHASE THE WARRANTIES DIRECTLY.

THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL MECHANICAL EQUIPMENT VOLTAGE REQUIREMENTS WITH THE VOLTAGE AVAILABLE AT THE PROJECT SITE PRIOR TO ORDERING ANY MECHANICAL EQUIPMENT.

**4. CONTROLS**

THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONTRACTING WITH THE EXISTING CONTROLS CONTRACTOR AND DETERMINING WHAT IS REQUIRED TO INCORPORATE NEW MECHANICAL EQUIPMENT AND CONTROLS INTO THE EXISTING CONTROL SYSTEMS AND INCLUDING ALL COSTS ASSOCIATED WITH INCORPORATING NEW MECHANICAL EQUIPMENT AND CONTROLS INTO THE EXISTING CONTROL SYSTEM(S) IN HIS/HER BID. THE CONTROLS CONTRACTOR SHALL PROVIDE A COMPLETE DESCRIPTION OF THE ENTIRE CONTROL SYSTEM, INCLUDING SCHEMATIC DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL CONTROLS AND SUB-CONTRACT TO THE ELECTRICAL CONTRACTOR ALL CONTROLS POWER AND TRANSFORMERS NOT IDENTIFIED IN THE ELECTRICAL PORTION OF THE CONSTRUCTION DOCUMENTS.

**5. TESTING AND BALANCING THE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM**

THE GENERAL CONTRACTOR SHALL PROVIDE THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY TO TEST, BALANCE, AND CERTIFY THE PERFORMANCE OF THE COMPLETE EXHAUST AIR SYSTEMS. THE TEST AND BALANCE CONTRACTOR SHALL PERFORM ALL TESTING, ADJUSTING, BALANCING, AND DATA RECORDING NECESSARY TO ESTABLISH THE CAPACITY AND QUALITY OF THE SYSTEMS AND CONFIRM THE SATISFACTORY COMPLETION OF ALL ASPECTS OF THE SCOPE OF WORK. THIS WILL INCLUDE NOT ONLY THE NEW SYSTEMS, BUT ALSO ALL OF THE EXISTING SYSTEMS THAT HAVE BEEN MODIFIED.

THE TEST AND BALANCE CONTRACTOR SHALL BE AN APPROVED MEMBER OF THE AABC OR NEBB AND SHALL SPECIALIZE IN THE TESTING AND BALANCING OF HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS. THE FOLLOWING TEST AND BALANCE CONTRACTORS ARE PRE-APPROVED: THE PHOENIX AGENCY, SITA, TEST AND BALANCE CORPORATION AND SPEG TECH CONSULTANTS. THE CONTRACTOR SHALL SUBMIT ANY NON-PRE-APPROVED TEST AND BALANCE CONTRACTOR TO THE MECHANICAL ENGINEER FOR APPROVAL PRIOR TO SUBMITTING A BID.

THE TEST AND BALANCE CONTRACTOR SHALL ENSURE THAT THE BUILDING IS UNDER POSITIVE PRESSURE AT THE CONCLUSION OF THE TEST AND BALANCE PROCESS. IF THE BUILDING IS NOT UNDER POSITIVE PRESSURE AT THE CONCLUSION OF THE TEST AND BALANCE PROCESS, THEN THE TEST AND BALANCE AND MECHANICAL CONTRACTORS SHALL IMMEDIATELY AND WITHOUT DELAY NOTIFY THE ARCHITECT AND MECHANICAL ENGINEER. THE TEST AND BALANCE CONTRACTOR SHALL WORK WITH THE ENGINEER TO COMFORT BALANCE AS REQUIRED TO SATISFY THE CLIENT.

CONTROLS CONTRACTOR SHALL PROVIDE REQUIRED BAS HARDWARE, SOFTWARE, PERSONNEL AND ASSISTANCE TO TAB AGENCY AS REQUIRED TO BALANCE THE SYSTEMS. CONTROLS CONTRACTOR SHALL ALSO PROVIDE TRENDDING REPORT TO DEMONSTRATE THAT SYSTEMS ARE COMPLETE. MECHANICAL CONTRACTOR SHALL PROVIDE TAB AGENCY ONE COMPLETE SET OF CONTRACT DOCUMENTS, CHANGE ORDERS, AND APPROVED SUBMITTALS. MECHANICAL CONTRACTOR SHALL COORDINATE MEETINGS AND ASSISTANCE FROM SUPPLIERS AND CONTRACTORS AS REQUIRED BY TAB AGENCY. MECHANICAL CONTRACTOR SHALL PROVIDE ADDITIONAL VALVES, DAMPERS, SHEAVES AND BELTS AS REQUIRED BY TAB AGENCY. MECHANICAL CONTRACTOR SHALL FLAG ALL MANUAL VOLUME DAMPERS WITH FLORESCENT OR OTHER HIGH-VISIBILITY TAPE. MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS TO ALL DAMPERS, VALVES, TEST PORTS, NAMEPLATES AND OTHER APPURTENANCES AS REQUIRED BY TAB AGENCY. MECHANICAL CONTRACTOR SHALL REPLACE OR REPAIR INSULATION AS REQUIRED BY TAB AGENCY.

THE TEST AND BALANCE CONTRACTOR SHALL, UPON COMPLETION OF ALL NECESSARY TESTING AND BALANCING AND AT LEAST ONE (1) WEEK PRIOR TO SUBSTANTIAL COMPLETION, SUBMIT THREE (3) BOUND COPIES OF THE TEST AND BALANCE REPORT TO THE MECHANICAL ENGINEER.

THE TEST AND BALANCE CONTRACTOR SHALL BALANCE THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS AND RETURN AREAS OUTSIDE OF THE SCOPE OF WORK AND SERVED BY EXISTING SYSTEMS WITHIN THE SCOPE OF WORK TO THE ORIGINAL DESIGN AIRFLOWS OR RE-BALANCE THE ORIGINAL DESIGN AIRFLOWS IN LOCATIONS WHERE THE EXISTING SYSTEM MAY NOT BE BALANCED PROPERLY.

**6. SUBSTANTIAL AND FINAL COMPLETION**

THE MECHANICAL CONTRACTOR SHALL MAINTAIN A SET OF CONTINUOUSLY UPDATED, REPRODUCIBLE AS-BUILT DRAWINGS DURING CONSTRUCTION AND PROVIDE A COMPLETE SET OF THOSE DRAWINGS IN BOTH ELECTRONIC AND HARD COPY FORMATS TO THE OWNER UPON FINAL COMPLETION.

THE MECHANICAL AND ELECTRICAL CONTRACTORS SHALL PROVIDE FIVE (5) BOUND COPIES OF ALL MECHANICAL AND ELECTRICAL CONTRACTOR WARRANTIES, MANUFACTURERS' WARRANTIES, PARTS LISTS, AND INSTALLATION AND MAINTENANCE MANUALS FOR ALL MECHANICAL EQUIPMENT, AS WELL AS INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL MECHANICAL EQUIPMENT TO THE OWNER UPON FINAL COMPLETION.

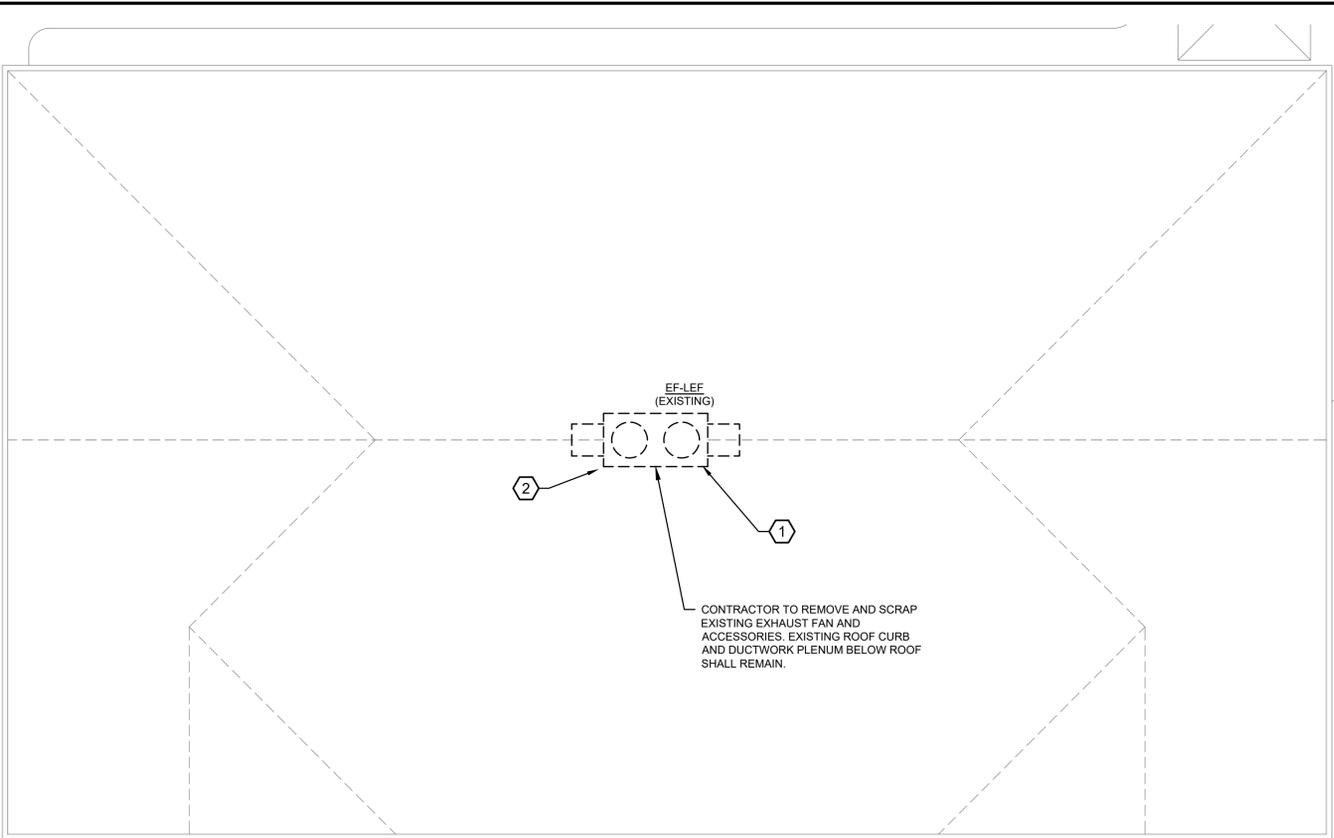
**7. ROOF WORK**

CONTRACTOR SHALL SUBCONTRACT WITH OWNERS ROOFING CONTRACTOR TO PROVIDE ALL WORK REQUIRED TO MAINTAIN ROOF INTEGRITY AND WARRANTY.

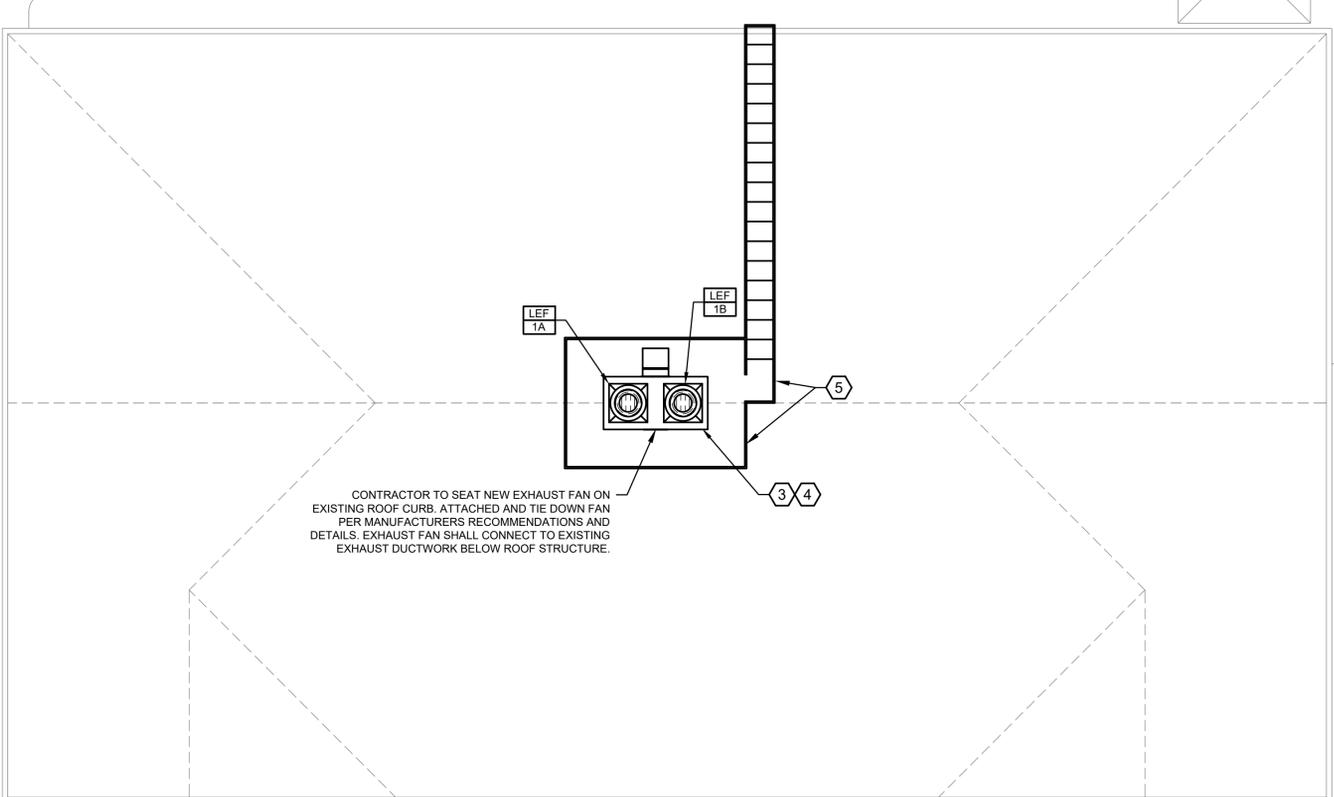
**# MECHANICAL NOTES**

- CONTRACTOR TO RETAIN EXISTING LIGHTING PROTECTION, AND SHALL BE REINSTALLED ON NEW EXHAUST FAN.
- EXISTING CONVENIENCE OUTLET TO REMAIN. (SEE ELECTRICAL PLANS.)
- CONTRACTOR TO INSTALL FAN PER MANUFACTURERS LITERATURE AND DETAILS ON MECHANICAL SHEET M2. THE MANUFACTURER OF THE FAN ASSEMBLY SHALL PROVIDE STRUCTURAL ENGINEERING SERVICES AND DOCUMENTATION, SIGNED AND SEALED BY A FLORIDA LICENSED PROFESSIONAL ENGINEER. THIS SHALL INCLUDE WIND LOAD CALCULATIONS PER FLORIDA CODE AND DETAILS TO SECURE FAN ASSEMBLY TO EXISTING CURB, AND FAN COMPONENTS TO EACH OTHER.
- REINSTALL EXISTING LIGHTING PROTECTION ONTO NEW EXHAUST FAN PER MANUFACTURERS LITERATURE.
- THE MECHANICAL CONTRACTOR SHALL PROVIDE SERVICE PLATFORM AND STAIR COMPLIANT WITH FLORIDA MECHANICAL CODE 306.5.1. PROVIDE STAIR, WITH HANDRAILS, UP SLOPE OF ROOF TO REAR OF BUILDING. STAIR AND PLATFORM SHALL BE SECURED TO ROOF STRUCTURE, PER ENGINEERED DRAWINGS BY MANUFACTURER. SEE DETAIL.

**CONSTRUCTION SCHEDULE:**  
THE CONTRACTORS SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH MANATEE COUNTY TO MINIMIZE DISRUPTION OF LABORATORY OPERATIONS. THE REPLACEMENT OF THE EXHAUST FAN AND STARTUP SHALL PREFERABLY OCCUR OVER A WEEKEND. FURTHER WORK, INCLUDING THE PLATFORM AND STAIR MAY OCCUR AFTERWARD. PRIOR TO ORDERING THE EQUIPMENT (FAN ASSEMBLY, PLATFORM, STAIR), THE MECHANICAL CONTRACTOR SHALL FIELD VERIFY AND COORDINATE ALL PERTINENT MEASUREMENTS AND / OR CONDITIONS WITH THE MANUFACTURERS OF THE EQUIPMENT. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW.



**1 MECHANICAL DEMOLITION PLAN: ROOF**  
SCALE: 1/8"=1'-0"



**2 MECHANICAL RENOVATION PLAN: ROOF**  
SCALE: 1/8"=1'-0"

CONTRACTOR TO REMOVE AND SCRAP EXISTING EXHAUST FAN AND ACCESSORIES. EXISTING ROOF CURB AND DUCTWORK PLENUM BELOW ROOF SHALL REMAIN.

CONTRACTOR TO SEAT NEW EXHAUST FAN ON EXISTING ROOF CURB. ATTACHED AND TIE DOWN FAN PER MANUFACTURERS RECOMMENDATIONS AND DETAILS. EXHAUST FAN SHALL CONNECT TO EXISTING EXHAUST DUCTWORK BELOW ROOF STRUCTURE.

**REVISIONS**


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Project Engineer: John R. Wood  
Manager: JRW  
CAEDD: JRW  
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PE-64788

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**MECHANICAL RENOVATION PLAN**  
**MANATEE COUNTY - WATER TREATMENT LAB**  
**CHILLER & EXHAUST FAN REPLACEMENT**  
4751 65th STREET WEST  
BRADENTON, FL 34210

JOB NO: 14079.06DE  
PROJ. MNGR: JRW  
DRAWN BY: DCD  
ISSUE DATE: 07.24.2017

SHEET NUMBER  
**EF-M1.0**  
BID SET

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 PE-64788  
 CA-8488  
 19365 Automobile Boulevard, Suite 350, Clearwater, FL 34625 - Office: 727-540-9388 - Facsimile: 727-540-8276  
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### MECHANICAL LEGEND

	NEW POINT OF CONNECTION
	EQUIPMENT TAG
	HUMIDISTAT
	PRESSURE SENSOR
	REMOTE TEMPERATURE SENSOR
	SMOKE DETECTOR
	THERMOSTAT
	TIME CLOCK
	BACKDRAFT DAMPER (WITH ACCESS DOOR ON ACCESSIBLE SIDE)
	MOTORIZED DAMPER (WITH ACCESS DOOR ON ACCESSIBLE SIDE)
	MANUAL DAMPER

### FAN SCHEDULE - ROOF MOUNTED

MARK	LEF-1A	LEF-1B
MANUFACTURER - BASIS OF DESIGN	MK PLASTICS	MK PLASTICS
MODEL NUMBER	AXCL - 2225	AXCL - 2225
CFM	8,680	8,680
EXTERNAL STATIC PRESSURE (IWG)	2.5"	2.5"
DRIVE	DIRECT	DIRECT
CONE VELOCITY (FPM)	3,979	3,979
FAN RPM	1,911	1,911
ELECTRICAL SERVICE	460/3/60	460/3/60
MOTOR (HP)	10	10
MOTOR RPM	1,800	1,800
OPERATING WEIGHT	534	534

**NOTES**

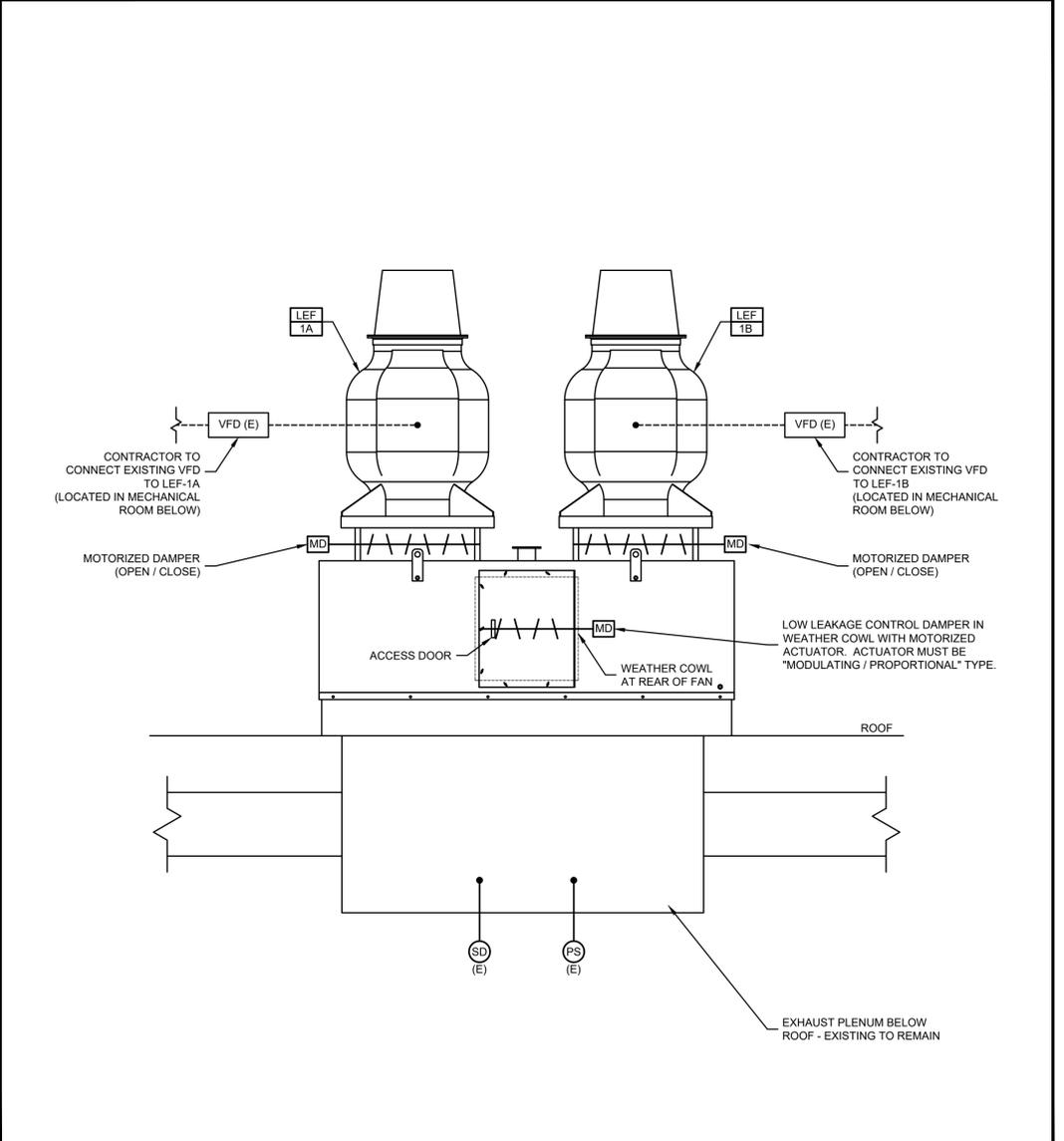
- LEF-1A & LEF-1B SHALL SHARE A FIELD FABRICATED PLENUM
- FOR MK PLASTICS BASIS OF DESIGN CONTACT TOM BARROW CO, CYRIL JOHN, 813-990-9010.
- SHALL BE MIAMI-DADE NOA HIGH WIND LOAD CERTIFIED.

### CONTROLS SEQUENCE OF OPERATION

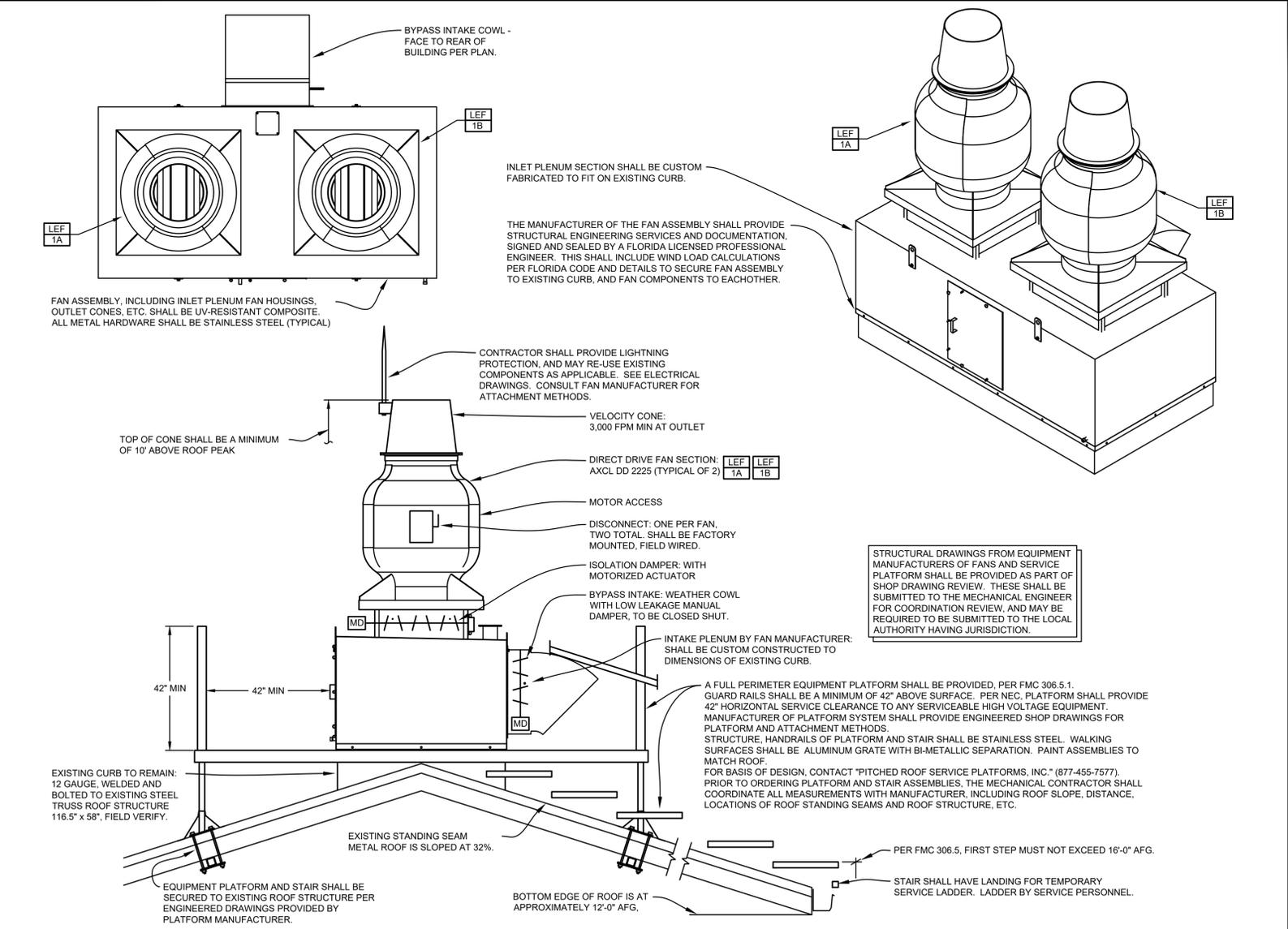
#### FUME HOOD EXHAUST FANS

- Only one fan, LEF-1A or LEF-1B shall run at one time. Two fans are designed for redundancy. Exhaust shall operate at all times regardless of occupancy.
- Lead fan shall be alternated periodically, such as weekly. Switching of lead fan shall be scheduled during un-occupied hours. Switching of fans shall provide continuous exhaust flow. During switch, the VFD of one fan shall ramp down to zero while the VFD of the other fan simultaneously ramps up to setpoint.
- When the lead fan is energized, its motorized isolation damper shall open 100%. The motorized damper of the redundant fan shall close shut.
- If a run fault is found in one of the fans, an alert shall be sent through the BMS. The other fan shall operate as lead until repair has been made, and fault reset.
- Occupied hours:
  - The VFD of the lead fan shall ramp up to balanced setpoint to provide balanced exhaust flow. This is a constant flow exhaust system.
  - The bypass damper shall be closed shut, so that the full balanced exhaust fan is drawn through the exhaust duct system.
  - The VFD of AHU-2 shall ramp up to the balanced setpoint to provide balanced supply flow. This is a constant flow supply system.
  - AHU-2 shall provide a constant leaving coil temperature of 50°F. Zone heaters shall modulate to maintain room temperature.
- All hours:
  - AHU-2 shall modulate chilled water supply valve to provide a constant leaving coil temperature of 50°F.
  - Zone heaters shall modulate to maintain room temperature. Default setpoints are 65°F in metals analysis and 68°F in all other spaces of lab.
  - Monitor pressure differential from inside of lobby to the exterior to verify that the building is maintained at a slight positive pressure.
  - Send alarm if a negative pressure persists for over one hour.
- AHU-2 fault: If AHU airflow fault is detected or AHU-2 is shut down, an alarm shall sound indicating to evacuate building. Exhaust flow shall modulate down to a lower, but safe airflow to prevent a door closure hazard. The controls contractor, the mechanical contractor, the T&B contractor and ASE shall work together to determine the proper airflow setpoint.
- Upon detection of smoke from the exhaust system smoke detector, the fire alarm system shall sound an alarm indicating to evacuate the building. AHU-2 shall shut down and outside air damper shall close. The exhaust fan shall continue to operate at reduced airflow.
- EF fault: If exhaust flow cannot be achieved with either exhaust fan or the exhaust fans are shut down, an alarm shall sound indicating to evacuate building. AHU-2 shall shut down and outside air damper shall close.
- Un-occupied hours mode (optional line item alternate): Energy saving measure. The controls contractor shall write programming to enable a low-flow operation during un-occupied hours. This shall include an adjustable time of day schedule; unoccupied from 8pm to 4 am, and 4 occupancy sensors located throughout laboratory area. The un-occupied mode will occur if and only if the schedule indicates un-occupied and none of the occupancy sensors detect people. Provide adjustable Setpoints for both exhaust and supply (AHU-2) VFD as a percentage of the occupied mode VFD setting. Set original low-flow airflow for both supply and exhaust to 100% of occupied airflow. Owner may initialize programming by adjusting this setting. When this mode is initialized, the controls contractor, the mechanical contractor, the T&B contractor and ASE shall work together to commission and determine the proper airflow setpoints.

The owner should have the controls commissioned every 5 years.  
 All setpoints shall be adjustable.



1 CONTROLS SCHEMATIC: EXHAUST SYSTEM  
 NOT TO SCALE



2 MK PLASTICS EXHAUST FAN DETAIL  
 NOT TO SCALE

MECHANICAL SCHEDULES & DETAILS

**MANATEE COUNTY - WATER TREATMENT LAB**

CHILLER & EXHAUST FAN REPLACEMENT

4751 65th STREET WEST  
 BRADENTON, FL 34210

JOB NO: 14079.06DE  
 PROJ. MNGR: JRW  
 DRAWN BY: DCD  
 ISSUE DATE: 07.24.2017

SHEET NUMBER  
**EF-M2.0**  
 BID SET

DIVISION 16000 ELECTRICAL SPECIFICATIONS

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
	DISCONNECT SWITCH, NEMA/AMPERAGE/POLE/FUSE/VOLTAGE. PROVIDE NEMA 1, 600V UON.	AS NOTED.
	MOTOR CONNECTION OR EXHAUST FAN.	BY OTHERS.
	JUNCTION BOX OR OUTLET BOX.	AS NOTED.
	DRIVEN GROUND ROD.	AS NOTED.
	CONDUIT CONCEALED IN WALL OR CEILING.	SEE SPECIFICATIONS.
	CONDUIT CONCEALED IN SLAB OR UNDERGROUND.	SEE SPECIFICATIONS.
	CONDUIT EXPOSED ON WALL OR CEILING.	SEE SPECIFICATIONS.
	PHASE NEUTRAL EQUIPMENT GROUND, AND ISOLATED GROUND. ALL HOMERUNS SHALL BE 1/2" WITH 3 #12 UON.	
	480Y/277V PANELBOARD.	78" AFF TO TOP.
	208Y/120V OR 240/120V PANELBOARD.	78" AFF TO TOP.
	REFER TO KEYED NOTES.	

ABBREVIATIONS			
AFF	ABOVE FINISHED FLOOR	HID	HIGH INTENSITY DISCHARGE
AFG	ABOVE FINISHED GRADE	HP	HORSEPOWER
C	CONDUIT	N	NEW
CLG	CEILING MOUNTED	NF	NON-FUSED
D	DEMOLISHED	NL	NIGHT LIGHT
E	EXISTING	NP	NAMEPLATE
EC	ELECTRICAL CONTRACTOR	PNL	PANEL
EG	EQUIPMENT GROUND	R	RELOCATED
EWC	ELECTRIC WATER COOLER	TTB/C	TELEPHONE TERMINAL BOARD/CABINET
EWB	ELECTRIC WATER HEATER	UON	UNLESS OTHERWISE NOTED
GEC	GROUNDING ELECTRODE CONDUCTOR	WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTER	WPI	WEATHERPROOF WHILE IN USE

GENERAL PROJECT NOTES

- CONTRACTOR SHALL PERFORM A SITE VISIT TO VERIFY EXISTING SYSTEMS AND CONDITIONS PRIOR TO SUBMITTING BID.
- THE EXISTING CIRCUITRY ON THE PLANS IS SHOWN FOR REFERENCE ONLY AND WAS TAKEN FROM THE ORIGINAL CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL PROVIDE ALL CIRCUITRY WITHIN THE AREA UNDER CONSTRUCTION AS REQUIRED TO PROVIDE A FULLY FUNCTIONAL ELECTRICAL SYSTEM MEETING THE INTENTION OF THE PLANS AND SPECIFICATIONS. CONTRACTOR SHALL VERIFY THE ACCURACY OF EXISTING CONDITIONS, INCLUDING THE ACCURACY OF THE AS-BUILT CIRCUITRY INDICATED ON THE PLANS PRIOR TO SUBMITTING BID. NO ADDITIONAL COSTS FOR INACCURATE OR UNCONFIRMED EXISTING CONDITIONS WILL BE ACCEPTED.
- CONTRACTOR MAY RE-USE EXISTING PANELBOARDS, CIRCUIT BREAKERS, TRANSFORMERS, SAFETY SWITCHES, ETC. ONLY WHERE INDICATED TO BE REUSED ON THE PLANS.
- CONTRACTOR MAY RE-USE EXISTING CONDUIT, CONDUCTORS, FITTINGS, SUPPORTS, ETC. WHERE THESE ITEMS COMPLY WITH CURRENT CODE AND THE REQUIREMENTS OF THE SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY THE PRESENCE OF EXISTING SPARES AND SPACES IN THE PANELBOARDS UNDER THIS SCOPE OF WORK. CONTRACTOR SHALL PROVIDE ALL NECESSARY NEW BREAKERS TO FACILITATE THE ELECTRICAL INSTALLATION WHETHER SHOWN ON THE PLANS OR NOT. ANY CONFLICTS BETWEEN THE ELECTRICAL PLANS AND SITE CONDITIONS SHALL BE DOCUMENTED ON THE AS-BUILT PLANS.
- ITEMS TO BE DEMOLISHED, SUCH AS DISCONNECTS, TRANSFORMERS, ETC. SHALL BE HANDED OVER TO THE OWNER TO BE KEPT AS SPARE INVENTORY OR REMOVED FROM SITE AT THE SOLE DISCRETION OF THE OWNER.
- ANY MECHANICAL EQUIPMENT TO BE DEMOLISHED OR RELOCATED SHALL BE COORDINATED WITH THE MECHANICAL PLANS AND MECHANICAL CONTRACTOR PRIOR TO REMOVAL.
- CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE MECHANICAL PLANS. ADDITIONAL WORK NOT SHOWN ON THE ELECTRICAL PLANS MAY BE REQUIRED BY THE CONTRACTOR IN ORDER TO ASSIST THE WORK OF OTHER TRADES. ANY SUCH WORK SHALL BE COMPLETED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL MAINTAIN EXISTING DOWNSTREAM CIRCUITRY FOR DEVICES AND EQUIPMENT TO REMAIN. WHERE DEMOLITION WORK IS BEING PERFORMED THAT WOULD DISRUPT SERVICE, THE CONTRACTOR SHALL EXTEND OR REPLACE FEEDERS OR BRANCH CIRCUITS AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.

REVISIONS


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ELECTRICAL LEGEND & SPECIFICATIONS  
**MANATEE COUNTY - WATER TREATMENT LAB**  
 CHILLER & EXHAUST FAN REPLACEMENT  
 4751 65th STREET WEST  
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 BID SET

SECTION 16010  
 GENERAL PROVISIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, and equipment as required by the plans and specifications to provide a complete and operable electrical system. This specification describes the types of materials, methods, and management to be utilized. This includes the work listed in this division as well as equipment furnished under other divisions not specifically mentioned herein.

1.02 CODES AND STANDARDS

A. All equipment, materials, and methods of design and installation are to comply with the 2011 National Electrical Code (NEC), the Occupational Safety and Health Act (OSHA), and the requirements of applicable local codes. Codes and standards of the following organizations may be referred to in this section and shall be considered as the minimum acceptable. A reference herein to any portion of the standard or code is not to be considered as negating any other portion of the standard or code.

- American Society for Testing & Materials (ASTM)
- Institute of Electrical & Electronic Engineers (IEEE)
- National Electrical Code (NEC), 2011 ed.
- National Electric Manufacturers Association (NEMA)
- Underwriters Laboratories, Inc. (UL)
- Florida Building Code (FBC), 2010, 5th ed.
- Florida Fire Prevention Code (Florida Specific edition of NFPA 101), 2010 ed.

1.03 EQUIPMENT, MATERIAL AND WORKMANSHIP

A. All equipment and material shall be new, free from defects, of current manufacture, and listed by Underwriters Laboratories, Inc., (UL) where UL requirements apply. All materials are to be products of reputable and experienced manufacturers. Similar items in the project are to be of the same manufacturer. Use only equipment and materials of commercial quality and durability, and capable of long, reliable, trouble free service.

B. Provide protection for materials and equipment against loss or damage throughout the contract. Provide protection from the effect of weather prior to installation, store items to be installed in indoor weather protected location.

C. Following installation, protect materials and equipment from corrosion, physical damage and effects of moisture on insulation.

D. Layout work carefully in advance.

E. Do not cut or notch any structural member or building surface without specific approval of the Structural Engineer. Carefully carry out any cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, paving, or other surfaces required for the installation, support, or anchorage of conduit, raceways, or other electrical equipment. Following such work, restore surfaces neatly to new conditions using skilled craftsmen of the trades involved at no additional cost to the Owner.

F. All work will be performed by accomplished, qualified and experienced personnel working under continuous competent supervision.

G. Contractor shall restore fire ratings of all rated assemblies penetrated with the appropriate assembly: WL-1001, CAJ-1045, WL-1049, WL-3214, WJ-1055, or WJ-3094 or equivalent.

1.04 PERMITS

A. Obtain and pay for all permits and inspections pertinent to the electrical installation.

1.05 SITE INSPECTION

A. Prior to submitting a bid, visit the project site and ascertain conditions affecting the proposed work and all existing electrical facilities.

B. Furnish all labor associated with accompanying Engineer during observations of construction.

1.06 SHOP DRAWINGS

A. Submit 6 copies of all project submittal data and shop drawings.

B. Submit complete shop drawings for review prior to purchase of the following:

- Breakers and breaker mounting hardware.
- Conduit and conduit fittings.
- Supporting hardware.

1.07 RECORD DRAWINGS

A. Maintain a neatly marked set of record drawings showing installation location, and/or routing of conduits, depth of buried cables, pull boxes, junction boxes, and outlets. Mark this set to show current job progress and any deviation from the contract drawings. These drawings shall be available upon request of the Engineer. After final inspection, transfer all record information to the Owner as required in the contract.

PART 2 - EXECUTION

2.01 INSTALLATION

A. The electrical plans show general arrangements and locations for equipment conduit, outlets, etc. Unless detailed or dimensioned, exact locations of conduit, routing of cables and placement of equipment will be governed by structural conditions, physical interference, and locations of electrical termination on equipment. Examine architectural, structural, and mechanical plans and shop drawings for the various equipment in order to determine exact routing and placement of all raceways, cables, and equipment, to assure a workable installation in accordance with NEC.

2.02 CLEAN-UP

A. Continuously remove debris, cuttings, crates, cartons, etc.

B. Before acceptance, carefully clean all cabinets, panels, boxes, wiring devices, cover plates, etc. Replace all damaged or blemished fixtures.

\*\*\*END OF SECTION\*\*\*

SECTION 16070  
 ELECTRICAL CONNECTIONS FOR EQUIPMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide all labor, materials and equipment as required furnishing connections to all electrical equipment, lights, etc.

PART 2 - PRODUCTS

2.01 GENERAL

A. For each electrical connection indicated, provide complete assembly of materials, including but not necessarily limited to, raceways, conductors, cords caps, wiring devices, pressure connectors, terminals (lugs), electrical insulating tape, heat-shrinkable insulating tubing, cable ties, solderless wire nuts, and other items and accessories as needed to complete splices, terminations, and connections as required.

B. See Section 16111, Conduit Raceways; Section 16140 Wiring Devices; and Section 16120 Wire and Cables for additional requirements. Provide final connections for equipment consistent with the following:

- Permanently installed fixed equipment - flexible seal-tite conduit from branch circuit terminal equipment, or raceway; to equipment, control cabinet, terminal junction box, or wiring terminals. Totally enclose all wiring in raceway.
- Other methods as required by the National Electrical Code and/or as required by special equipment or field conditions.

PART 3 - EXECUTION

3.01 INSTALLATION OF ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with connector manufacturer's written instructions and with recognized industry practices, and complying with requirements of NEC and NECA's "Standard of Installation" to ensure that products fulfill requirements.

B. Connect electrical power supply conductors to equipment conductors in accordance with equipment manufacturer's written instructions and wiring diagrams.

C. Coordinate installation of electrical connections for equipment with equipment installer.

D. Verify all electrical loads (voltage, phase, full load amperes, number and joint of connections, minimum circuit ampacity, etc.) for equipment furnished under other Sections of this specification, by reviewing respective shop drawings furnished under each section. Meet with each subcontractor who is responsible for furnishing equipment that requiring electrical service connection and review equipment electrical characteristics. Report any variances from electrical characteristics noted on the electrical drawings to the Engineer before proceeding with rough-in work.

E. Obtain and review the equipment shop drawings to determine particular final connection requirements before rough in begins for each equipment item.

F. Refer to basic materials and methods Section 16120, Conductors, for identification of electrical power supply conductor terminations.

\*\*\*END OF SECTION\*\*\*

SECTION 16111  
 CONDUIT RACEWAYS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials and equipment as required to install all flexible or rigid conduit, couplings, supports and nonmetallic ducts, as shown on the Plans.

PART 2 - PRODUCTS

2.01 MATERIALS

A. GENERAL: Provide conduit, and fittings of types, grades, sizes, and weights (wall thicknesses) as indicated; with minimum trade size of 1/2" above grade and 3/4" below grade.

B. Electrical Metallic Tubing (EMT) with zinc die cast or steel set screw fittings for dry and damp locations, compression fittings for wet locations.

C. RIGID METAL CONDUIT (RMC) with threaded fittings.

D. RIGID NON-METALLIC CONDUIT (RNC): Schedule 40, with matching glue on socket fittings.

E. FLEXIBLE METALLIC CONDUIT (FMC): Galvanized interlocked steel strip with cadmium plated steel or malleable iron fittings.

F. LIQUID-TIGHT FLEXIBLE METAL CONDUIT (LT): Provide liquid-tight, flexible metal conduit; constructed of single strip, flexible continuous, interlocked, and double-wrapped steel; galvanized inside and outside; coated with liquid-tight jacket of flexible polyvinyl chloride (PVC) with cadmium plated steel or malleable iron fittings and compression type steel ferrule and neoprene gasket sealing rings.

G. EXPANSION FITTINGS: OZ Type AX, or equivalent to suit application.

2.02 SCHEDULE OF LOCATIONS

A. RMC in all areas subject to physical damage to an elevation of 48" AFF/AFG.

B. EMT for all above grade areas in the building unless noted otherwise.

C. RNC for all areas below grade.

D. Make connections to motors and equipment with FMC and LT as environmental conditions dictate.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install conduit concealed in all areas where possible.

B. Plug ends of conduits to prevent entry of dirt or moisture.

C. Clean out conduit before installation of conductors.

D. Route all exposed conduits parallel or perpendicular to building lines.

E. Do not exceed number of bends in conduit beyond that allowed by the NEC.

F. Cut conduit with hacksaw or other approved pipe cutting tool and ream ends to clean out all burrs before connecting.

G. Keep conduits at least 12" away from gas lines and hot water pipes, and in no case permit conductors to reach higher than rated temperatures.

H. Fasten raceways securely in place. Firmly fasten conduit within three feet of each outlet, junction box, cabinet, or fitting. Support metallic conduit in accordance with the NEC. Use raceway fasteners designed for the purpose.

I. Provide pull boxes as shown on the plans, plus any such items required to assemble conduits and other raceways. Provide pull boxes as dictated by wire pulling requirements. Unless shown otherwise, face into secondary or unfinished rooms.

\*\*\*END OF SECTION\*\*\*

SECTION 16120  
 BUILDING WIRE AND CABLE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, and equipment as required to install all wires and cables as n the Plans, and as required to connect all electrical services and equipment.

1.02 RELATED WORK

A. Section 16000 - Electrical General Requirements

B. Section 16111 - Conduit

PART 2 - PRODUCTS

2.01 MATERIALS

A. All wiring shall be copper unless specifically noted otherwise on plans.

B. Minimum size conductors:

- Branch circuits, # 12 AWG THHN/THWN.
- Control circuits, # 14 AWG THHN/THWN.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Color coding shall be as follows:

Voltage Phase A Phase B Phase C Neutral  
 277/480 Brown Orange Yellow Gray

B. Provide a green grounding conductor in all raceways except service entrance.

C. Provide conductors with identification tags as manufactured by Bryd or approved equal.

D. Install wires and cables continuous without splices from source of supply to distribution equipment and from source of supply to motors, lighting, or power outlets. Do not use pull boxes for making splices. Do not install splices in conduits or trench.

E. Install all wiring in accordance with NEC.

\*\*\*END OF SECTION\*\*\*

SECTION 16130  
 PULL AND JUNCTION BOXES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Construct junction or pull boxes less than 100 cubic inches as "standard outlet boxes".

B. Construct junction or pull boxes greater than 100 cubic inches as "cabinets".

C. Provide all covers of same gauge metal and include screws.

PART 2 - PRODUCTS

2.01 STANDARD OUTLET BOXES

A. Make of material resistant to corrosion or suitably protected, both internally and externally by galvanizing.

B. Boxes installed in damp or wet locations shall be U.L. approved for the purpose.

C. Comply with U.L. Standard 50.

D. Metal boxes to meet NEC construction specifications.

E. Boxes exposed or surface mounted shall be die-cast or permanent-mold cast aluminum body with threaded external hub and cast cover.

F. Interior metal boxes shall be labeled with the circuits contained within. Labeling shall be by permanent black magic marker.

2.02 CABINETS

A. 14 gauge sheet steel with corrosion resistant finish.

B. Ample space for wires, connections and equipment.

C. Cabinet fronts: Sheet steel panels with hinged door and locking provisions.

PART 3 - EXECUTION

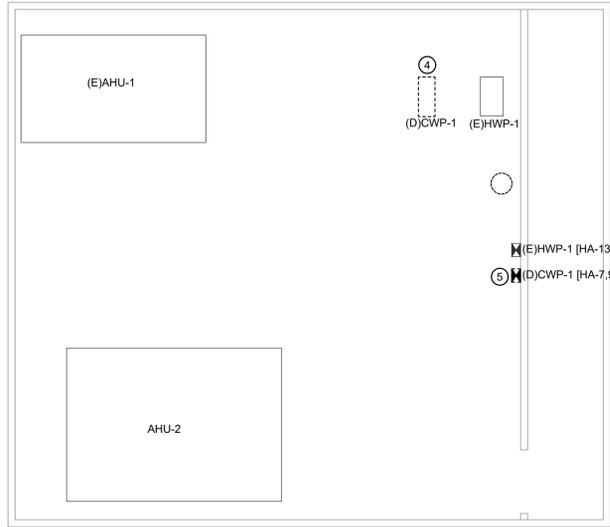
3.01 INSTALLATION

A. Install junction boxes so that covers are readily accessible after the completion of the installation.

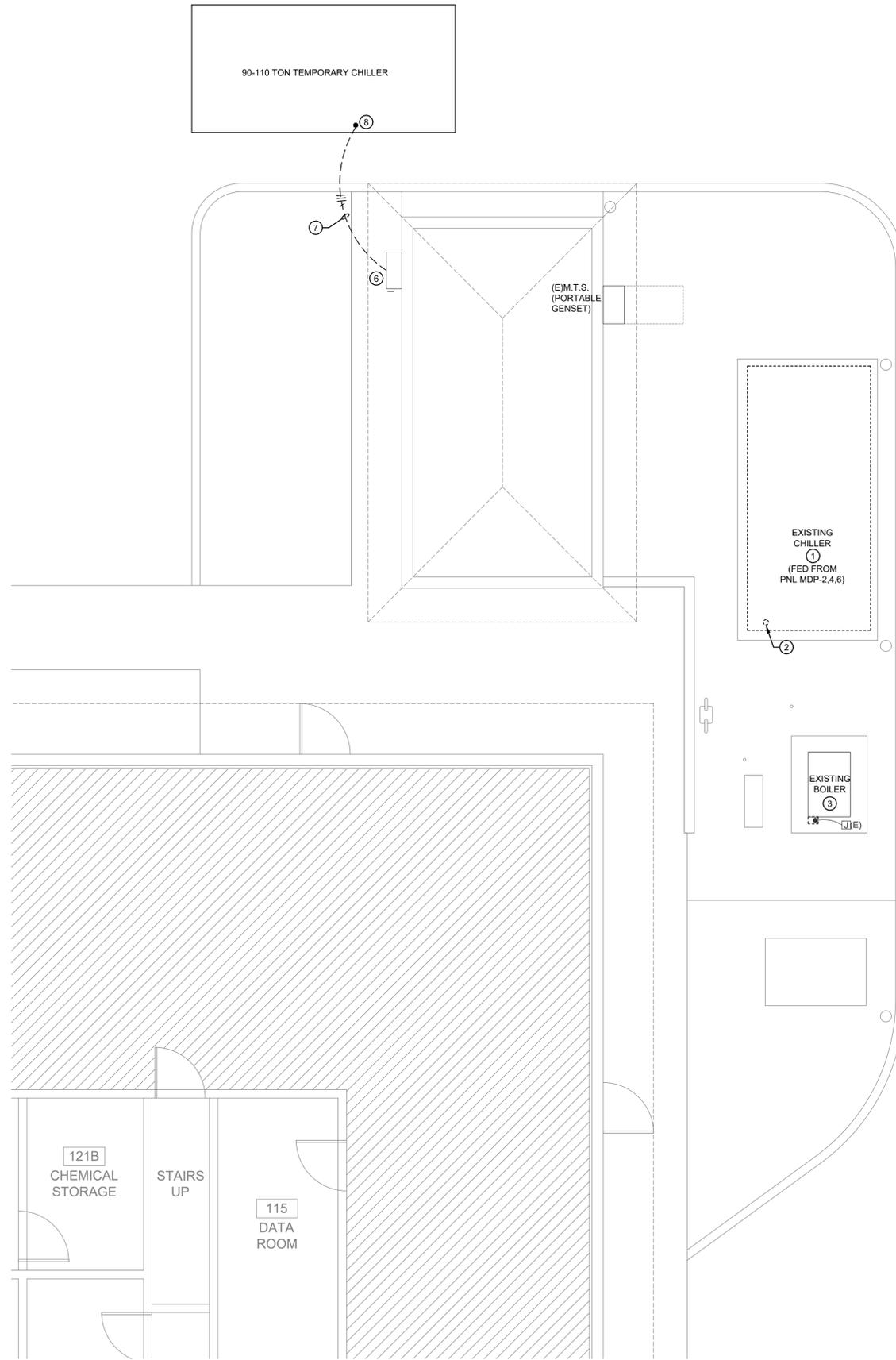
B. Mount rigidly in place with front of box level and plumb.

C. Secure flush covers with corrosion resistant screws or bolts.

D. Provide each pull box with sufficient clamps to which cables shall be secured in neat and orderly fashion permitting ready identification.



1 ELECTRICAL MECHANICAL ROOM DEMOLITION PLAN  
SCALE: 1/4"=1'-0"



2 ELECTRICAL CHILLER YARD DEMOLITION PLAN  
SCALE: 1/4"=1'-0"

ELECTRICAL NOTES ○

- EXISTING MECHANICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL LINE AND LOW VOLTAGE CONNECTIONS TO FACILITATE THE REMOVAL OF MECHANICAL EQUIPMENT. LOW VOLTAGE CONNECTIONS TO BE REMOVED SHALL INCLUDE BUILDING MANAGEMENT SYSTEM, CONTROLS, FIRE ALARM, ETC.
- REMOVE EXISTING FEEDERS SERVING EXISTING MECHANICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY BACK TO SOURCE PANEL. REMOVE ALL EXISTING SURFACE MOUNTED WEATHERPROOF POWER CONNECTIONS IN THEIR ENTIRETY AND CUT EXISTING CONDUIT OFF FLUSH WITH EXISTING GRADE AND CAP AS REQUIRED.
- EXISTING MECHANICAL EQUIPMENT TO REMAIN.
- EXISTING CHILLED WATER PUMP TO BE REPLACED IN PLACE WITH NEW OF SAME HORSE POWER. ELECTRICAL CONTRACTOR SHALL DISCONNECT PUMP AND MAKE SAFE FOR REMOVAL BY MECHANICAL CONTRACTOR.
- REMOVE EXISTING COMBINATION STARTER/DISCONNECT SERVING CHILLED WATER PUMP COMPLETELY. ALL EXISTING BRANCH CIRCUIT CONDUIT AND WIRE TO REMAIN FOR NEW WORK. REFER TO RENOVATION PLAN ON SHEET E2.0 FOR MORE INFORMATION.
- EXISTING N3R/400/3/NF/600V DISCONNECT FOR TEMPORARY CHILLER.
- PROVIDE 3 #250 KCMIL CU, 1 #4 CU E.G. IN 2-1/2" C FOR TEMPORARY CONNECTION TO CHILLER.
- MAKE CONNECTIONS TO TEMPORARY CHILLER AS REQUIRED.

GENERAL NOTES

- CONTRACTOR SHALL PERFORM A SITE VISIT TO VERIFY EXISTING SYSTEMS AND CONDITIONS PRIOR TO SUBMITTING BID.
- THE EXISTING CIRCUITRY ON THE PLANS IS SHOWN FOR REFERENCE ONLY AND WAS TAKEN FROM THE ORIGINAL CONSTRUCTION DOCUMENTS AND WHAT COULD BE DETERMINED FROM A SITE SURVEY. THE CONTRACTOR SHALL PROVIDE ALL CIRCUITRY WITHIN THE AREA UNDER CONSTRUCTION AS REQUIRED TO PROVIDE A FULLY FUNCTIONAL ELECTRICAL SYSTEM MEETING THE INTENTION OF THE PLANS. CONTRACTOR SHALL VERIFY THE ACCURACY OF EXISTING CONDITIONS, INCLUDING THE ACCURACY OF THE AS-BUILT CIRCUITRY INDICATED ON THE PLANS PRIOR TO SUBMITTING BID. NO ADDITIONAL COSTS FOR INACCURATE OR UNCONFIRMED EXISTING CONDITIONS WILL BE ACCEPTED.
- CONTRACTOR MAY RE-USE EXISTING PANELBOARDS, CIRCUIT BREAKERS, TRANSFORMERS, SAFETY SWITCHES, ETC. ONLY WHERE INDICATED TO BE REUSED ON THE PLANS.
- CONTRACTOR MAY RE-USE EXISTING CONDUIT, CONDUCTORS, FITTINGS, AND SUPPORTS, ETC. WHERE THESE ITEMS ARE SUPPORTED AND SECURED WITH STRAPS COMPLY WITH CURRENT NEC CODE AND THE REQUIREMENTS OF THE SPECIFICATIONS.
- ITEMS TO BE DEMOLISHED, SUCH AS STARTERS, DISCONNECTS, JUNCTION BOXES, ETC. SHALL BE HANDED OVER TO THE OWNER TO BE KEPT AS SPARE INVENTORY OR REMOVED FROM SITE AT THE SOLE DISCRETION OF THE OWNER.

REVISIONS

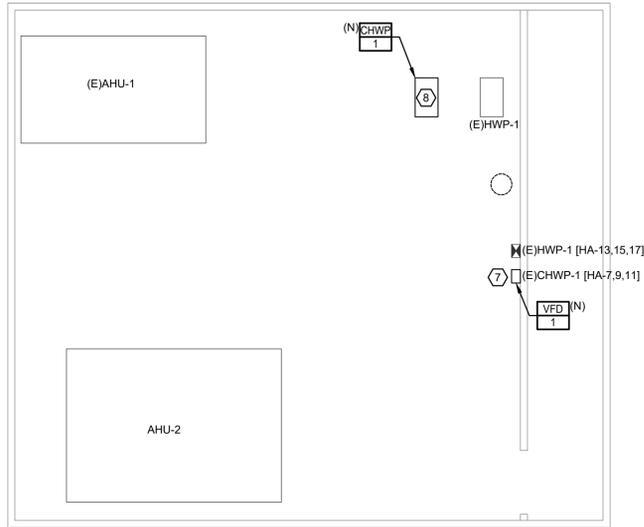
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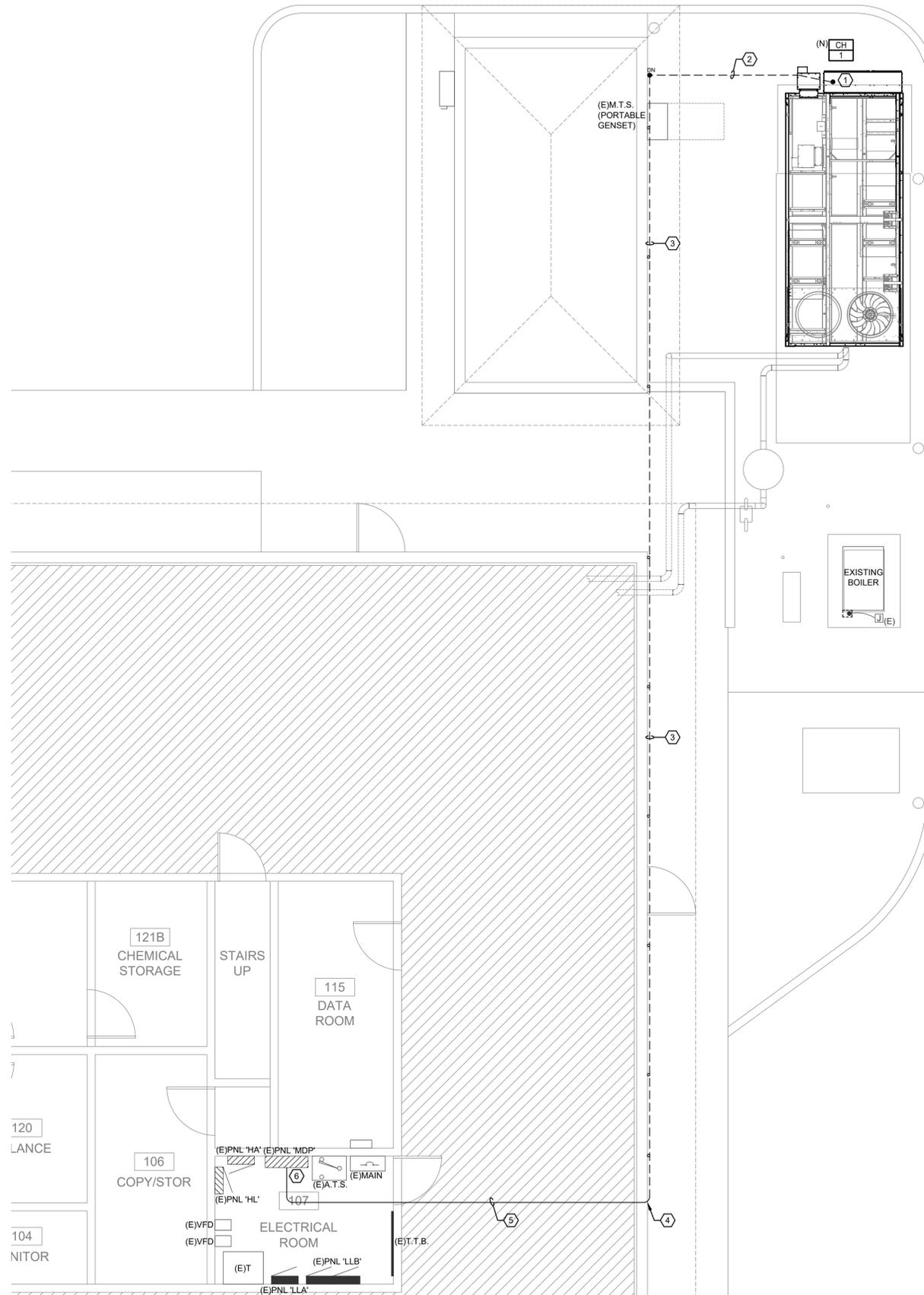
ELECTRICAL CHILLER YARD DEMOLITION PLAN  
MANATEE COUNTY - WATER TREATMENT LAB  
CHILLER & EXHAUST FAN REPLACEMENT  
4751 65th STREET WEST  
BRADENTON, FL 34210

JOB NO:	14079.06DE
PROJ. MNGR:	KCW
DRAWN BY:	KCW
ISSUE DATE:	07.24.2017

SHEET NUMBER  
**CH-E1.0**  
BID SET



1 ELECTRICAL MECHANICAL ROOM RENOVATION PLAN  
SCALE: 1/4"=1'-0"



2 ELECTRICAL CHILLER YARD RENOVATION PLAN  
SCALE: 1/4"=1'-0"



ELECTRICAL NOTES

1. PROVIDE MINIMUM OF A 24" FLEXIBLE SEALTIGHT CONNECTION TO CHILLER CONTROL PANEL AND PROVIDE FINAL CONNECTION TO CHILLER. COORDINATE EXACT STUB UP AND CONNECTION POINT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. CHILLER TO BE PROVIDED WITH INTEGRAL DISCONNECT IN CONTROL PANEL.
2. 3 #350 KCMIL CU AND 1 #4 CU E.G. IN 2-1/2" C. ROUTED EXPOSED ABOVE GROUND. MOUNT CONDUIT TO GROUND WITH ALUMINUM UNISTRUT AND UNISTRUT STYLE STRAPS. PROVIDE ALUMINUM RIGID CONDUIT AND MALLEABLE IRON "LB" FITTINGS ALL FOR EXPOSED EXTERIOR CONDUIT.
3. 3 #350 KCMIL CU AND 1 #4 CU E.G. IN 2-1/2" C. ROUTE CONDUIT AND WIRE OVERHEAD TIGHT TO BOTTOM OF ROOF OVERHANG AND SUPPORT FROM WALL WITH ALUMINUM UNISTRUT AND STRUT STYLE STRAPS.
4. PENETRATE WALL ABOVE EXISTING ACCESSIBLE CEILING SPACE. CONTRACTOR SHALL MAKE A WEATHRPROOF SEAL AT PENETRATION POINT.
5. 3 #350 KCMIL CU AND 1 #4 CU E.G. IN 2-1/2" C. ROUTE CONDUIT AND WIRE OVERHEAD ABOVE ACCESSIBLE CEILING SPACE AND SUPPORT FROM STRUCTURE.
6. PROVIDE NEW 350A, 3 POLE BREAKER IN EXISTING SQUARE D, I-LINE, 600 AMP, 277/480 VOLT, 3 PHASE, 4 WIRE, PANELBOARD. NEW BREAKER SHALL MATCH EXISTING BREAKER STYLE AND A.I.C. RATING. CONTRACTOR SHALL PROVIDE ALL NECESSARY BREAKER MOUNTING HARDWARE AND ADDITIONAL BLANK PLATES AS REQUIRED. REFER TO PANEL SCHEDULES ON SHEET E3.0 FOR MORE INFORMATION.
7. NEW VARIABLE FREQUENCY DRIVE (VFD) WITH INTEGRAL DISCONNECT FURNISHED BY MECHANICAL CONTRACTOR. INSTALLATION AND ALL FINAL LINE VOLTAGE CONNECTIONS BY ELECTRICAL CONTRACTOR. CONNECT NEW VFD TO EXISTING BRANCH CIRCUIT CONDUIT AND WIRE SERVING CHILLED WATER PUMP.
8. PROVIDE MINIMUM OF 24" FLEXIBLE CONNECTIONS TO NEW PUMP. ELECTRICAL CONTRACTOR SHALL EXTEND EXISTING BRANCH CIRCUIT CONDUIT AND WIRE AS REQUIRED.

GENERAL NOTES

1. ELECTRICIAN SHALL PERFORM A SITE VISIT TO VERIFY EXISTING SYSTEMS AND CONDITIONS PRIOR TO SUBMITTING BID.
2. THE EXISTING CIRCUITRY ON THE PLANS IS SHOWN FOR REFERENCE ONLY AND WAS TAKEN FROM THE ORIGINAL CONSTRUCTION DOCUMENTS AND WHAT COULD BE DETERMINED FROM A SITE SURVEY. THE ELECTRICIAN SHALL PROVIDE ALL CIRCUITRY WITHIN THE AREA UNDER CONSTRUCTION AS REQUIRED TO PROVIDE A FULLY FUNCTIONAL ELECTRICAL SYSTEM MEETING THE INTENTION OF THE PLANS. ELECTRICIAN SHALL VERIFY THE ACCURACY OF EXISTING CONDITIONS, INCLUDING THE ACCURACY OF THE AS-BUILT CIRCUITRY INDICATED ON THE PLANS PRIOR TO SUBMITTING BID. NO ADDITIONAL COSTS FOR INACCURATE OR UNCONFIRMED EXISTING CONDITIONS WILL BE ACCEPTED.
3. ELECTRICIAN MAY RE-USE EXISTING PANELBOARDS, CIRCUIT BREAKERS, TRANSFORMERS, SAFETY SWITCHES, ETC. ONLY WHERE INDICATED TO BE REUSED ON THE PLANS.
4. ELECTRICIAN MAY RE-USE EXISTING CONDUIT, CONDUCTORS, FITTINGS, SUPPORTS, ETC. WHERE THESE ITEMS COMPLY WITH CURRENT CODE AND THE REQUIREMENTS OF THE SPECIFICATIONS.
5. AT PROJECT COMPLETION ELECTRICAL CONTRACTOR SHALL REDLINE DRAWINGS TO DOCUMENT INSTALLED CONDITIONS AND POINT OUT DISCREPANCIES IN INDICATED "AS-BUILT" CONDITIONS.
6. ELECTRICAL CONTRACTOR SHALL PROVIDE CIRCUIT IDENTIFICATION LABEL ON NEW DEVICES AS PER SPECIFICATIONS. LABEL SHALL INCLUDE SOURCE PANEL AND CIRCUIT NUMBER. REFER TO ELECTRICAL SPECIFICATIONS FOR MORE INFORMATION.

REVISIONS


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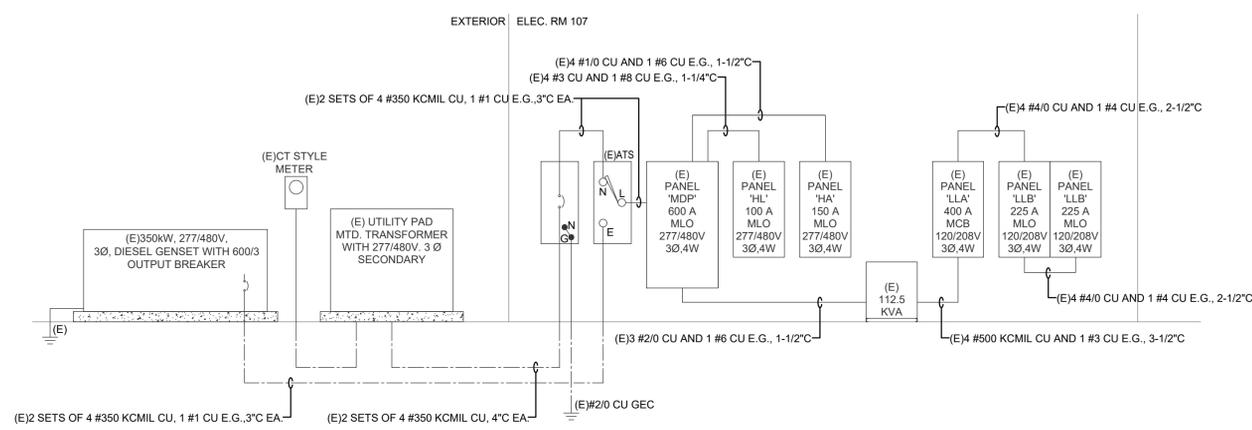
**ELECTRICAL CHILLER YARD RENOVATION PLAN**  
**MANATEE COUNTY - WATER TREATMENT LAB**  
 CHILLER & EXHAUST FAN REPLACEMENT  
 4751 65th STREET WEST  
 BRADENTON, FL 34210

JOB NO: 14079.06DE  
 PROJ. MNGR: KCW  
 DRAWN BY: KCW  
 ISSUE DATE: 07.24.2017

SHEET NUMBER  
**CH-E2.0**  
 BID SET

REVISIONS

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1 PARTIAL ELECTRICAL RISER DIAGRAM

SCALE: NO SCALE  
 NOTE: RISER DIAGRAM SHOWN FOR REFERENCE ONLY. NO WORK TO EXISTING ELECTRICAL SERVICE IS PART OF THIS SCOPE OF WORK.

<b>PANEL: 'MDP' (RENO.)</b>										ACCESSORIES: EXIST. SQUARE D LINE PNLBRD (HCM)												
VOLTAGE: 480 /2777 PHASE: 3					MOUNTING: SURFACE					NEMA 1 AIC: 35,000					NEMA 1 AIC: 35,000							
LOAD (KVA)										LOAD (KVA)												
LTG	REC	MISC	COOL	HEAT	MTR	AMPS	POLE	LOAD DESCRIPTION	CKT	A	B	C	CKT	LOAD DESCRIPTION	AMPS	POLE	LTG	REC	MISC	COOL	HEAT	MTR
100	3							PANEL 'HL' (1)	1				2	CHILLER CH-1 (3)(4)	350	3						
									3				4									
									5				6									
150	3							PANEL 'HA' (1)	7				8									
									9				10	1.5" SPACE								
									11				12	1.5" SPACE								
125	3							PANEL 'LLC' (1)	13				14	TRANSFORMER T1 (2)	175	3						
									15				16									
									17				18									
125	3							UPS (1)	19				20	TVSS (2)	60	3						
									21				22									
									23				24									
								1.5" SPACE	25				26	TEMP CHILLER (2)	250	3						
								1.5" SPACE	27				28									
								1.5" SPACE	29				30									
CONNECTED LOAD SUMMARY (KVA)										DEMAND LOAD SUMMARY												
LTG	REC	MISC	COOL	HEAT	MTR	A	B	C	TOTALS	D.F.	COMMENTS										LOAD	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
CONNECTED LOAD PER PHASE										Breaker Notes ( )										DEMAND LOAD: 0.0 KVA		
PHASE A 0.0 KVA 0.0 AMPS										1. EXISTING BREAKER, EXISTING WIRE										REFER TO LOAD SUMMARY		
PHASE B 0.0 KVA 0.0 AMPS										2. EXISTING BREAKER TO BE RELOCATED												
PHASE C 0.0 KVA 0.0 AMPS										3. NEW BREAKER, NEW WIRE												
										4. NEW BREAKER REQUIRES 6" OF MOUNTING SPACE												
										5. NEW BREAKER REQUIRES 6" OF MOUNTING SPACE												
										6. NEW BREAKER REQUIRES 6" OF MOUNTING SPACE										DEMAND CURRENT: 0.0 AMPS		

<b>PANEL: 'MDP' (EXIST.)</b>										ACCESSORIES: EXIST. SQUARE D LINE PNLBRD (HCM)												
VOLTAGE: 480 /2777 PHASE: 3					MOUNTING: SURFACE					NEMA 1 AIC: 35,000					NEMA 1 AIC: 35,000							
LOAD (KVA)										LOAD (KVA)												
LTG	REC	MISC	COOL	HEAT	MTR	AMPS	POLE	LOAD DESCRIPTION	CKT	A	B	C	CKT	LOAD DESCRIPTION	AMPS	POLE	LTG	REC	MISC	COOL	HEAT	MTR
100	3							PANEL 'HL' (1)	1				2	CHILLER CH-1 (2)	250	3						
									3				4									
									5				6									
150	3							PANEL 'HA' (1)	7				8	TRANSFORMER T1 (3)	175	3						
									9				10									
									11				12									
									13				14	TVSS (3)	60	3						
									15				16									
									17				18									
125	3							UPS (1)	19				20	TEMP CHILLER (3)	250	3						
									21				22									
									23				24									
								1.5" SPACE	25				26	1.5" SPACE								
								1.5" SPACE	27				28	1.5" SPACE								
								1.5" SPACE	29				30	1.5" SPACE								
CONNECTED LOAD SUMMARY (KVA)										DEMAND LOAD SUMMARY												
LTG	REC	MISC	COOL	HEAT	MTR	A	B	C	TOTALS	D.F.	COMMENTS										LOAD	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
CONNECTED LOAD PER PHASE										Breaker Notes ( )										DEMAND LOAD: 0.0 KVA		
PHASE A 0.0 KVA 0.0 AMPS										1. EXISTING BREAKER, EXISTING WIRE										REFER TO LOAD SUMMARY		
PHASE B 0.0 KVA 0.0 AMPS										2. EXISTING BREAKER TO BE REMOVED												
PHASE C 0.0 KVA 0.0 AMPS										3. EXISTING BREAKER TO BE RELOCATED												
										4. EXISTING BREAKER TO BE RELOCATED												
										5. EXISTING BREAKER TO BE RELOCATED												
										6. EXISTING BREAKER TO BE RELOCATED										DEMAND CURRENT: 0.0 AMPS		

<b>PANEL: 'HA' (EXISTING)</b>										ACCESSORIES: EXISTING SQUARE D NF PNLBRD												
VOLTAGE: 480 /2777 PHASE: 3					MOUNTING: SURFACE					NEMA 1 AIC: 35,000					NEMA 1 AIC: 35,000							
LOAD (KVA)										LOAD (KVA)												
LTG	REC	MISC	COOL	HEAT	MTR	AMPS	POLE	LOAD DESCRIPTION	CKT	A	B	C	CKT	LOAD DESCRIPTION	AMPS	POLE	LTG	REC	MISC	COOL	HEAT	MTR
4.0								WATER HEATER (1)	1				2	LEF-1 (1)	30	3						
4.0									3				4									
4.0									5				6									
4.0									7				8	LEF-2 (1)	30	3						
						3.9	30	3					9									
						3.9							10									
						3.9							11									
						0.9	15	3					13	14	AHU-1 (1)	15	3				0.7	
						0.9							15	16								0.7
						0.9							17	18								0.7
						0.9							19	20	AHU-2 (1)	40	3				5.8	
													21	22								5.8
													23	24								5.8
						2.1	30	3					25	26	SPACE							
						2.1							27	28	SPACE							
						2.1							29	30	SPACE							
													31	32	SPACE							
													33	34	SPACE							
													35	36	SPACE							
													37	38	SPACE							
													39	40	SPACE							
													41	42	SPACE							
CONNECTED LOAD SUMMARY (KVA)										DEMAND LOAD SUMMARY												
LTG	REC	MISC	COOL	HEAT	MTR	A	B	C	TOTALS	D.F.	COMMENTS										LOAD	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.0 KVA	
4.0	0.0	4.0	4.0	4.0	0.0	12.0	1.00														12.0 KVA	
6.5	0.0	6.5	6.5	6.5	19.6	1.00															19.6 KVA	
0.0	0.0	0.0	0.0	0.0	0.0	0.0															0.0 KVA	
14.7	0.0	14.7	14.7	14.7	44.1	1.07					125% OF LARGEST MOTOR PLUS 100% OF REMAINDER										47.0 KVA	
CONNECTED LOAD PER PHASE										Breaker Notes ( )										DEMAND LOAD: 78.6 KVA		
PHASE A 25.2 KVA 91.1 AMPS										1.										REFER TO LOAD SUMMARY		
PHASE B 25.2 KVA 91.1 AMPS										2.												
PHASE C 25.2 KVA 91.1 AMPS										3.												
										4.												
										5.												
										6.												DEMAND CURRENT: 94.6 AMPS

<b>BUILDING LOAD SUMMARY</b>	
EXISTING 1-YEAR PEAK DEMAND (IN KW)	159.0 KW
POWER FACTOR CORRECTION	0.9
EXISTING 1-YEAR PEAK DEMAND (IN KVA)	176.7 KVA
125% OF EXISTING 1-YEAR PEAK DEMAND	220.8 KVA
LESS LOADS REMOVED	-121.3 KVA
PLUS LOADS ADDED	151.4 KVA
TOTAL	250.9 KVA
AMPERES 480 V, 3 PHASE	301.8 Amps

ELECTRICAL RISER DIAGRAM & SCHEDULES  
**MANATEE COUNTY - WATER TREATMENT LAB**  
 CHILLER & EXHAUST FAN REPLACEMENT  
 4751 65th STREET WEST  
 BRADENTON, FL 34210

JOB NO: 14079.06DE  
 PROJ. MNGR: KCW  
 DRAWN BY: KCW  
 ISSUE DATE: 07.24.2017

SHEET NUMBER  
**CH-E3.0**  
 BID SET

DIVISION 16000 ELECTRICAL SPECIFICATIONS

ELECTRICAL LEGEND

REVISIONS

SECTION 16010  
GENERAL PROVISIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, materials, and equipment as required by the plans and specifications to provide a complete and operable electrical system. This specification describes the types of materials, methods, and management to be utilized. This includes the work listed in this division as well as equipment furnished under other divisions not specifically mentioned herein.

1.02 CODES AND STANDARDS

- A. All equipment, materials, and methods of design and installation are to comply with the 2011 National Electrical Code (NEC), the Occupational Safety and Health Act (OSHA), and the requirements of applicable local codes. Codes and standards of the following organizations may be referred to in this section and shall be considered as the minimum acceptable. A reference herein to any portion of the standard or code is not to be considered as negating any other portion of the standard or code.

- American Society for Testing & Materials (ASTM)
- Institute of Electrical & Electronic Engineers (IEEE)
- National Electrical Code (NEC), 2011 ed.
- National Electric Manufacturers Association (NEMA)
- Underwriters Laboratories, Inc. (UL)
- Florida Building Code (FBC), 2014, 5th ed.
- Florida Fire Prevention Code (Florida Specific edition of NFPA 101), 2010 ed.

1.03 EQUIPMENT, MATERIAL AND WORKMANSHIP

- A. All equipment and material shall be new, free from defects, of current manufacture, and listed by Underwriters Laboratories, Inc., (UL) where UL requirements apply. All materials are to be products of reputable and experienced manufacturers. Similar items in the project are to be of the same manufacturer. Use only equipment and materials of commercial quality and durability, and capable of long, reliable, trouble free service.
- B. Provide protection for materials and equipment against loss or damage throughout the contract. Provide protection from the effect of weather prior to installation, store items to be installed in indoor weather protected location.
- C. Following installation, protect materials and equipment from corrosion, physical damage and effects of moisture on insulation.
- D. Layout work carefully in advance.
- E. Do not cut or notch any structural member or building surface without specific approval of the Structural Engineer. Carefully carry out any cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, paving, or other surfaces required for the installation, support, or anchorage of conduit, raceways, or other electrical equipment. Following such work, restore surfaces neatly to new conditions using skilled craftsmen of the trades involved at no additional cost to the Owner.
- F. All work will be performed by accomplished, qualified and experienced personnel working under continuous competent supervision.
- G. Contractor shall restore fire ratings of all rated assemblies penetrated with the appropriate assembly: WL-1001, CAJ-1045, WL-1049, WL-3214, WJ-1055, or WJ-3094 or equivalent.

1.04 PERMITS

- A. Obtain and pay for all permits and inspections pertinent to the electrical installation.

1.05 SITE INSPECTION

- A. Prior to submitting a bid, visit the project site and ascertain conditions affecting the proposed work and all existing electrical facilities.
- B. Furnish all labor associated with accompanying Engineer during observations of construction.

1.06 SHOP DRAWINGS

- A. Submit 6 copies of all project submittal data and shop drawings.
- B. Submit complete shop drawings for review prior to purchase of the following:
  - Safety switches, and fuses.

1.07 RECORD DRAWINGS

- A. Maintain a neatly marked set of record drawings showing installation location, and/or routing of conduits, depth of buried cables, pull boxes, junction boxes, and outlets. Mark this set to show current job progress and any deviation from the contract drawings. These drawings shall available upon request of the Engineer. After final inspection, transfer all record information to the Owner as required in the contract.

PART 2 - EXECUTION

2.01 INSTALLATION

- A. The electrical plans show general arrangements and locations for equipment conduit, outlets, etc. Unless detailed or dimensioned, exact locations of conduit, routing of cables and placement of equipment will be governed by structural conditions, physical interference, and locations of electrical termination on equipment. Examine architectural, structural, and mechanical plans and shop drawings for the various equipment in order to determine exact routing and placement of all raceways, cables, and equipment, to assure a workable installation in accordance with NEC.

2.02 CLEAN-UP

- A. Continuously remove debris, cuttings, crates, cartons, etc.
- B. Before acceptance, carefully clean all cabinets, panels, boxes, wiring devices, cover plates, etc. Replace all damaged or blemished fixtures.

\*\*\*END OF SECTION\*\*\*

SECTION 16070  
ELECTRICAL CONNECTIONS FOR EQUIPMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide all labor, materials and equipment as required furnishing connections to all electrical equipment, lights, etc.

PART 2 - PRODUCTS

2.01 GENERAL

- A. For each electrical connection indicated, provide complete assembly of materials, including but not necessarily limited to, raceways, conductors, cords caps, wiring devices, pressure connectors, terminals (lugs), electrical insulating tape, heat-shrinkable insulating tubing, cable ties, solderless wire nuts, and other items and accessories as needed to complete splices, terminations, and connections as required.
- B. See Section 16111, Conduit Raceways; and Section 16120 Wire and Cables for additional requirements. Provide final connections for equipment consistent with the following:
  - Permanently installed fixed equipment - flexible seal-tite conduit from branch circuit terminal equipment, or raceway; to equipment, control cabinet, terminal junction box, or wiring terminals. Totally enclose all wiring in raceway.
  - Movable and/or portable equipment - wiring device, cord cap, and multi-conductor cord suitable for the equipment and in accordance with NEC requirements (Article 400).
  - Other methods as required by the National Electrical Code and/or as required by special equipment or field conditions.

PART 3 - EXECUTION

3.01 INSTALLATION OF ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with connector manufacturer's written instructions and with recognized industry practices, and complying with requirements of NEC and NECA's "Standard of Installation" to ensure that products fulfill requirements.
- B. Connect electrical power supply conductors to equipment conductors in accordance with equipment manufacturer's written instructions and wiring diagrams.
- C. Coordinate installation of electrical connections for equipment with equipment installer.
- D. Verify all electrical loads (voltage, phase, full load amperes, number and point of connections, minimum circuit ampacity, etc.) for equipment furnished under other Sections of this specification, by reviewing respective shop drawings furnished under each section. Meet with each subcontractor who is responsible for furnishing equipment that requiring electrical service connection and review equipment electrical characteristics. Report any variances from electrical characteristics noted on the electrical drawings to the Engineer before proceeding with rough-in work.
- E. Obtain and review the equipment shop drawings to determine particular final connection requirements before rough in begins for each equipment item.
- F. Refer to basic materials and methods Section 16120, Conductors, for identification of electrical power supply conductor terminations.

\*\*\*END OF SECTION\*\*\*

SECTION 16111  
CONDUIT RACEWAYS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, materials and equipment as required to install all flexible or rigid conduit, couplings, supports and nonmetallic ducts, as shown on the Plans.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. GENERAL: Provide conduit, and fittings of types, grades, sizes, and weights (wall thicknesses) as indicated; with minimum trade size of 1/2" above grade and 3/4" below grade.
- B. Electrical Metallic Tubing (EMT) with zinc die cast or steel set screw fittings for dry and damp locations, compression fittings for wet locations.
- C. RIGID METAL CONDUIT (RMC) with threaded fittings.
- D. RIGID NON-METALLIC CONDUIT (RNC): Schedule 40, with matching glue on socket fittings.
- E. FLEXIBLE METALLIC CONDUIT (FMC): Galvanized interlocked steel strip with cadmium plated steel or malleable iron fittings.
- F. LIQUID-TIGHT FLEXIBLE METAL CONDUIT (LT): Provide liquid-tight, flexible metal conduit; constructed of single strip, flexible continuous, interlocked, and double-wrapped steel; galvanized inside and outside; coated with liquid-tight jacket of flexible polyvinyl chloride (PVC) with cadmium plated steel or malleable iron fittings and compression type steel ferrule and neoprene gasket sealing rings.
- G. EXPANSION FITTINGS: OZ Type AX, or equivalent to suit application.

2.02 SCHEDULE OF LOCATIONS

- A. RMC in all areas subject to physical damage to an elevation of 48" AFF/AFG.
- B. EMT for all above grade areas in the building unless noted otherwise.
- C. RNC for all areas below grade.
- D. Make connections to motors and equipment with FMC and LT as environmental conditions dictate.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install conduit concealed in all areas where possible.
- B. Coordinate installation of conduit in masonry work.
- C. Do not install conduit larger than 2-1/2" in concrete slabs. Provide a minimum concrete cover over conduits of two inches, but not less than required to maintain any established fire ratings.

- D. Plug ends of conduits to prevent entry of dirt or moisture.
- E. Clean out conduit before installation of conductors.
- F. Route all exposed conduits parallel or perpendicular to building lines.
- G. Do not exceed number of bends in conduit beyond that allowed by the NEC.
- H. Cut conduit with hacksaw or other approved pipe cutting tool and ream ends to clean out all burrs before connecting.
- I. Keep conduits at least 12" away from gas lines and hot water pipes, and in no case permit conductors to reach higher than rated temperatures.
- J. Fasten raceways securely in place. Firmly fasten conduit within three feet of each outlet, junction box, cabinet, or fitting. Support metallic conduit in accordance with the NEC. Use raceway fasteners designed for the purpose.
- K. Provide pull boxes as shown on the plans, plus any such items required to assemble conduits and other raceways. Provide pull boxes as dictated by wire pulling requirements. Unless shown otherwise, face into secondary or unfinished rooms.

\*\*\*END OF SECTION\*\*\*

SECTION 16120  
BUILDING WIRE AND CABLE

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, materials, and equipment as required to install all wires and cables as in the Plans, and as required to connect all electrical services and equipment.

1.02 RELATED WORK

- A. Section 16000 - Electrical General Requirements
- B. Section 16111 - Conduit

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All wiring shall be copper unless specifically noted otherwise on plans.
- B. Minimum size conductors:
  - Branch circuits, # 12 AWG THHN/THWN.
  - Control circuits, # 14 AWG THHN/THWN.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Color coding shall be as follows:  
**Voltage Phase A Phase B Phase C Neutral**  
277/480 Brown Orange Yellow Gray
- B. Provide a green grounding conductor in all raceways except service entrance.
- C. Provide conductors with identification tags as manufactured by Brady or approved equal.
- D. Install wires and cables continuous without splices from source of supply to distribution equipment and from source of supply to motors, lighting, or power outlets. Do not use pull boxes for making splices. Do not install splices in conduits or trench.
- E. Install all wiring in accordance with NEC.

\*\*\*END OF SECTION\*\*\*

SECTION 16130  
PULL AND JUNCTION BOXES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Construct junction or pull boxes less than 100 cubic inches as "standard outlet boxes".
- B. Provide all covers of same gauge metal and include screws.

PART 2 - PRODUCTS

2.01 STANDARD OUTLET BOXES

- A. Make of material resistant to corrosion or suitably protected, both internally and externally by galvanizing.
- B. Boxes installed in damp or wet locations shall be U.L. approved for the purpose.
- C. Comply with U.L. Standard 50.
- D. Metal boxes to meet NEC construction specifications.
- E. Boxes exposed or surface mounted shall be die-cast or permanent-mold cast aluminum body with threaded external hub and cast cover.
- F. Interior metal boxes shall be labeled with the circuits contained within. Labeling shall be by permanent black magic marker.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install junction boxes so that covers are readily accessible after the completion of the installation.
- B. Mount rigidly in place with front of box level and plumb.
- C. Secure flush covers with corrosion resistant screws or bolts.
- D. Provide each pull box with sufficient clamps to which cables shall be secured in neat and orderly fashion permitting ready identification.
- E. Mount pull boxes connected to concealed conduits with covers flush with the finished wall.

\*\*\*END OF SECTION\*\*\*

SYMBOL	DESCRIPTION	MOUNTING
	DISCONNECT SWITCH, NEMA/AMPERAGE/POLE/FUSE/VOLTAGE. PROVIDE NEMA 1, 600V UON.	AS NOTED.
	MOTOR CONNECTION OR EXHAUST FAN.	BY OTHERS.
	JUNCTION BOX OR OUTLET BOX.	AS NOTED.
	DRIVEN GROUND ROD.	AS NOTED.
	CONDUIT CONCEALED IN SLAB OR CEILING.	SEE SPECIFICATIONS.
	CONDUIT CONCEALED IN WALL OR UNDERGROUND.	SEE SPECIFICATIONS.
	CONDUIT EXPOSED ON WALL OR CEILING.	SEE SPECIFICATIONS.
	PHASE, NEUTRAL, EQUIPMENT GROUND, AND ISOLATED GROUND. ALL HOMERUNS SHALL BE 1/2" WITH 3 #12 UON.	
	480Y/277V PANELBOARD.	78" AFF TO TOP.
	208Y/120V OR 240/120V PANELBOARD.	78" AFF TO TOP.
	REFER TO KEYED NOTES.	
	FIRE ALARM CONTROL PANEL.	78" AFF TO TOP.
	FIRE ALARM ANNUNCIATOR PANEL.	66" AFF TO TOP.
	FIRE ALARM SYSTEM SMOKE DETECTOR.	CEILING UON.
	FIRE ALARM SYSTEM DUCT TYPE SMOKE DETECTOR.	IN RETURN DUCT UON.
	FIRE ALARM SYSTEM PULL STATION.	48" AFF TO CENTERLINE UON.
	FIRE ALARM SYSTEM STROBE.	80" AFF TO BOTTOM OR 6" BELOW CEILING.
	FIRE ALARM SYSTEM HORN/STROBE.	80" AFF TO BOTTOM OR 6" BELOW CEILING.
	FIRE ALARM SYSTEM BELL.	96" AFF TO TOP UON.
	TAMPER SWITCH.	FIELD COORDINATE.
	FLOW SWITCH.	FIELD COORDINATE.
	FIRE ALARM MONITORING MODULE.	FIELD COORDINATE.
	FAN SHUTDOWN RELAY.	FIELD COORDINATE.

ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	HID	HIGH INTENSITY DISCHARGE
AFG	ABOVE FINISHED GRADE	HP	HORSEPOWER
C	CONDUIT	N	NEW
CLG	CEILING MOUNTED	NF	NON-FUSED
D	DEMOLISHED	NL	NIGHT LIGHT
E	EXISTING	NP	NAMEPLATE
EC	ELECTRICAL CONTRACTOR	PNL	PANEL
EG	EQUIPMENT GROUND	R	RELOCATED
EWC	ELECTRIC WATER COOLER	TTB/C	TELEPHONE TERMINAL BOARD/CABINET
EWH	ELECTRIC WATER HEATER	UON	UNLESS OTHERWISE NOTED
GEC	GROUNDING ELECTRODE CONDUCTOR	WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTER	WPI	WEATHERPROOF WHILE IN USE

GENERAL PROJECT NOTES

- CONTRACTOR SHALL PERFORM A SITE VISIT TO VERIFY EXISTING SYSTEMS AND CONDITIONS PRIOR TO SUBMITTING BID.
- THE EXISTING CIRCUITRY ON THE PLANS IS SHOWN FOR REFERENCE ONLY AND WAS TAKEN FROM THE ORIGINAL CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL PROVIDE ALL CIRCUITRY WITHIN THE AREA UNDER CONSTRUCTION AS REQUIRED TO PROVIDE A FULLY FUNCTIONAL ELECTRICAL SYSTEM MEETING THE INTENTION OF THE PLANS AND SPECIFICATIONS. CONTRACTOR SHALL VERIFY THE ACCURACY OF EXISTING CONDITIONS, INCLUDING THE ACCURACY OF THE AS-BUILT CIRCUITRY INDICATED ON THE PLANS PRIOR TO SUBMITTING BID. NO ADDITIONAL COSTS FOR INACCURATE OR UNCONFIRMED EXISTING CONDITIONS WILL BE ACCEPTED.
- CONTRACTOR MAY RE-USE EXISTING PANELBOARDS, CIRCUIT BREAKERS, TRANSFORMERS, SAFETY SWITCHES, ETC. ONLY WHERE INDICATED TO BE REUSED ON THE PLANS.
- CONTRACTOR MAY RE-USE EXISTING CONDUIT, CONDUCTORS, FITTINGS, SUPPORTS, ETC. WHERE THESE ITEMS COMPLY WITH CURRENT CODE AND THE REQUIREMENTS OF THE SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY THE PRESENCE OF EXISTING SPARES AND SPACES IN THE PANELBOARDS UNDER THIS SCOPE OF WORK. CONTRACTOR SHALL PROVIDE ALL NECESSARY NEW BREAKERS TO FACILITATE THE ELECTRICAL INSTALLATION WHETHER SHOWN ON THE PLANS OR NOT. ANY CONFLICTS BETWEEN THE ELECTRICAL PLANS AND SITE CONDITIONS SHALL BE DOCUMENTED ON THE AS-BUILT PLANS.
- ITEMS TO BE DEMOLISHED, SUCH AS DISCONNECTS, TRANSFORMERS, ETC. SHALL BE HANDED OVER TO THE OWNER TO BE KEPT AS SPARE INVENTORY OR REMOVED FROM SITE AT THE SOLE DISCRETION OF THE OWNER.
- ANY MECHANICAL EQUIPMENT TO BE DEMOLISHED OR RELOCATED SHALL BE COORDINATED WITH THE MECHANICAL PLANS AND MECHANICAL CONTRACTOR PRIOR TO REMOVAL.
- CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE MECHANICAL PLANS. ADDITIONAL WORK NOT SHOWN ON THE ELECTRICAL PLANS MAY BE REQUIRED BY THE CONTRACTOR IN ORDER TO ASSIST THE WORK OF OTHER TRADES. ANY SUCH WORK SHALL BE COMPLETED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL MAINTAIN EXISTING DOWNSTREAM CIRCUITRY FOR DEVICES AND EQUIPMENT TO REMAIN. WHERE DEMOLITION WORK IS BEING PERFORMED THAT WOULD DISRUPT SERVICE, THE CONTRACTOR SHALL EXTEND OR REPLACE FEEDERS OR BRANCH CIRCUITS AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
- ALL FIRE ALARM DEVICES SHALL CONFORM TO BUILDING STANDARDS. NEW NOTIFICATION DEVICES ARE TO BE INTEGRATED INTO THE EXISTING FIRE ALARM SYSTEM. PROVIDE SIGNAL EXPANDER IF REQUIRED TO ACCOMMODATE NEW DEVICES. UPON COMPLETION OF WORK, THE FIRE ALARM SYSTEM SHALL BE CERTIFIED BY MANUFACTURER. CONTRACTOR SHALL OBTAIN A SEPARATE PERMIT FOR ALL WORK ASSOCIATED WITH THE FIRE ALARM SYSTEM.

**ELECTRICAL LEGEND, SPECIFICATIONS & GEN. PROJECT NOTES**  
**MANATEE COUNTY - WATER TREATMENT LAB**  
**CHILLER & EXHAUST FAN REPLACEMENT**  
 4751 65th STREET WEST  
 BRADENTON, FL 34210

Project Engineer: David S. Bees PE-51871  
 Manager: KCW  
 CADD: KCW  
 Job No.: 14079.06DE  
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JOB NO: 14079.06DE

PROJ. MNGR: KCW

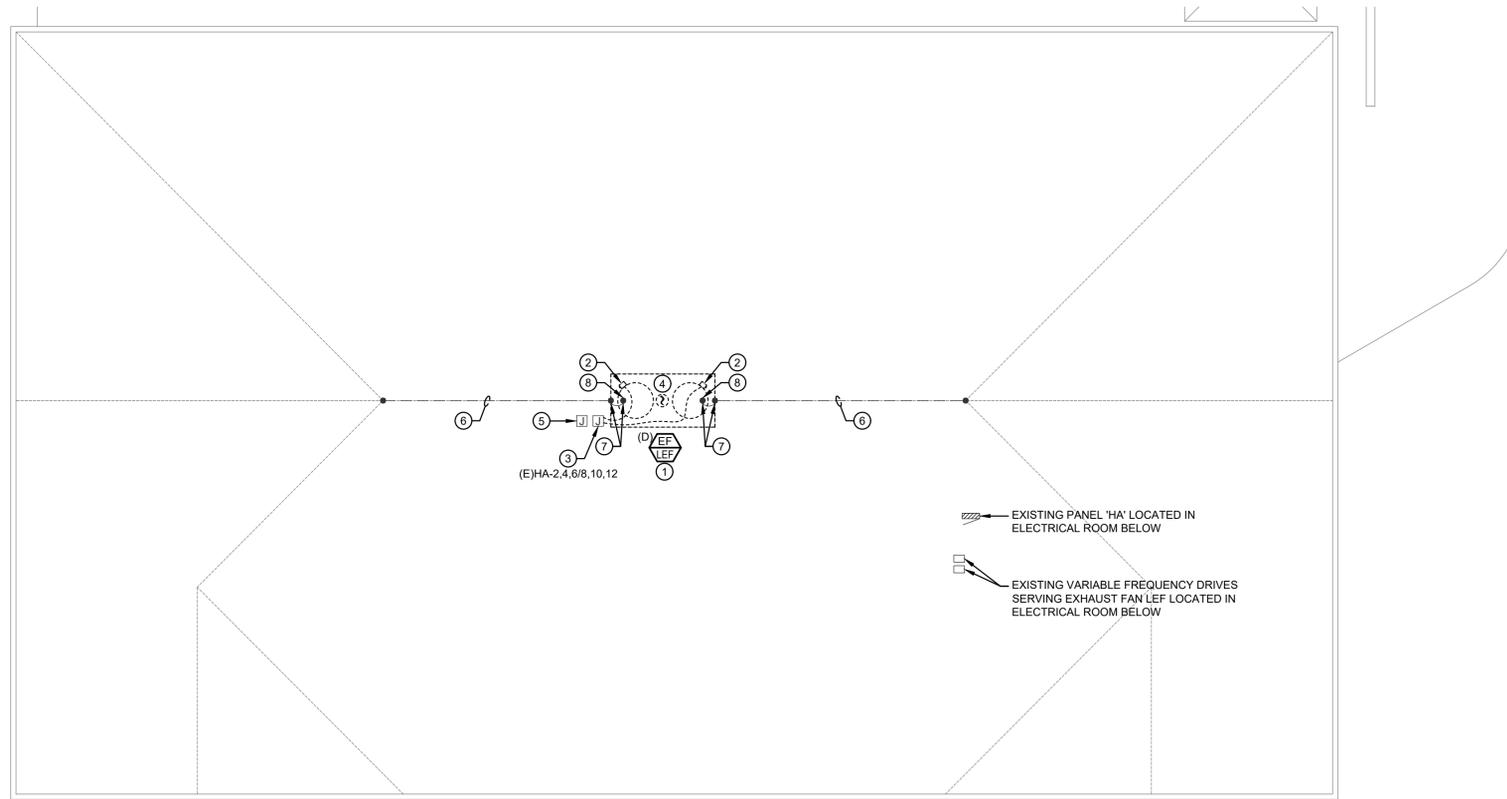
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ISSUE DATE: 07.24.2017

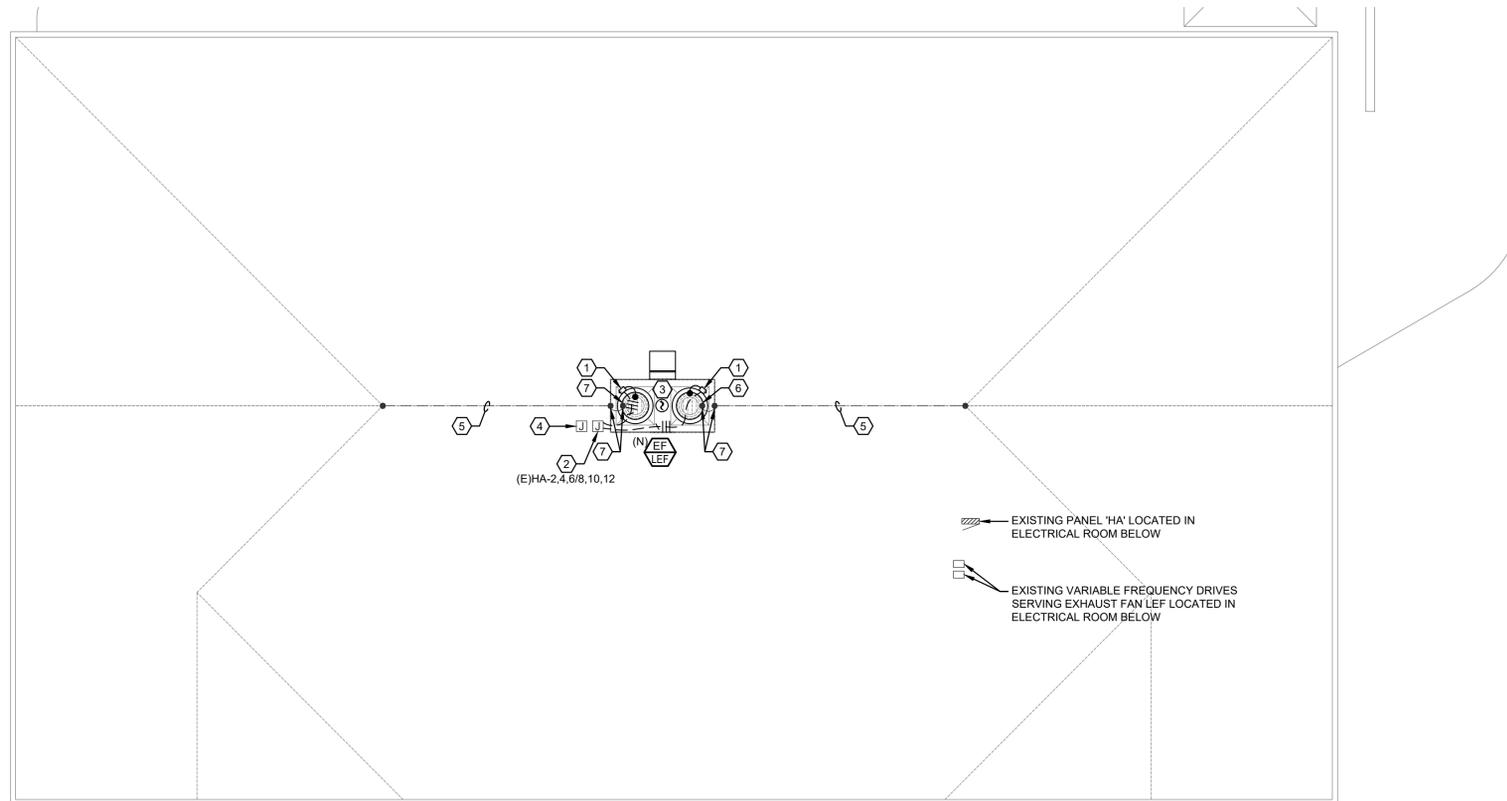
SHEET NUMBER

**EF-E0.0**

BID SET



1 ELECTRICAL DEMOLITION PLAN  
SCALE: 1/8"=1'-0"



1 ELECTRICAL RENOVATION PLAN  
SCALE: 1/8"=1'-0"

**ELECTRICAL DEMOLITION NOTES**

- EXISTING MECHANICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY BY MECHANICAL CONTRACTOR AND REPLACED IN PLACE WITH SAME SIZE UNIT. ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL LINE AND LOW VOLTAGE CONNECTIONS TO FACILITATE THE REMOVAL OF MECHANICAL EQUIPMENT. LOW VOLTAGE CONNECTIONS TO BE REMOVED SHALL INCLUDE BUILDING MANAGEMENT SYSTEM, FIRE ALARM, ETC.
- REMOVE EXISTING DISCONNECT SERVING EXISTING MECHANICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY. REMOVE ALL EXISTING SURFACE MOUNTED WEATHERPROOF POWER CONNECTIONS IN THEIR ENTIRETY BACK TO SOURCE JUNCTION BOX.
- EXISTING NEMA 3R JUNCTION BOX FOR POWER TO REMAIN.
- REMOVE EXISTING FIRE ALARM SMOKE DETECTOR TO FACILITATE THE REMOVAL OF MECHANICAL EQUIPMENT. ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUSPEND/SUPPORT EXISTING FIRE ALARM DEVICE AS REQUIRED UNTIL NEW EXHAUST FAN IS INSTALLED.
- EXISTING NEMA 3R JUNCTION BOX FOR CONTROLS TO REMAIN.
- EXISTING LIGHTNING PROTECTION CABLE TO REMAIN. CONTRACTOR TO TAKE CARE TO NOT DAMAGE CABLE DURING REMOVAL OF MECHANICAL EQUIPMENT.
- EXISTING LIGHTNING PROTECTION CABLE CONNECTED TO EXISTING MECHANICAL EQUIPMENT TO BE REMOVED TO FACILITATE THE EQUIPMENTS REMOVAL. REMOVE LIGHTNING PROTECTION CABLE TO NEAREST SPLICE POINT. CONTRACTOR TO RETAIN EXISTING LIGHTNING PROTECTION CABLE FOR RE-USE ON NEW MECHANICAL EQUIPMENT. REFER TO RENOVATION PLAN ON THIS SHEET FOR NEW WORK.
- EXISTING LIGHTNING PROTECTION ARIEL ROD CONNECTED TO EXISTING MECHANICAL EQUIPMENT TO BE REMOVED TO FACILITATE THE EQUIPMENTS REMOVAL. CONTRACTOR TO RETAIN EXISTING ARIEL RODS FOR RE-USE ON NEW MECHANICAL EQUIPMENT. REFER TO RENOVATION PLAN ON THIS SHEET FOR NEW WORK.

**ELECTRICAL RENOVATION NOTES**

- NEW DISCONNECT TO BE FURNISHED WITH MECHANICAL EQUIPMENT. ELECTRICAL SHALL MOUNT AND PROVIDE ALL NEW WIRING TO DISCONNECT AND MAKE FINAL CONNECTIONS TO NEW MECHANICAL EQUIPMENT. PROVIDE 3 #12 CU AND 1 #12 CU E.G. IN 1/2" C. ALL NEW WIRING TO BE IN WEATHER PROOF FLEXIBLE CONDUIT. CONTRACTOR SHALL PROVIDE LABELING ON DISCONNECT THAT STATES "CAUTION-DAMAGE TO DRIVE MAY OCCUR IF CIRCUIT IS OPENED WHILE IN USE". LABELING TO BE BLACK LETTERS ON YELLOW BACKGROUND.
- EXISTING NEMA 3R JUNCTION BOX FOR POWER. EXTEND EXISTING CIRCUITRY TO NEW DISCONNECTS AS REQUIRED.
- REINSTALL EXISTING FIRE ALARM SMOKE DETECTOR IN NEW MECHANICAL EQUIPMENT. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.
- EXISTING NEMA 3R JUNCTION BOX FOR CONTROLS. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NEW CONDUIT FOR CONTROLS AS REQUIRED. ALL NEW CONTROL CONDUIT SHALL BE IN WEATHER PROOF FLEXIBLE CONDUIT. ALL LOW VOLTAGE WIRE/CABLE TO BE PROVIDED AND TERMINATED BY MECHANICAL CONTRACTOR. COORDINATE EXACT REQUIREMENTS WITH MECHANICAL CONTRACTOR.
- EXISTING LIGHTNING PROTECTION SYSTEM MAIN CABLE.
- LOCATION OF RELOCATED LIGHTNING PROTECTION ARIEL ROD. MOUNT TO NEW ROOF MOUNTED MECHANICAL EQUIPMENT AS REQUIRED. CONTRACTOR SHALL PROVIDE ALL NECESSARY HARDWARE NEEDED TO MOUNT EXISTING ROD TO NEW MECHANICAL EQUIPMENT.
- BOND NEW MECHANICAL EQUIPMENT TO EXISTING LIGHTNING PROTECTION SYSTEM UTILIZING EXISTING LIGHTNING PROTECTION SYSTEM CABLING MADE AVAILABLE BY DEMOLITION. PROVIDE NEW LIGHTNING PROTECTION CONNECTION POINTS TO MATCH EXISTING MAIN LIGHTNING PROTECTION SYSTEM. BOND AT CLOSEST POINT TO EXISTING LIGHTNING PROTECTION SYSTEM.

**GENERAL NOTES**

- CONTRACTOR SHALL PERFORM A SITE VISIT TO VERIFY EXISTING SYSTEMS AND CONDITIONS PRIOR TO SUBMITTING BID.
- THE EXISTING CIRCUITRY ON THE PLANS IS SHOWN FOR REFERENCE ONLY AND WAS TAKEN FROM THE ORIGINAL CONSTRUCTION DOCUMENTS AND WHAT COULD BE DETERMINED FROM A SITE SURVEY. THE CONTRACTOR SHALL PROVIDE ALL CIRCUITRY WITHIN THE AREA UNDER CONSTRUCTION AS REQUIRED TO PROVIDE A FULLY FUNCTIONAL ELECTRICAL SYSTEM MEETING THE INTENTION OF THE PLANS. CONTRACTOR SHALL VERIFY THE ACCURACY OF EXISTING CONDITIONS, INCLUDING THE ACCURACY OF THE AS-BUILT CIRCUITRY INDICATED ON THE PLANS PRIOR TO SUBMITTING BID. NO ADDITIONAL COSTS FOR INACCURATE OR UNCONFIRMED EXISTING CONDITIONS WILL BE ACCEPTED.
- CONTRACTOR MAY RE-USE EXISTING PANELBOARDS, CIRCUIT BREAKERS, TRANSFORMERS, SAFETY SWITCHES, ETC. ONLY WHERE INDICATED TO BE REUSED ON THE PLANS.
- CONTRACTOR MAY RE-USE EXISTING CONDUIT, CONDUCTORS, FITTINGS, AND SUPPORTS, ETC. WHERE THESE ITEMS ARE SUPPORTED AND SECURED WITH STRAPS COMPLY WITH CURRENT NEC CODE AND THE REQUIREMENTS OF THE SPECIFICATIONS.
- ITEMS TO BE DEMOLISHED, SUCH AS DISCONNECTS, JUNCTION BOXES, ETC. SHALL BE HANDED OVER TO THE OWNER TO BE KEPT AS SPARE INVENTORY OR REMOVED FROM SITE AT THE SOLE DISCRETION OF THE OWNER.
- ALL NEW JUNCTION BOXES SHALL CONTAIN A GROUND PIGTAIL TO BE GROUNDED TO THE JUNCTION BOX BY A THREADED CONNECTION.
- DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN AN UPDATED SET OF CONSTRUCTION PLANS INDICATING DISCREPANCIES IN EXISTING CONDITIONS AND MODIFICATIONS MADE DURING THE CONSTRUCTION PROCESS. AT PROJECT COMPLETION THE INSTALLER SHALL PROVIDE THESE RED LINE DRAWINGS DOCUMENTING ACTUAL INSTALLED "AS-BUILT" CONDITIONS TO THE ENGINEER.
- NO LOAD WAS ADDED TO THE EXISTING SERVICE, BRANCH CIRCUITRY OR PANELBOARD 'HA' AS PART OF THIS PROJECT. PROJECT SCOPE IS REPLACING EXISTING EXHAUST FAN WITH ONE OF SAME SIZE AND HORSE POWER.

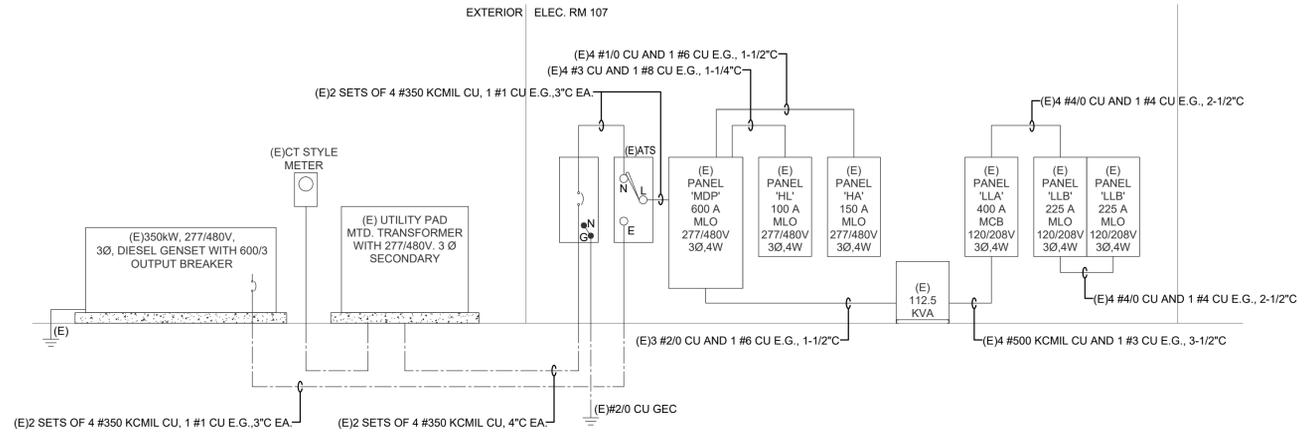
**REVISIONS**


Advanced Systems Engineering, Inc.  
**ASE**  
 Project Engineer: David S. Bees PE-51871  
 Job No. 14079.06DE  
 Manager: KCW  
 CADD: KCW  
 CA-8468  
 13555 Automobile Boulevard, Suite 330, Clearwater, FL 33765 • Office: 727-540-9388 • Faxline: 727-540-9276  
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**ELECTRICAL PLANS**  
**MANATEE COUNTY - WATER TREATMENT LAB**  
**CHILLER & EXHAUST FAN REPLACEMENT**  
 4751 65th STREET WEST  
 BRADENTON, FL 34210

JOB NO: 14079.06DE  
 PROJ. MNGR: KCW  
 DRAWN BY: KCW  
 ISSUE DATE: 07.24.2017

SHEET NUMBER  
**EF-E1.0**  
 BID SET



**1 PARTIAL ELECTRICAL RISER DIAGRAM**

SCALE: NO SCALE  
 NOTE: RISER DIAGRAM SHOWN FOR REFERENCE ONLY. NO WORK TO EXISTING ELECTRICAL SERVICE IS PART OF THIS SCOPE OF WORK.

PANEL: 'HA' (EXISTING)										ACCESSORIES: EXISTING SQUARE D NF PNLBRD															
VOLTAGE: 480 Y/277 PHASE: 3										MOUNTING: SURFACE															
AMPS: 150 AMP MLO WIRE: 4										NEMA 1 AIC: 35,000															
LOAD (KVA)										LOAD (KVA)															
LTG	REC	MISC	COOL	HEAT	MTR	W	F	P	U	LOAD DESCRIPTION	CKT	A	B	C	CKT	LOAD DESCRIPTION	AMPS	P	U	LTG	REC	MISC	COOL	HEAT	MTR
		4.0				20	3			WATER HEATER (1)	1				2	LEF-1 (1)	30	3							3.9
		4.0									3				4										3.9
		4.0									5				6										3.9
					3.9	30	3			CWP-1 (1)	7				8	LEF-2 (1)	30	3							3.9
					3.9						9				10										3.9
					3.9						11				12										3.9
					0.9	15	3			HWP-1 (1)	13				14	AHU-1 (1)	15	3						0.7	
					0.9						15				16									0.7	
					0.9						17				18									0.7	
					2.1	30	3			TVSS (1)	19				20	AHU-2 (1)	40	3						5.8	
											21				22									5.8	
											23				24									5.8	
					2.1	30	3			LIFT STATION (1)	25				26	SPACE									
					2.1						27				28	SPACE									
					2.1						29				30	SPACE									
											31				32	SPACE									
											33				34	SPACE									
											35				36	SPACE									
											37				38	SPACE									
											39				40	SPACE									
											41				42	SPACE									
CONNECTED LOAD SUMMARY (KVA)										DEMAND LOAD SUMMARY															
LTG	A	B	C	TOTALS	D.F.	COMMENTS										LOAD									
REC	0.0	0.0	0.0	0.0												0.0 KVA									
MISC	0.0	0.0	0.0	0.0												0.0 KVA									
MISC	4.0	4.0	4.0	12.0	1.00											12.0 KVA									
COOL	6.5	6.5	6.5	19.5	1.00											19.5 KVA									
HEAT	0.0	0.0	0.0	0.0												0.0 KVA									
MTR	14.7	14.7	14.7	44.1	1.07	125% OF LARGEST MOTOR PLUS 100% OF REMAINDER										47.0 KVA									
CONNECTED LOAD PER PHASE										Breaker Notes ( )										DEMAND LOAD:					
PHASE A	25.2 KVA			91.1 AMPS		1.										78.6 KVA									
PHASE B	25.2 KVA			91.1 AMPS		2.																			
PHASE C	25.2 KVA			91.1 AMPS		3.																			
										4.															
										5.										DEMAND CURRENT:					
										6.										94.6 AMPS					

REVISIONS

Advanced Systems Engineering, Inc.  
 Job No. 14079.06DE  
 Project Engineer: David S. Bess PE-51871  
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**ELECTRICAL RISER DIAGRAM & SCHEDULES**

**MANATEE COUNTY - WATER TREATMENT LAB**

**CHILLER & EXHAUST FAN REPLACEMENT**

4751 65th STREET WEST  
 BRADENTON, FL 34210

JOB NO: 14079.06DE  
 PROJ. MNGR: KCW  
 DRAWN BY: KCW  
 ISSUE DATE: 07.24.2017

SHEET NUMBER  
**EF-E2.0**  
 BID SET

CONSTRUCTION AGREEMENT

Agreement #: 17-2001OV

*for*

STIPULATED SUM

*between*

MANATEE COUNTY (AS OWNER)

*and*

\_\_\_\_\_ (AS CONTRACTOR)

**CONSTRUCTION AGREEMENT FOR  
STIPULATED SUM  
Solicitation Title**

**THIS AGREEMENT** (“Agreement”) is made and entered into by and between Manatee County, a political subdivision of the State of Florida, referred to herein as “Owner”, and the firm of \_\_\_\_\_, incorporated in the State of \_\_\_\_\_ and registered and licensed to do business in the State of Florida (license # \_\_\_\_\_), referred to herein as “Contractor.”

**WHEREAS**, the Owner intends to replace / install **Chiller and Exhaust Fan [17-2001OV]**, the aforementioned improvements being hereinafter referred to and defined as the “Project”; and

**WHEREAS**, in response to Owner’s Invitation for Bid No. **17-2001OV** (the “IFB”), Contractor has submitted its Bid (the “Contractor’s Bid”) to provide the aforementioned construction services.

**NOW THEREFORE**, the Owner and the Contractor, in consideration of the mutual covenants hereinafter set forth, the sufficiency of which is hereby acknowledged, agree as follows:

**1. Contract Documents.** The Contract Documents consist of this Agreement and attached Exhibits, the attached General Conditions of the Construction Agreement, Supplementary Conditions (if any), Special Conditions (if any), Drawings (the titles of which are attached hereto as Exhibit A), Specifications (the titles of which are attached hereto as Exhibit B), Addenda issued prior to execution of this Agreement, the Invitation for Bid (including any Instructions to Bidders, Scope of Work, Bid Summary, Supplements, and Technical Specifications), any interpretations issued pursuant to the Invitation for Bid, the Contractor’s Bid, permits, notice of intent to award, Notice to Proceed, purchase order(s), any other documents listed in this Agreement, and Modifications [to include written Amendment(s), Change Order(s), Work Directive Change(s) and Field Directive(s)] issued after execution of this Agreement. These form the Agreement, and are as fully a part of the Agreement as if attached or repeated herein. This Agreement represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. No other documents shall be considered Contract Documents.

**2. Work.** The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

**3. Date of Commencement and Substantial Completion.**

A. Date of Commencement. The date of commencement of the Work shall be the date fixed in a Notice to Proceed issued by the Owner.

B. Contract Time. The Contract Time shall be measured from the date of commencement.

C. Substantial Completion. The Contractor shall achieve Substantial Completion of the entire Work not later than \_\_\_ days from the date of commencement, or as follows: subject to adjustments of this Contract Time as provided in the Contract Documents.

Time is of the essence in the Contract Documents and all obligations thereunder. If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty, the sum of **\$200.00 per calendar day**, commencing upon the first day following expiration of the Contract Time and continuing until the actual date of Substantial Completion. Such liquidated damages are hereby agreed to be a reasonable estimate of damages the Owner will incur as a result of delayed completion of the Work. The Owner may deduct liquidated damages as described in this paragraph from any unpaid amounts then or thereafter due the Contractor under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due the Contractor shall be payable to the Owner at the demand of the Owner, together with interest from the date of the demand at the maximum allowable rate.

#### 4. **Contract Sum.**

A. Payment. The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be \_\_\_\_\_ Dollars and Zero Cents (\$ \_\_\_\_\_), subject to additions and deductions as provided in the Contract Documents.

B. Alternates. N/A

C. Unit Prices. Unit prices, if any, are reflected in the Contractor's Bid.

#### 5. **Payments.**

A. Progress Payments.

- (1) Based upon Applications for Payment submitted to the Architect/Engineer by the Contractor and Certificates for Payment issued by the Architect/Engineer, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.
- (2) The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.
- (3) Payments shall be made by Owner in accordance with the requirements of Section 218.735, Florida Statutes.
- (4) Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum

among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect/Engineer may require. This schedule, unless objected to by the Owner or Architect/Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

- (5) Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.
- (6) Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:
  - i. Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of ten percent (10.00%). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 3.3.B. of the General Conditions;
  - ii. Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), supported by paid receipts, less retainage of ten percent (10.00%);
  - iii. Subtract the aggregate of previous payments made by the Owner; and
  - iv. Subtract amounts, if any, for which the Architect/Engineer has withheld or nullified an Application for Payment, in whole or in part as provided in Section 3.3.C. of the General Conditions.
- (7) The progress payment amount determined in accordance with Section 5.A(6) shall be further modified under the following circumstances:
  - i. Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect/Engineer shall determine for incomplete Work, retainage applicable to such work and unsettled claims.
  - ii. Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 3.2.B. of the General Conditions.

- (8) Reduction or limitation of retainage, if any, shall be as follows:

Notwithstanding the foregoing, upon completion of at least 50% of the Work, as determined by the Architect/Engineer and Owner, the Owner shall reduce to five percent (5%) the amount of retainage withheld from each subsequent progress payment.

- (9) Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

B. Final Payment. Final Payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when:

(1) The Contractor has fully performed the Work except for the Contractor's responsibility to correct Work as provided in Section 2.4.C. of the General Conditions, and to satisfy other requirements, if any, which extend beyond final payment; and

(2) A final Application for Payment has been approved by the Architect/Engineer.

## 6. Termination or Suspension.

A. Termination. The Agreement may be terminated by the Owner or the Contractor as provided in Article XIV of the General Conditions.

B. Suspension by Owner. The Work may be suspended by the Owner as provided in Article XIV of the General Conditions.

## 7. Other Provisions.

A. Substantial Completion Defined. Substantial Completion shall be defined as provided in Article I of the General Conditions. In the event a temporary certificate of occupancy or completion is issued establishing Substantial Completion, the Contractor shall diligently pursue the issuance of a permanent certificate of occupancy or completion.

B. Project Meetings. There shall be a project meeting, at the jobsite or other location acceptable to the parties, on a regularly scheduled basis. The meeting will be attended by a representative of the Contractor, Architect/Engineer and Owner. These representatives shall be authorized to make decisions that are not otherwise contrary to the requirements of this Agreement.

C. Weather. Any rainfall, temperatures below 32 degrees Fahrenheit or winds greater than 25 m.p.h. which actually prevents Work on a given day, shall be considered lost time and an additional day added to the Contract Time, provided no work could be done on

site, and provided written notice has been submitted to the Owner by the Contractor documenting same.

D. Shop Drawings; Critical Submittals. In consideration of the impact of timely review of submittals and shop drawings on the overall progress of the Work, it is hereby agreed that the Owner shall cause his agents and design professionals to accomplish the review of any particular "critical" submittals and/or shop drawings and return same to the Contractor within fourteen (14) days.

E. Applications for Payment. Applications for Payment shall be submitted once monthly at regular intervals and shall include detailed documentation of all costs incurred.

F. Punch List. Within 30 days after obtainment of Substantial Completion, the Owner shall generate a "punch list" of all work items requiring remedial attention by the Contractor. Within 5 days thereafter the Architect/Engineer shall assign a fair value to the punch list items, which sum shall be deducted from the next scheduled progress payment to the Contractor. Upon satisfactory completion of the punch list items, as certified by the Architect/Engineer, the previously deducted sum shall be paid to the Contractor.

G. Closeout documentation. Within 30 days after obtainment of Substantial Completion and before final payment, Contractor shall gather and deliver to Owner all warranty documentation, all manufacturer's product and warranty literature, all manuals (including parts and technical manuals), all schematics and handbooks, and all as-built drawings.

H. Governing Provisions; Conflicts. In the event of a conflict between this Agreement and the Specifications or as between the General Conditions and the Specifications, the Specifications shall govern.

I. E-Verify. The Contractor's employment of unauthorized aliens is a violation of Section 274(e) of the Federal Immigration and Employment Act. The Contractor shall utilize the U.S. Department of Homeland Security E-Verify system to verify the employment eligibility of all new employees hired during the term of this Agreement, and shall require the same verification procedure of all Subcontractors.

**8. Insurance and Bonding.** If and to the extent required by the Invitation for Bid documents, the Contractor shall furnish insurance coverage for (but not necessarily limited to) workers' compensation, commercial general liability, auto liability, excess liability, and builder's risk. The Contractor shall furnish to the Owner all appropriate policies and Certificate(s) of Insurance. The Contractor shall also post a Payment and Performance Bond for the Contract Sum, within **ten (10) days** following notification of intent to award, and otherwise in accordance with the Invitation for Bid documents.

**9. Independent Contractor.** The Contractor acknowledges that it is functioning as an independent contractor in performing under the terms of this Agreement, and it is not acting as an employee of the Owner.

**10. Entire Agreement.** This Agreement (inclusive of the Contract Documents incorporated herein by reference) represents the full agreement of the parties.

**11. Amendments; Waivers; Assignment.**

A. Amendments. This Agreement may be amended only pursuant to an instrument in writing that has been jointly executed by authorized representatives of the parties hereto.

B. Waivers. Neither this Agreement nor any portion of it may be modified or waived orally. However, each party (through its governing body or properly authorized officer) shall have the right, but not the obligation, to waive, on a case-by-case basis, any right or condition herein reserved or intended for the benefit or protection of such party without being deemed or considered to have waived such right or condition for any other case, situation, or circumstance and without being deemed or considered to have waived any other right or condition. No such waiver shall be effective unless made in writing with an express and specific statement of the intent of such governing body or officer to provide such waiver.

C. Assignment. The rights and obligations of either party to this Agreement may be assigned to a third party only pursuant to a written amendment hereto.

**12. Validity.** Each of the Owner and Contractor represents and warrants to the other its respective authority to enter into this Agreement.

**13. Covenant To Defend.** Neither the validity of this Agreement nor the validity of any portion hereof may be challenged by any party hereto, and each party hereto hereby waives any right to initiate any such challenge. Furthermore, if this Agreement or any portion hereof is challenged by a third party in any judicial, administrative, or appellate proceeding (each party hereby covenanting with the other party not to initiate, encourage, foster, promote, cooperate with, or acquiesce to such challenge), the parties hereto collectively and individually agree, at their individual sole cost and expense, to defend in good faith its validity through a final judicial determination or other resolution, unless all parties mutually agree in writing not to defend such challenge or not to appeal any decision invalidating this Agreement or any portion thereof.

**14. Disclaimer of Third-Party Beneficiaries; Successors and Assigns.** This Agreement is solely for the benefit of the parties hereto, and no right, privilege, or cause of action shall by reason hereof accrue upon, to, or for the benefit of any third party. Nothing in this Agreement is intended or shall be construed to confer upon or give any person, corporation, partnership, trust, private entity, agency, or other governmental entity any right, privilege, remedy, or claim under or by reason of this Agreement or any provisions or conditions hereof. This Agreement shall be binding upon, and its benefits and advantages shall inure to, the successors and assigns of the parties hereto.

**15. Construction.**

A. Headings and Captions. The headings and captions of articles, sections, and paragraphs used in this Agreement are for convenience of reference only and are not intended to define or limit their contents, nor are they to affect the construction of or be taken into consideration in interpreting this Agreement.

B. Legal References. All references to statutory sections or chapters shall be construed to include subsequent amendments to such provisions, and to refer to the successor provision of any such provision. References to “applicable law” and “general law” shall be construed to include provisions of local, state and federal law, whether established by legislative action, administrative rule or regulation, or judicial decision.

**16. Severability.** The provisions of this Agreement are declared by the parties hereto to be severable. In the event any term or provision of this Agreement shall be held invalid by a court of competent jurisdiction, such invalid term or provision should not affect the validity of any other term or provision hereof; and all such terms and provisions hereof shall be enforceable to the fullest extent permitted by law as if such invalid term or provision had never been part of this Agreement; provided, however, if any term or provision of this Agreement is held to be invalid due to the scope or extent thereof, then, to the extent permitted by law, such term or provision shall be automatically deemed modified in order that it may be enforced to the maximum scope and extent permitted by law.

**17. Governing Law; Venue.** This Agreement shall be governed by the laws of the State of Florida. Venue for any petition for writ of certiorari or other court action allowed by this Agreement shall be in the Circuit Court of the Twelfth Judicial Circuit in and for Manatee County, Florida.

**18. Attorney’s Fees and Costs.** In any claim dispute procedure or litigation arising from this Agreement, each party hereto shall be solely responsible for paying its attorney’s fees and costs.

**19. Notices.** All notices, comments, consents, objections, approvals, waivers, and elections under this Agreement shall be in writing and shall be given only by hand delivery for which a receipt is obtained, or certified mail, prepaid with confirmation of delivery requested, or by electronic mail with delivery confirmation. All such communications shall be addressed to the applicable addressees set forth below or as any party may otherwise designate in the manner prescribed herein.

To the Owner:

Charles Froman, Utility Department  
Southwest Waste Water Plant Superintendent  
5101 65<sup>th</sup> Street West  
Bradenton, FL 34210

To the Contractor:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Email: \_\_\_\_\_

Notices, comments, consents, objections, approvals, waivers, and elections shall be deemed given when received by the party for whom such communication is intended at such party's address herein specified, or such other physical address or email address as such party may have substituted by notice to the other.

**20. Exhibits.** Exhibits to this Agreement are as follows:

Exhibit A—Title(s) of Drawings

Exhibit B—Title(s) of Specifications

Exhibit C—Affidavit of No Conflict

Exhibit D—Certificate(s) of Insurance

Exhibit E—Payment and Performance Bond

Exhibit F—Standard Forms

- 1—Application for Payment
- 2—Certificate of Substantial Completion
- 3—Final Reconciliation / Warranty / Affidavit
- 4—Change Order
- 5—Public Construction Bond Form

***WHEREFORE, the parties hereto have executed this Agreement as of the date last executed below.***

\_\_\_\_\_  
Name of Contractor

By: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**MANATEE COUNTY, a political subdivision  
of the State of Florida**

By: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

GENERAL CONDITIONS  
*of the*  
CONSTRUCTION AGREEMENT

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GENERAL CONDITIONS  
*of the*  
CONSTRUCTION AGREEMENT

**GENERAL CONDITIONS  
ARTICLE I  
DEFINITIONS**

**1.1 Definitions.** For purposes of the Contract Documents, the following terms shall have the following meanings.

A. Acceptance: The acceptance of the Project into the Owner's operating public infrastructure.

B. Application for Payment: The form approved and accepted by the Owner, which is to be used by Contractor in requesting progress payments or final payment and which is to include such supporting documentation as is required by the Contract Documents.

C. Architect/Engineer: John R. Wood, P.E., Advanced Systems Engineering, Inc., (ASE), a corporation, registered and licensed to do business in the State of Florida.

D. Change Order: A written order signed by the Owner, the Architect/Engineer and the Contractor authorizing a change in the Project Plans and/or Specifications and, if necessary, a corresponding adjustment in the Contract Sum and/or Contract Time, pursuant to Article V.

E. Compensable Delay: Any delay beyond the control and without the fault or negligence of the Contractor resulting from Owner-caused changes in the Work, differing site conditions, suspensions of the Work, or termination for convenience by Owner.

F. Contractor's Personnel: The Contractor's key personnel designated by Contractor.

G. Construction Services: The Construction Services to be provided by Contractor pursuant to Section 2.4, in accordance with the terms and provisions of the Contract Documents.

H. Contract Sum: The total compensation to be paid to the Contractor for Construction Services rendered pursuant to the Contract Documents, as set forth in Contractor's Bid (or Guaranteed Maximum Price Addendum), unless adjusted in accordance with the terms of the Contract Documents.

I. Construction Team: The working team established pursuant to Section 2.1.B.

J. Contract Time: The time period during which all Construction Services are to be completed pursuant to the Contract Documents, to be set forth in the Project Schedule.

K. Days: Calendar days except when specified differently. When time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or legal holiday, such day will be omitted from the computation.

L. Defective: When modifying the term "Work", referring to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or that does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or that has been damaged prior to Owner's approval of final payment (unless responsibility for the protection thereof has been assumed by Owner).

M. Excusable Delay: Any delay beyond the control and without the negligence of the Contractor, the Owner, or any other contractor caused by events or circumstances such as, but not limited to, acts of God or of a public enemy, fires, floods, freight embargoes, acts of government other than Owner or epidemics. Labor disputes and above average rainfall shall give rise only to excusable delays.

N. Field Directive: A written order issued by Owner which orders minor changes in the Work not involving a change in Contract Time, to be paid from the Owner's contingency funds.

O. Final Completion Date: The date upon which the Project is fully constructed and all Work required on the Project and Project Site is fully performed as verified in writing by the Owner.

P. Float or Slack Time: The time available in the Project Schedule during which an unexpected activity can be completed without delaying substantial completion of the Work.

Q. Force Majeure: Those conditions constituting excuse from performance as described in and subject to the conditions described in Article XII.

R. Inexcusable Delay: Any delay caused by events or circumstances within the control of the Contractor, such as inadequate crewing, slow submittals, etc., which might have been avoided by the exercise of care, prudence, foresight or diligence on the part of the Contractor.

S. Non-prejudicial Delay: Any delay impacting a portion of the Work within the available total Float or Slack Time and not necessarily preventing Substantial Completion of the Work within the Contract Time.

T. Notice to Proceed: Written notice by Owner (after execution of Contract) to Contractor fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform the Work.

U. Owner: Manatee County, a political subdivision of the State of Florida.

V. Owner's Project Representative: The individual designated by Owner to perform those functions set forth in Section 7.8.

W. Payment and Performance Bond: The Payment and Performance Bond security posted pursuant to Section 2.4.Y to guarantee payment and performance by the Contractor of its obligations hereunder.

X. Permitting Authority: Any applicable governmental authority acting in its governmental and regulatory capacity which is required to issue or grant any permit, certificate, license or other approval which is required as a condition precedent to the commencement or approved of the Work, or any part thereof, including the building permit.

Y. Prejudicial Delay: Any excusable or compensable delay impacting the Work and exceeding the total float available in the Project Schedule, thus preventing completion of the Work within the Contract Time unless the Work is accelerated.

Z. Progress Report: A report to Owner that includes all information required pursuant to the Contract Documents and submitted in accordance with Section 2.4.EE, hereof.

AA. Project: The total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by Owner and by separate contractors. For the purposes of the Contract Documents, the term Project shall include all areas of proposed improvements and all areas which may reasonably be judged to have an impact on the Project.

BB. Project Costs: The costs incurred by the Contractor to plan, construct and equip the Project and included within, and paid as a component of, the Contract Sum.

CC. Project Manager: Subject to the prior written consent of Owner, the individual designated to receive notices on behalf of the Contractor, or such other individual designated by the Contractor, from time to time, pursuant to written notice in accordance with the Contract Documents.

DD. Project Plans and Specifications: The one hundred percent (100%) construction drawings and specifications prepared by the Architect/Engineer, and any changes, supplements, amendments or additions thereto approved by the Owner, which shall also include any construction drawings and final specifications required for the repair or construction of the Project, as provided herein.

EE. Project Schedule: The schedule and sequence of events for the commencement, progression and completion of the Project, developed pursuant to Section 2.3., as such schedule may be amended as provided herein.

FF. Project Site: The site depicted in the Project Plans and Specifications, inclusive of all rights of way, temporary construction easements or licensed or leased sovereign lands.

GG. Pre-operation Testing: All field inspections, installation checks, water tests, performance tests and necessary corrections required of Contractor to demonstrate that individual components of the Work have been properly constructed and do operate in accordance with the Contract Documents for their intended purposes.

HH. Procurement Ordinance: The Manatee County Procurement Code, Chapter 2-26 of the Manatee County Code of Laws, as amended from time to time.

II. Punch List Completion Date: The date upon which all previously incomplete or unsatisfactory items, as identified by the Contractor, the Architect/Engineer and/or the Owner are completed in a competent and workmanlike manner, consistent with standards for Work of this type and with good building practices in the State of Florida.

JJ. Subcontractor: Any individual (other than a direct employee of the Contractor) or organization retained by Contractor to plan, construct or equip the Project pursuant to Article IV.

KK. Substantial Completion and Substantially Complete: The stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use; provided, however, that as a condition precedent to Substantial Completion, the Owner has received all certificates of occupancy or completion and other permits, approvals, licenses, and other documents from any governmental authority which are necessary for the beneficial occupancy of the Project.

LL. Substantial Completion Date: The date on which the Project is deemed to be Substantially Complete, as evidenced by receipt of (i) the Architect/Engineer's certificate of Substantial Completion, (ii) written Acceptance of the Project by the Owner, and (iii) approvals of any other authority as may be necessary or otherwise required.

MM. Substitute: Materials or equipment offered by the Contractor as an alternative to that set forth in the Project Plans and Specifications, where (i) the Project Plans and Specifications do not authorize an "approved equal", or (ii) the Owner, in its reasonable discretion, determines that a pre-authorized "approved equal" will result in a substantial change to the Work because of cost, quality or other difference in comparison to the materials or equipment specified.

NN. Unit Price Work: Work to be paid for on the basis of unit prices.

OO. Work: The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

PP. Work Directive Change: A written directive to Contractor, issued on or after the effective date of the Agreement pursuant to Section 5.8 and signed by Owner's Project Representative, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed or responding to emergencies.

## ARTICLE II RELATIONSHIP AND RESPONSIBILITIES

**2.1 Relationship between Contractor and Owner.** The Contractor accepts the relationship of trust and confidence established with Owner pursuant to the Contract Documents. The Contractor shall furnish its best skill and judgment and cooperate with Owner and Owner's Project Representative in furthering the interests of the Owner. The Contractor agrees to provide the professional services required to complete the Project consistent with the Owner's direction and the terms of the Contract Documents. All services provided hereunder by Contractor, either directly or through Subcontractors, shall be provided in accordance with sound construction practices and applicable professional construction standards.

A. Purpose. The purpose of the Contract Documents is to provide for the provision of construction services for the Project on the Project Site by the Contractor, and construction of the Project by the Contractor in accordance with the Project Plans and Specifications. The further purpose of the Contract Documents is to define and delineate the responsibilities and obligations of the parties to the Contract Documents and to express the desire of all such parties to cooperate together to accomplish the purposes and expectations of the Contract Documents.

B. Construction Team. The Contractor, Owner and Architect/Engineer shall be called the "Construction Team" and shall work together as a team commencing upon full execution of the Contract Documents through Substantial Completion. As provided in Section 2.2, the Contractor and Architect/Engineer shall work jointly through completion and shall be available thereafter should additional services be required. The Contractor shall provide leadership to the Construction Team on all matters relating to construction. The Contractor understands, acknowledges and agrees that the Architect/Engineer shall provide leadership to the Construction Team on all matters relating to design.

C. Owner's Reliance on Bid (or Guaranteed Maximum Price Addendum). The Contractor acknowledges that the representations, statements, information and pricing contained in its Bid (or Guaranteed Maximum Price Addendum) have been relied upon by the Owner and have resulted in the award of this Project to the Contractor.

**2.2 General Contractor Responsibilities.** In addition to the other responsibilities set forth herein, the Contractor shall have the following responsibilities pursuant to the Contract Documents:

A. Personnel. The Contractor represents that it has secured, or shall secure, all personnel necessary to perform the Work, none of whom shall be employees of the Owner. Primary liaison between the Contractor and the Owner shall be through the Owner's Project Representative and Contractor's Project Manager. All of the services required herein shall be performed by the Contractor or under the Contractor's supervision, and all personnel engaged in the Work shall be fully qualified and shall be authorized or permitted under law to perform such services.

B. Cooperation with Architect/Engineer. The Contractor's services shall be provided in conjunction with the services of the Architect/Engineer. In the performance of professional services, the Contractor acknowledges that time is critical for Project delivery. The Contractor acknowledges that timely construction utilizing the services of an Architect/Engineer and a Contractor requires maximum cooperation between all parties.

C. Timely Performance. The Contractor shall perform all services as expeditiously as is consistent with professional skill and care and the orderly progress of the Work, in accordance with the Project Schedule. Verification of estimated Project Schedule goals will be made as requested by the Owner.

D. Duty to Defend Work. In the event of any dispute between the Owner and any Permitting Authority that relates to the quality, completeness or professional workmanship of the Contractor's services or Work, the Contractor shall, at its sole cost and expense, cooperate with the Owner to defend the quality and workmanship of the Contractor's services and Work.

E. Trade and Industry Terminology. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials, or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids (or at the time of execution of the Guaranteed Maximum Price Addendum), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of Owner or Contractor, or any of their agents or employees from those set forth in the Contract Documents. Computed dimensions shall govern over scaled dimensions.

**2.3 Project Schedule.** The Contractor, within ten (10) days after being awarded the Contract, shall prepare and submit for the Owner's and Architect/Engineer's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the

extent required by the Contract Documents, and shall provide for expeditious and practicable execution of Work.

- A. The Project Schedule shall show a breakdown of all tasks to be performed, and their relationship in achieving the completion of each phase of Work, subject to review of Owner and Architect/Engineer and approval or rejection by Owner. The Project Schedule shall show, at a minimum, the approximate dates on which each segment of the Work is expected to be started and finished, the proposed traffic flows during each month, the anticipated earnings by the Contractor for each month and the approximate number of crews and equipment to be used. The Project Schedule shall include all phases of procurement, approval of shop drawings, proposed Change Orders in progress, schedules for Change Orders, and performance testing requirements. The Project Schedule shall include a construction commencement date and Project Substantial Completion Date, which dates shall accommodate known or reasonably anticipated geographic, atmospheric and weather conditions.
- B. The Project Schedule shall serve as the framework for the subsequent development of all detailed schedules. The Project Schedule shall be used to verify Contractor performance and to allow the Owner's Project Representative to monitor the Contractor's efforts.
- C. The Project Schedule may be adjusted by the Contractor pursuant to Article V. The Owner shall have the right to reschedule Work provided such rescheduling is in accord with the remainder of terms of the Contract Documents.
- D. The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect/Engineer's approval. The Architect/Engineer's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect/Engineer reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.
- E. The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect/Engineer.

**2.4 Construction Services.** The Contractor shall provide the following Construction Services:

A. Construction of Project. The Contractor shall work from the receipt of a Notice to Proceed through the Substantial Completion of the Project in accordance with the terms

of the Contract Documents to manage the construction of the Project. The Construction Services provided by the Contractor to construct the Project shall include without limitation (1) all services necessary and commensurate with established construction standards, and (2) all services described in the Invitation for Bid (or Request for Proposal) and the Bid (or Guaranteed Maximum Price Addendum).

B. Notice to Proceed. A Notice to Proceed may be given at any time within thirty (30) days after the effective date of the Agreement. Contractor shall start to perform the Work on the date specified in the Notice to Proceed, but no Work shall be done at the site prior to the issuance of the Notice to Proceed.

C. Quality of Work. If at any time the labor used or to be used appears to the Owner as insufficient or improper for securing the quality of Work required or the required rate of progress, the Owner may order the Contractor to increase its efficiency or to improve the character of its Work, and the Contractor shall conform to such an order. Any such order shall not entitle Contractor to any additional compensation or any increase in Contract Time. The failure of the Owner to demand any increase of such efficiency or any improvement shall not release the Contractor from its obligation to secure the quality of Work or the rate of progress necessary to complete the Work within the limits imposed by the Contract Documents. The Owner may require the Contractor to remove such personnel as the Owner deems incompetent, careless, insubordinate or otherwise objectionable, or whose continued employment on the Project is deemed to be contrary to the Owner's interest. The Contractor shall provide good quality workmanship and shall promptly correct construction defects without additional compensation. Acceptance of the Work by the Owner shall not relieve the Contractor of the responsibility for subsequent correction of any construction defects.

D. Materials. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by Architect/Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instruction of the applicable supplier except as otherwise provided in the Contract Documents.

E. Accountability for Work. The Contractor shall be solely accountable for its Work, including plans review and complete submittals. The Contractor shall be solely responsible for means, methods, techniques, sequences and procedures of construction. In the event that a specific means, method, technique, sequence or procedure of construction is required by the Contract Documents, the Contractor may utilize an alternative means, method, technique, sequence or procedure acceptable to the Architect/Engineer if the Contractor submits sufficient information to allow the Architect/Engineer to determine that the alternative is equivalent to that required by the Contract Documents.

F. Contract Sum. The Contractor shall construct the Project so that the Project can be built for a cost not to exceed the Contract Sum.

G. Governing Specifications. The Project shall be constructed in accordance with applicable Owner design standards and guidelines. In the absence of specified Owner

design standards or guidelines, the Architect/Engineer shall use, and the Contractor shall comply with, the most recent version of the applicable FDOT or AASHTO design standards. In general, the Project shall be constructed by the Contractor in accordance with applicable industry standards. The Contractor shall be responsible for utilizing and maintaining current knowledge of any laws, ordinances, codes, rules, regulations, standards, guidelines, special conditions, specifications or other mandates relevant to the Project or the services to be performed.

H. Adherence to Project Schedule. The development and equipping of the Project shall be undertaken and completed in accordance with the Project Schedule, and within the Contract Time described therein.

I. Superintendent. The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project Site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

(1) The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect/Engineer the name and qualifications of the proposed superintendent. The Architect/Engineer may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect/Engineer has reasonable objection to the proposed superintendent or (2) that the Architect/Engineer requires additional time to review. Failure of the Architect/Engineer to reply within 14 days shall constitute notice of no reasonable objection.

(2) The Contractor shall not employ a proposed superintendent to whom the Owner or Architect/Engineer has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not be unreasonably withheld or delayed.

J. Work Hours. Contractor shall provide competent, suitable qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and Contractor shall not permit overtime work or the performance of Work on a Saturday, Sunday or legal holiday without Owner's written consent given after prior notice to Architect/Engineer (at least seventy-two (72) hours in advance).

K. Overtime-Related Costs. Contractor shall pay for all additional Architect/Engineering charges, inspection costs and Owner staff time for any overtime work which may be authorized. Such additional charges shall be a subsidiary obligation of Contractor and no extra payment shall be made by Owner on account of such overtime work. At Owner's option, such overtime costs may be deducted from Contractor's monthly payment request or Contractor's retainage prior to release of final payment.

L. Insurance, Overhead and Utilities. Unless otherwise specified, Contractor shall furnish and assume full responsibility for all bonds, insurance, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

M. Cleanliness. The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project Site. Contractor shall restore to original conditions all property not designated for alteration by the Contract Documents. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from Contractor.

N. Loading. Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

O. Safety and Protection. Contractor shall comply with the Florida Department of Commerce Safety Regulations and any local safety regulations. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of and shall provide the necessary protection to prevent damage, injury or loss to:

- (1) All employees on the Work and other persons and organizations who may be affected thereby;
- (2) All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Project Site; and
- (3) Other property at the Project Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction.

Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss, and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall provide and maintain all passageways, guard fences, lights and other facilities for the protection required by public authority or local conditions. Contractor shall provide reasonable maintenance of traffic for the public and preservation of the Owner's business, taking into full consideration all local conditions. Contractor's duties and responsibilities for safety and protection with regard to the Work shall continue until such time as all the Work is completed.

P. Emergencies. In emergencies affecting the safety or protection of persons or the Work or property at the Project Site or adjacent thereto, Contractor, without special

instruction or authorization from Architect/Engineer or Owner, shall act to prevent threatened damage, injury or loss. Contractor shall give Owner prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If Owner determines that a change in the Project is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variation.

Q. Substitutes. For Substitutes not included with the Bid (or Guaranteed Maximum Price Addendum), but submitted after the effective date of the Agreement (or Guaranteed Maximum Price Addendum), Contractor shall make written application to Architect/Engineer for acceptance thereof, certifying that the proposed Substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will also contain an itemized estimate of all costs and delays or schedule impacts that will result directly or indirectly from review, acceptance and provision of such Substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by the Architect/Engineer in evaluating the proposed Substitute. Architect/Engineer may require Contractor to furnish at Contractor's expense, additional data about the proposed Substitute. In rendering a decision, Owner, Architect/Engineer and Contractor shall have access to any available Float Time in the Project Schedule. In the event that Substitute materials or equipment not included as part of the Bid (or Guaranteed Maximum Price Addendum), but proposed after the effective date of the Agreement, are accepted and are less costly than the originally specified materials or equipment, then the net difference in cost shall be credited to the Owner and an appropriate Change Order executed to adjust the Contract Sum.

- (1) Architect/Engineer will be allowed a reasonable time within which to evaluate each proposed Substitute. Architect/Engineer will be the sole judge of acceptability and no Substitute will be ordered, installed or utilized without Architect/Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved shop drawing. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any Substitute.
- (2) Contractor shall reimburse Owner for the charges of Architect/Engineer and Architect/Engineer's Consultants for evaluating each proposed Substitute submitted after the effective date of the Agreement and all costs resulting from any delays in the Work while the Substitute was undergoing review.

R. Surveys and Stakes. The Contractor shall furnish, free of charge, all labor, stakes, surveys, batter boards for structures, grade lines and other materials and supplies and shall set construction stakes and batter boards for establishing lines, position of structures, slopes and other controlling points necessary for the proper prosecution of the Work. Where rights-of-way, easements, property lines or any other conditions which make the lay-out of the Project or parts of the Project critical are involved, the Contractor shall employ a competent surveyor who is registered in the State of Florida for lay-out and staking. These stakes and marks shall constitute

the field control by and in accord with which the Contractor shall govern and execute the Work. The Contractor shall be held responsible for the preservation of all stakes and marks and if for any reason any of the stakes or marks or batter boards become destroyed or disturbed, they shall be immediately and accurately replaced by the Contractor.

S. Suitability of Project Site. The Contractor has, by careful examination, satisfied itself as to the nature and location of the Work and all other matters which can in any way affect the Work, including, but not limited to details pertaining to borings, as shown on the drawings. Such boring information is not guaranteed to be more than a general indication of the materials likely to be found adjacent to holes bored at the Project Site, approximately at the locations indicated. The Contractor has examined boring data, where available, made its own interpretation of the subsurface conditions and other preliminary data, and has based its Bid (or Guaranteed Maximum Price Addendum) on its own opinion of the conditions likely to be encountered. Except as specifically provided in Sections 2.4.U., 5.4 and 5.5, no extra compensation or extension of time will be considered for any Project Site conditions that existed at the time of bidding (or at the time of execution of the Guaranteed Maximum Price Addendum). No verbal agreement or conversation with any officer, agent or employee of the Owner, before or after the execution of the Agreement, shall affect or modify any of the terms or obligations herein contained.

T. Project Specification Errors. If the Contractor, in the course of the Work, finds that the drawings, specifications or other Contract Documents cannot be followed, the Contractor shall immediately inform the Owner in writing, and the Owner shall promptly check the accuracy of the information. Any Work done after such discovery, until any necessary changes are authorized, will be done at the Contractor's sole risk of non-payment and delay.

U. Remediation of Contamination: Owner and Contractor recognize that remediation of subsurface conditions may be necessary due to potential hazardous materials contamination. Because the presence or extent of any contamination is not known, Contractor shall include no cost in the Contract Sum, and no time in the Project Schedule, for cost or delays that might result from any necessary remediation. The Project Schedule will provide a period of time between demolition activities and the start of the next activity to commence any remediation if needed. Contractor shall use all reasonable efforts in scheduling the Project to minimize the likelihood that remediation delays construction. Any hazardous materials remediation Work which Contractor agrees to perform shall be done pursuant to a Change Order or amendment consistent with the following:

- (1) The dates of Substantial Completion shall be equitably adjusted based on delays, if any, incurred in connection with remediation efforts.
- (2) Contractor, and any Subcontractors which have mobilized on the Project Site, shall be paid for demonstrated costs of overhead operations at the Project Site during any period of delay in excess of seven (7) days, except to the extent that Work proceeds concurrently with remediation. The categories of costs to be reimbursed are limited to those reasonably incurred at the jobsite during the delay period (such as trailers or offices, telephones, faxes, and the like); equipment dedicated to the Project and

located at the Project Site; salaries and associated costs of personnel dedicated to the Project to the extent that they do not perform Work on other projects; and other jobsite costs that are reasonable and which are incurred during the delay period. Subcontractors and suppliers which have not mobilized are limited to the costs set forth in Section 2.4.U(3).

- (3) Contractor and any Subcontractor or supplier on the Project who is eligible for compensation shall be paid any demonstrated costs of escalation in materials or labor, and reasonable costs of off-site storage of materials identified to the Project, arising as a result of any delay in excess of seven (7) days. Such Contractor, Subcontractors and suppliers are obligated to take all reasonable steps to mitigate escalation costs, such as through early purchase of materials.
- (4) Contractor, for itself and all Subcontractors and suppliers on the Project, hereby agrees that the extension of time for delays under Section 2.4.U(1), and payment of the costs identified in Sections 2.4.U(2) and/or Section 2.4.U(3), are the sole remedies for costs and delays described in this Section, and waives all claims and demands for extended home office overhead (including, but not limited to, "Eichleay" claims), lost profit or lost opportunities, and any special, indirect, or consequential damages arising as a result of delays described in this Section. The Contract Sum shall be adjusted to reflect payment of allowable costs.
- (5) If any delay described in this section causes the time or cost for the Project to exceed the Contract Time or the Contract Sum, then the Owner may terminate the Agreement pursuant to Section 14.2.
- (6) Contractor and any Subcontractor or supplier seeking additional costs under this Section 2.4.U. shall promptly submit estimates or any costs as requested by Owner, and detailed back-up for all costs when payment is sought or whenever reasonably requested by Owner. All costs are auditable, at Owner's discretion. Bid, estimate and pricing information reasonably related to any request for additional compensation will be provided promptly upon request.
- (7) Contractor shall include provisions in its subcontracts and purchase orders consistent with this Section.

V. Interfacing.

- (1) The Contractor shall take such measures as are necessary to ensure proper construction and delivery of the Project, including but not limited to providing that all procurement of long-lead items, the separate construction Subcontractors, and the general conditions items are performed without duplication or overlap to maintain completion of all Work on schedule. Particular attention shall be given to provide that each

Subcontractor bid package clearly identifies the Work included in that particular separate subcontract, its scheduling for start and completion, and its relationship to other separate contractors.

- (2) Without assuming any design responsibilities of the Architect/Engineer, the Contractor shall include in the Progress Reports required under this Section 2.4 comments on overlap with any other separate subcontracts, omissions, lack of correlation between drawings, and any other deficiencies noted, in order that the Architect/Engineer may arrange for necessary corrections.

W. Job Site Facilities. The Contractor shall arrange for all job site facilities required and necessary to enable the Contractor and Architect/Engineer to perform their respective duties and to accommodate any representatives of the Owner which the Owner may choose to have present on the job.

X. Weather Protection. The Contractor shall provide temporary enclosures of building areas in order to assure orderly progress of the Work during periods when extreme weather conditions are likely to be experienced. The Contractor shall also be responsible for providing weather protection for Work in progress and for materials stored on the Project Site. A contingency plan shall be prepared upon request of the Owner for weather conditions that may affect the construction.

Y. Payment and Performance Bond. Prior to the construction commencement date, the Contractor shall obtain, for the benefit of and directed to the Owner, a Payment and Performance Bond satisfying the requirements of Section 255.05, Florida Statutes, covering the faithful performance by the Contractor of its obligations under the Contract Documents, including but not limited to the construction of the Project on the Project Site and the payment of all obligations arising thereunder, including all payments to Subcontractors, laborers, and materialmen. The surety selected by the Contractor to provide the Payment and Performance Bond shall be approved by the Owner prior to the issuance of such Bond, which approval shall not be unreasonably withheld or delayed provided that the surety is rated A or better by Best's Key Guide, latest edition. For Changes in the Work that result in an increase in the Contract Sum, Owner reserves the right to require the Contractor to secure and deliver additive riders to the Payment and Performance Bond.

Z. Construction Phase; Building Permit; Code Inspections. Unless otherwise provided, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work.

- (1) Building Permit. The Owner and Architect/Engineer shall provide such information to any Permitting Authority as is necessary to obtain approval from the Permitting Authority to commence construction prior to beginning construction. The Contractor shall pull any required building permit, and shall be responsible for delivering and posting the building permit at the Project Site prior to the commencement of construction. The

cost of the building permit is included in the Contract Sum. The Owner and Architect/Engineer shall fully cooperate with the Contractor when and where necessary.

- (2) Code Inspections. The Project requires detailed code compliance inspection during construction in disciplines determined by any Permitting Authority. These disciplines normally include, but are not necessarily limited to, structural, mechanical, electrical, plumbing, general building and fire. The Contractor shall notify the appropriate inspector(s) and the Architect/Engineer, no less than 24 hours in advance, when the Work is ready for inspection and before the Work is covered up. All inspections shall be made for conformance with the applicable ordinances and building codes. Costs for all re-inspections of Work found defective and subsequently repaired shall not be included as Project Costs and shall be borne by the Contractor or as provided in the contract between Contractor and Subcontractor.
- (3) Contractor's Personnel. The Contractor shall maintain sufficient off-site support staff and competent full-time staff at the Project Site authorized to act on behalf of the Contractor to coordinate, inspect, and provide general direction of the Work and progress of the Subcontractors. At all times during the performance of the Work, the Owner shall have the right to demand replacement of Contractor Personnel to whom the Owner has reasonable objection, without liability to the Contractor.
- (4) Lines of Authority. To provide general direction of the Work, the Contractor shall establish and maintain lines of authority for its personnel and shall provide this information to the Owner and all other affected parties, such as the code inspectors of any Permitting Authority, the Subcontractors, and the Architect/Engineer. The Owner and Architect/Engineer may attend meetings between the Contractor and his Subcontractors; however, such attendance is optional and shall not diminish either the authority or responsibility of the Contractor to administer the subcontracts.

AA. Quality Control. The Contractor shall develop and maintain a program, acceptable to the Owner and Architect/Engineer, to assure quality control of the construction. The Contractor shall be responsible for and supervise the Work of all Subcontractors, providing instructions to each when their Work does not conform to the requirements of the Project Plans and Specifications, and the Contractor shall continue to coordinate the Work of each Subcontractor to ensure that corrections are made in a timely manner so as to not affect the efficient progress of the Work. Should a disagreement occur between the Contractor and the Architect/Engineer over the acceptability of the Work, the Owner, at its sole discretion and in addition to any other remedies provided herein, shall have the right to determine the acceptability, provided that such determination is consistent with standards for construction projects of this type and generally accepted industry standards for workmanship in the State of Florida.

BB. Management of Subcontractors. All Subcontractors shall be compensated in accordance with Article IV. The Contractor shall solely control the Subcontractors. The Contractor shall negotiate all Change Orders and Field Orders with all affected Subcontractors and shall review the costs and advise the Owner and Architect/Engineer of their validity and reasonableness, acting in the Owner's best interest. When there is an imminent threat to health and safety, and Owner's Project Representative concurrence is impractical, the Contractor shall act immediately to remove the threats to health and safety and shall subsequently fully inform Owner of all such action taken. The Contractor shall also carefully review all shop drawings and then forward the same to the Architect/Engineer for review and actions. The Architect/Engineer will transmit them back to the Contractor, who will then issue the shop drawings to the affected Subcontractor for fabrication or revision. The Contractor shall maintain a suspense control system to promote expeditious handling. The Contractor shall request the Architect/Engineer to make interpretations of the drawings or specifications requested of him by the Subcontractors and shall maintain a business system to promote timely response. The Contractor shall inform the Architect/Engineer which shop drawings or requests for clarification have the greatest urgency, so as to enable the Architect/Engineer to prioritize requests coming from the Contractor. The Contractor shall advise the Owner and Architect/Engineer when timely response is not occurring on any of the above.

CC. Job Requirements.

- (1) The Contractor shall provide each of the following as a part of its services hereunder:
  - (a) Maintain a log of daily activities, including manpower records, equipment on site, weather, delays, major decisions, etc;
  - (b) Maintain a roster of companies on the Project with names and telephone numbers of key personnel;
  - (c) Establish and enforce job rules governing parking, clean-up, use of facilities, and worker discipline;
  - (d) Provide labor relations management and equal opportunity employment for a harmonious, productive Project;
  - (e) Provide and administer a safety program for the Project and monitor for subcontractor compliance without relieving them of responsibilities to perform Work in accordance with best acceptable practice;
  - (f) Provide a quality control program as provided under Section 2.4.C above;
  - (g) Provide miscellaneous office supplies that support the construction efforts which are consumed by its own forces;

- (h) Provide for travel to and from its home office to the Project Site and to those other places within Manatee County as required by the Project;
- (i) Verify that tests, equipment, and system start-ups and operating and maintenance instructions are conducted as required and in the presence of the required personnel and provide adequate records of same to the Architect/Engineer;
- (j) Maintain at the job site orderly files for correspondence, reports of job conferences, shop drawings and sample submissions, reproductions of original Contract Documents including all addenda, change orders, field orders, additional drawings issued subsequent to the execution of the Agreement, Owner/Architect/Engineer's clarifications and interpretations of the Contract Documents, progress reports, as-built drawings, and other project related documents;
- (k) Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions; list of visiting officials and representatives or manufacturers, fabricators, suppliers and distributors; daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures, and provide copies of same to Owner/Architect/Engineer;
- (l) Record names, addresses and telephone numbers of all Contractors, Subcontractors and major suppliers of materials and equipment;
- (m) Furnish Owner/Architect/Engineer periodic reports, as required, of progress of the Work and Contractor's compliance with the approved progress schedule and schedule of shop drawing submissions;
- (n) Consult with Owner/Architect/Engineer in advance of scheduling major tests, inspections or start of important phases of the Work;
- (o) Verify, during the course of the Work, that certificates, maintenance and operations manuals and other data required to be assembled and furnished are applicable to the items actually installed, and deliver same to Owner/Architect/Engineer for review prior to final Acceptance of the Work; and
- (p) Cooperate with Owner in the administration of grants.

- (2) The Contractor shall provide personnel and equipment, or shall arrange for separate Subcontractors to provide each of the following as a Project Cost:
  - (a) Services of independent testing laboratories, and provide the necessary testing of materials to ensure conformance to contract requirements; and
  - (b) Printing and distribution of all required bidding documents and shop drawings, including the sets required by Permitting Authority inspectors.

DD. As-Built Drawings. The Contractor shall continuously review as-built drawings and mark up progress prints to provide as much accuracy as possible. Prior to, and as a requirement for authorizing final payment to the Contractor due hereunder, the Contractor shall provide to the Owner an original set of marked-up, as-built Project Plans and Specifications and an electronic format of those records showing the location and dimensions of the Project as constructed, which documents shall be certified as being correct by the Contractor and the Architect/Engineer. Final as-built drawings shall be signed and sealed by a registered Florida surveyor.

EE. Progress Reports. The Contractor shall forward to the Owner, as soon as practicable after the first day of each month, a summary report of the progress of the various parts of the Work under the Contract, in fabrication and in the field, stating the existing status, estimated time of completion and cause of delay, if any. Together with the summary report, the Contractor shall submit any necessary revisions to the original schedule for the Owner's review and approval. In addition, more detailed schedules may be required by the Owner for daily traffic control.

FF. Contractor's Warranty. The Contractor warrants to the Owner and Architect/Engineer that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements will be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect/Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

- (1) Contractor shall use its best efforts and due diligence to ensure that during the warranty period, those entities or individuals who have provided direct warranties to the Owner as required by the Contract Documents perform all required warranty Work in a timely manner and at the sole cost and expense of such warranty providers. Any such cost or expense not paid by the warranty providers shall be paid by the Contractor, to include any

costs and attorney's fees incurred in warranty-related litigation between Contractor and any Subcontractors.

- (2) The Contractor shall secure guarantees and warranties of Subcontractors, equipment suppliers and materialmen, and assemble and deliver same to the Owner in a manner that will facilitate their maximum enforcement and assure their meaningful implementation. The Contractor shall collect and deliver to the Owner any specific written guaranties or warranties given by others as required by subcontracts.
- (3) At the Owner's request, the Contractor shall conduct, jointly with the Owner and the Architect/Engineer, no more than two (2) warranty inspections within three (3) years after the Substantial Completion Date.

GG. Apprentices. If Contractor employs apprentices, their performance of Work shall be governed by and comply with the provisions of Chapter 446, Florida Statutes.

HH. Schedule of Values. Unit prices shall be established for this Contract by the submission of a schedule of values within ten (10) days of receipt of the Notice to Proceed. The schedule shall include quantities and prices of items equaling the Contract Sum and will subdivide the Work into components in sufficient detail to serve as the basis for progress payments during construction. Such prices shall include an appropriate amount of overhead and profit applicable to each item of Work. Upon request of the County, the Contractor shall support the values with data which will substantiate their correctness.

II. Other Contracts. The Owner reserves the right to let other Contracts in connection with this Work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and execution of their Work, and promptly connect and coordinate the Work with theirs.

## **ARTICLE III COMPENSATION**

**3.1 Compensation.** The Contract Sum constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change in the Contract Sum.

A. Adjustments. The Contract Sum may only be changed by Change Order or by a written amendment. Any claim for an increase or decrease in the Contract Sum shall be based on written notice delivered by the party making the claim to the other party. Notice of the amount of the claim with supporting data shall be delivered within fifteen (15) days from the beginning of such occurrence and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. Failure to deliver a claim within the requisite 15-day period shall constitute a waiver of the right to pursue said claim.

B. Valuation. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Sum shall be determined in one of the following ways (at Owner's discretion):

- (1) In the case of Unit Price Work, in accordance with Section 3.1.C, below;  
or
- (2) By mutual acceptance of lump sum; or
- (3) On the basis of the cost of the Work, plus a negotiated Contractor's fee for overhead and profit. Contractor shall submit an itemized cost breakdown together with supporting data.

C. Unit Price Work. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment pursuant to a requested Change Order under the following conditions:

- (1) If the total cost of a particular item of Unit Price Work amounts to 5% or more of the Contract Sum and the variation in the quantity of the particular item of Unit Price Work performed by Contractor differs by more than 15% from the estimated quantity of such item indicated in the Agreement; and
- (2) If there is no corresponding adjustment with respect to any other item of Work; and
- (3) If Contractor believes that it has incurred additional expense as a result thereof; or
- (4) If Owner believes that the quantity variation entitles it to an adjustment in the unit price; or
- (5) If the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

**3.2 Schedule of Compensation.** All payments for services and material under the Contract Documents shall be made in accordance with the following provisions.

A. Periodic Payments for Services. The Contractor shall be entitled to receive payment for Construction Services rendered pursuant to Section 2.4 in periodic payments which shall reflect a fair apportionment of cost and schedule of values of services furnished prior to payment, subject to the provisions of this Section.

B. Payment for Materials and Equipment. In addition to the periodic payments authorized hereunder, payments may be made for material and equipment not

incorporated in the Work but delivered and suitably stored at the Project Site, or another location, subject to prior approval and acceptance by the Owner on each occasion.

C. Credit toward Contract Sum. All payments for Construction Services made hereunder shall be credited toward the payment of the Contract Sum as Contractor's sole compensation for the construction of the Project.

**3.3 Invoice and Payment.** All payments for services and materials under the Contract Documents shall be invoiced and paid in accordance with the following provisions.

A. Invoices. The Contractor shall submit to the Owner periodic invoices for payment, in a form acceptable to the Owner, which shall include a sworn statement certifying that, to the best of the Contractor's knowledge, information and belief, the construction has progressed to the point indicated, the quality and the Work covered by the invoice is in accord with the Project Plans and Specifications, and the Contractor is entitled to payment in the amount requested, along with the cost reports required pursuant to Article II, showing in detail all monies paid out, Project Costs accumulated, or Project Cost incurred during the previous period. This data shall be attached to the invoice.

B. Additional Information; Processing of Invoices. Should an invoiced amount appear to exceed the Work effort believed to be completed, the Owner may, prior to processing of the invoice for payment, require the Contractor to submit satisfactory evidence to support the invoice. All progress reports and invoices shall be delivered to the attention of the Owner's Project Representative. Invoices not properly prepared (mathematical errors, billing not reflecting actual Work done, no signature, etc.) shall be returned to the Contractor for correction.

C. Architect/Engineer's Approval. Payment for Work completed shall be subject to the Architect/Engineer approving the payment requested by the Contractor and certifying the amount thereof that has been properly incurred and is then due and payable to the Contractor, and identifying with specificity any amount that has not been properly incurred and that should not be paid.

D. Warrants of Contractor with Respect to Payments. The Contractor warrants that (1) upon payment of any retainage, materials and equipment covered by a partial payment request will pass to Owner either by incorporation in construction or upon receipt of payment by the Contractor, whichever occurs first; (2) Work, materials and equipment covered by previous partial payment requests shall be free and clear of liens, claims, security interests, or encumbrances; and (3) no Work, materials or equipment covered by a partial payment request which has been acquired by the Contractor or any other person performing Work at the Project Site, or furnishing materials or equipment for the Project, shall be subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or any other person.

E. All Compensation Included. Contractor's compensation includes full payment for services set forth in the Contract Documents, including but not limited to overhead, profit, salaries or other compensation of Contractor's officers, partners and/or employees, general operating expenses incurred by Contractor and relating to this Project, including the cost of

management, supervision and data processing staff, job office equipment and supplies, and other similar items.

## ARTICLE IV SUBCONTRACTORS

**4.1 Subcontracts.** At the Owner's request, the Contractor shall provide Owner's Project Representative with copies of all proposed and final subcontracts, including the general and supplementary conditions thereof.

A. Subcontracts Generally. All subcontracts shall: (1) require each Subcontractor to be bound to Contractor to the same extent Contractor is bound to Owner by the terms of the Contract Documents, as those terms may apply to the portion of the Work to be performed by the Subcontractor, (2) provide for the assignment of the subcontracts from Contractor to Owner at the election of Owner, upon termination of Contractor, (3) provide that Owner will be an additional indemnified party of the subcontract, (4) provide that Owner will be an additional insured on all insurance policies required to be provided by the Subcontractor, except workers' compensation, (5) assign all warranties directly to Owner, and (6) identify Owner as an intended third-party beneficiary of the subcontract.

(1) A Subcontractor is a person or entity who has a direct contract with Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

(2) A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

B. No Damages for Delay. Except when otherwise expressly agreed to by Owner in writing, all subcontracts shall provide:

"LIMITATION OF REMEDIES – NO DAMAGES FOR DELAY. The Subcontractor's exclusive remedy for delays in the performance of the contract caused by events beyond its control, including delays claimed to be caused by the Owner or Architect/Engineer or attributable to the Owner or Architect/Engineer and including claims based on breach of contract or negligence, shall be an extension of its contract time and shall in no way involve any monetary claim."

Each subcontract shall require that any claims by the Subcontractor for delay must be submitted to the Contractor within the time and in the manner in which the Contractor must submit such claims to the Owner, and that failure to comply with the conditions for giving notice and submitting claims shall result in the waiver of such claims.

C. Subcontractual Relations. The Contractor shall require each Subcontractor to assume all the obligations and responsibilities which the Contractor owes the Owner pursuant to the Contract Documents, by the parties to the extent of the Work to be performed by the Subcontractor. Said obligations shall be made in writing and shall preserve and protect the rights of the Owner and Architect/Engineer, with respect to the Work to be performed by the Subcontractor, so that the subcontracting thereof will not prejudice such rights. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with its sub-subcontractors.

D. Insurance; Acts and Omissions. Insurance requirements for Subcontractors shall be no more stringent than those requirements imposed on the Contractor by the Owner. The Contractor shall be responsible to the Owner for the acts and omissions of its employees, agents, Subcontractors, their agents and employees, and all other persons performing any of the Work or supplying materials under a contract to the Contractor.

**4.2 Relationship and Responsibilities.** Except as specifically set forth herein with respect to direct materials acquisitions by Owner, nothing contained in the Contract Documents or in any Contract Document does or shall create any contractual relation between the Owner or Architect/Engineer and any Subcontractor. Specifically, the Contractor is not acting as an agent of the Owner with respect to any Subcontractor. The utilization of any Subcontractor shall not relieve Contractor from any liability or responsibility to Owner, or obligate Owner to the payment of any compensation to the Subcontractor or additional compensation to the Contractor.

**4.3 Payments to Subcontractors; Monthly Statements.** The Contractor shall be responsible for paying all Subcontractors from the payments made by the Owner to Contractor pursuant to Article III, subject to the following provisions:

A. Payment. The Contractor shall, no later than ten (10) days after receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's Work, pay to each Subcontractor the amount to which the Subcontractor is entitled in accordance with the terms of the Contractor's contract with such Subcontractor. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to sub-Subcontractors in a similar manner. After receipt of payment from Owner, if the need should arise to withhold payments to Subcontractors for any reason, as solely determined by Contractor, the Contractor shall promptly restore such monies to the Owner, adjusting subsequent pay requests and Project bookkeeping as required.

B. Final Payment of Subcontractors. The final payment of retainage to Subcontractors shall not be made until the Project has been inspected by the Architect/Engineer or other person designated by the Owner for that purpose, and until both the Architect/Engineer and the Contractor have issued a written certificate that the Project has been constructed in accordance with the Project Plans and Specifications and approved Change Orders. Before issuance of final payment to any Subcontractor without any retainage, the Subcontractor shall submit satisfactory evidence that all payrolls, material bills, and other indebtedness connected with the Project have been paid or otherwise satisfied, warranty information is complete, as-built markups have been submitted, and instruction for the Owner's operating and maintenance

personnel is complete. Final payment may be made to certain select Subcontractors whose Work is satisfactorily completed prior to the completion of the Project, but only upon approval of the Owner's Project Representative.

**4.4 Responsibility for Subcontractors.** As provided in Section 2.4.BB, Contractor shall be fully responsible to Owner for all acts and omissions of the Subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect Contract with Contractor just as Contractor is responsible for Contractor's own acts and omissions.

**4.5 Contingent Assignment of Subcontracts.** Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that:

- (1) assignment is effective only after termination of the Contract by the Owner for cause pursuant to Article XIV and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- (2) assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Agreement.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract. Upon such assignment, if the Work has been suspended for more than thirty (30) days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension. Upon such assignment to the Owner, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

## **ARTICLE V CHANGES IN WORK**

**5.1 General.** Changes in the Work may be accomplished after execution of the Agreement, and without invalidating the Agreement, by Change Order, Work Directive Change or order for a minor change in the Work, subject to the limitations stated in this Article V and elsewhere in the Contract Documents. A Change Order shall be based upon agreement among the Owner, Contractor and Architect/Engineer; a Work Directive Change requires agreement by the Owner and Architect/Engineer and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect/Engineer alone. Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Work Directive Change or order for a minor change in the Work.

**5.2 Minor Changes in the Work.** The Owner or Architect/Engineer shall have authority to order minor changes in the Work not involving adjustment in the Contract Sum or

extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such change will be effected by written order signed by the Architect/Engineer and shall be binding on the Owner and Contractor. The Contractor shall abide by and perform such minor changes. Such changes shall be effected by a Field Directive or a Work Directive Change. Documentation of changes shall be determined by the Construction Team, and displayed monthly in the Progress Reports. Because such changes shall not affect the Contract Sum to be paid to the Contractor, they shall not require a Change Order pursuant to Section 5.6.

**5.3 Emergencies.** In any emergency affecting the safety of persons or property, the Contractor shall act at its discretion to prevent threatened damage, injury, or loss. Any increase in the Contract Sum or extension of time claimed by the Contractor on account of emergency Work shall be determined as provided in Section 5.6. However, whenever practicable, the Contractor shall obtain verbal concurrence of the Owner's Project Representative and Architect/Engineer where the act will or may affect the Contract Sum or Contract Time.

**5.4 Concealed Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect/Engineer before conditions are disturbed and in no event later than ten (10) days after first observance of the conditions. The Architect/Engineer will promptly investigate such conditions and, if the Architect/Engineer determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect/Engineer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect/Engineer shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect/Engineer's determination or recommendation, that party may proceed as provided in Article VIII.

**5.5 Hazardous Materials.** In the event the Contractor encounters on the Project Site material reasonably believed to be hazardous, petroleum or petroleum related products, or other hazardous or toxic substances, except as provided in Section 2.4.U, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and the Architect/Engineer in writing. The Work in the affected area shall not thereafter be resumed except by written amendment, if in fact the material or substance has not been rendered harmless. The Work in the affected area shall be resumed when the Project Site has been rendered harmless, in accordance with the final determination by the Architect/Engineer or other appropriate professional employed by Owner. The Contractor shall not be required to perform without its consent any Work relating to hazardous materials, petroleum or petroleum related products, or other hazardous or toxic substances. In the event the Contractor encounters on the Project Site materials believed in good faith to be hazardous or contaminated material, and the presence of such hazardous or contaminated material was not known and planned for at the time the Contractor submitted its Bid (or Guaranteed Maximum Price proposal), and it is necessary for the Contractor to stop Work in the area affected and delays Work for more than a seven (7) day

period, adjustments to the Contract Sum and/or Contract Time shall be made in accordance with this Article V.

#### **5.6 Change Orders; Adjustments to Contract Sum.**

A. Change Orders Generally. The increase or decrease in the Contract Sum resulting from a change authorized pursuant to the Contract Documents shall be determined:

- (1) By mutual acceptance of a lump sum amount properly itemized and supported by sufficient substantiating data, to permit evaluation by the Architect/Engineer and Owner; or
- (2) By unit prices stated in the Agreement or subsequently agreed upon; or
- (3) By any other method mutually agreeable to Owner and Contractor.

If Owner and Contractor are unable to agree upon increases or decreases in the Contract Sum and the Architect/Engineer certifies that the work needs to be commenced prior to any such agreement, the Contractor, provided it receives a written Change Order signed by or on behalf of the Owner, shall promptly proceed with the Work involved. The cost of such Work shall then be determined on the basis of the reasonable expenditures of those performing the Work attributed to the change. However, in the event a Change Order is issued under these conditions, the Owner, through the Architect/Engineer, will establish an estimated cost of the Work and the Contractor shall not perform any Work whose cost exceeds that estimated without prior written approval by the Owner. In such case, the Contractor shall keep and present in such form as the Owner may prescribe an itemized accounting, together with appropriate supporting data of the increase in overall costs of the Project. The amount of any decrease in the Contract Sum to be allowed by the Contractor to the Owner for any deletion or change which results in a net decrease in costs will be the amount of the actual net decrease.

**5.7 Unit Prices.** If unit prices are stated in the Contract Documents or subsequently agreed upon, and if the quantities originally contemplated are so changed in a proposed Change Order that application of the agreed unit prices to the quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices and Contract Sum shall be equitably adjusted.

**5.8 Owner-Initiated Changes.** Without invalidating the Agreement and without notice to any Surety, Owner may, at any time, order additions, deletions or revisions in the Work. These will be authorized by a written amendment, a Field Directive, a Change Order, or a Work Directive Change, as the case may be. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided). A Work Directive Change may not change the Contract Sum or the Contract Time; but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Sum or Contract Time.

**5.9 Unauthorized Work.** Contractor shall not be entitled to an increase in the Contract Sum or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents.

**5.10 Defective Work.** Owner and Contractor shall execute appropriate Change Orders (or written amendments) covering changes in the Work which are ordered by Owner, or which may be required because of acceptance of defective Work, without adjustment to the Contract Sum.

**5.11 Estimates for Changes.** At any time Architect/Engineer may request a quotation from Contractor for a proposed change in the Work. Within twenty-one (21) calendar days after receipt, Contractor shall submit a written and detailed proposal for an increase or decrease in the Contract Sum or Contract Time for the proposed change. Architect/Engineer shall have twenty one (21) calendar days after receipt of the detailed proposal to respond in writing. The proposal shall include an itemized estimate of all costs and time for performance that will result directly or indirectly from the proposed change. Unless otherwise directed, itemized estimates shall be in sufficient detail to reasonably permit an analysis by Architect/Engineer of all material, labor, equipment, subcontracts, overhead costs and fees, and shall cover all Work involved in the change, whether such Work was deleted, added, changed or impacted. Notwithstanding the request for quotation, Contractor shall carry on the Work and maintain the progress schedule. Delays in the submittal of the written and detailed proposal will be considered non-prejudicial.

**5.12 Form of Proposed Changes.** The form of all submittals, notices, Change Orders and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the Owner. Standard Owner forms shall be utilized.

**5.13 Changes to Contract Time.** The Contract Time may only be changed pursuant to a Change Order or a written amendment to the Contract Documents. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party. Notice of the extent of the claim with supporting data shall be delivered within fifteen (15) days from detection or beginning of such occurrence and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. The Contract time will be extended in an amount equal to time lost due to delays beyond the control of Contractor. Such delays shall include, but not be limited to, acts or neglect by Owner or others performing additional Work; or to fires, floods, epidemics, abnormal weather conditions or acts of God. Failure to deliver a written notice of claim within the requisite 15-day period shall constitute a waiver of the right to pursue said claim.

## **ARTICLE VI ROLE OF ARCHITECT/ENGINEER**

### **6.1 General.**

A. Retaining. The Owner shall retain an Architect/Engineer (whether an individual or an entity) lawfully licensed to practice in Florida. That person or entity is identified

as the Architect/Engineer in the Agreement and is referred to throughout the Contract Documents as if singular in number.

B. Duties. Duties, responsibilities and limitations of authority of the Architect/Engineer as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner and Architect/Engineer. Consent shall not be unreasonably withheld.

C. Termination. If the employment of the Architect/Engineer is terminated, the Owner shall employ a successor Architect/Engineer as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect/Engineer.

**6.2 Administration.** The Architect/Engineer will provide administration of the Agreement as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect/Engineer approves the final Application for Payment. The Architect/Engineer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

A. Site Visits. The Architect/Engineer will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work complete, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. Unless specifically instructed by Owner, the Architect/Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect/Engineer will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

B. Reporting. On the basis of the site visits, the Architect/Engineer will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect/Engineer will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect/Engineer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

**6.3 Interpretation of Project Plans and Specifications.** The Architect/Engineer will be the interpreter of the requirements of the Project Plans and Specifications. Upon receipt of comments or objections by Contractor or Owner, the Architect/Engineer will make decisions on all claims, disputes, or other matters pertaining to the interpretation of the Project Plans and Specifications.

**6.4 Rejection of Non-Conforming Work.** Upon consultation with Owner, the Architect/Engineer shall have the authority to reject Work which does not conform to the Project Plans and Specifications.

**6.5 Correction of Work.** The Contractor shall promptly correct all Work rejected by the Architect/Engineer for being defective or as failing to conform to the Project Plans and Specifications, whether observed before or after the Substantial Completion Date and whether or not fabricated, installed, or completed. The Contractor shall bear all costs of correcting such rejected Work, including compensation for Architect/Engineer's additional services made necessary thereby.

**6.6 Timely Performance of Architect/Engineer.** The Contractor shall identify which requests for information or response from the Architect/Engineer have the greatest urgency and those items which require prioritizing in response by the Architect/Engineer. The Contractor shall also identify the preferred time period for response and shall request a response time which is reasonably and demonstrably related to the needs of the Project and Contractor. In the event that Architect/Engineer claims that Contractor's expectations for a response are unreasonable, Owner shall require Architect/Engineer to communicate such claim to Contractor in writing together with the specific time necessary to respond and the date upon which such response will be made. In the event that Contractor believes that Architect/Engineer is not providing timely services or responses, Contractor shall notify Owner of same in writing not less than two (2) weeks before Contractor believes performance or response time from Architect/Engineer is required without risk of delaying the Project.

## **ARTICLE VII OWNER'S RIGHTS AND RESPONSIBILITIES**

**7.1 Project Site; Title.** The Owner shall provide the lands upon which the Work under the Contract Documents is to be done, except that the Contractor shall provide all necessary additional land required for the erection of temporary construction facilities and storage of his materials, together with right of access to same. The Owner hereby represents to the Contractor that it currently has and will maintain up through and including the Substantial Completion Date, good title to all of the real property constituting the Project Site. Owner agrees to resolve, at its expense, any disputes relating to the ownership and use of the Project Site which might arise during the course of construction.

**7.2 Project Plans and Specifications; Architect/Engineer.** The parties hereto acknowledge and agree that Owner has previously entered into an agreement with Architect/Engineer. Pursuant to the terms of such agreement, the Architect/Engineer, as an agent

and representative of Owner, is responsible for the preparation of Project Plans and Specifications which consist of drawings, specifications, and other documents setting forth in detail the requirements for the construction of the Project. All of such Project Plans and Specifications shall be provided either by Owner or the Architect/Engineer, and Contractor shall be under no obligation to provide same and shall be entitled to rely upon the accuracy and completeness of the Project Plans and Specifications provided by the Architect/Engineer and all preliminary drawings prepared in connection therewith. The Contractor will be furnished a reproducible set of all drawings and specifications reasonably necessary for the performance of Contractor's services hereunder and otherwise ready for printing. The Contractor shall be notified of any written modification in the agreement between Owner and Architect/Engineer.

**7.3 Surveys; Soil Tests and Other Project Site Information.** Owner shall be responsible for providing a legal description and certified land survey of the Project Site in a form and content and with such specificity as may be required by the Architect/Engineer and Contractor to perform their services. To the extent deemed necessary by Owner and Architect/Engineer, and solely at Owner's expense, Owner may engage the services of a geotechnical consultant to perform test borings and other underground soils testing as may be deemed necessary by the Architect/Engineer or the Contractor. Contractor shall not be obligated to provide such surveys or soil tests and shall be entitled to rely upon the accuracy and completeness of the information provided; subject, however, to the provisions of Section 2.4.S hereof. Owner shall provide Contractor, as soon as reasonably possible following the execution of the Contract Documents, all surveys or other survey information in its possession describing the physical characteristics of the Project Site, together with soils reports, subsurface investigations, utility locations, deed restrictions, easements, and legal descriptions then in its possession or control. Upon receipt of all surveys, soils tests, and other Project Site information, Contractor shall promptly advise Owner of any inadequacies in such information and of the need for any additional surveys, soils or subsoil tests. In performing this Work, Contractor shall use the standard of care of experienced contractors and will use its best efforts timely to identify all problems or omissions. Owner shall not be responsible for any delay or damages to the Contractor for any visible or disclosed site conditions or disclosed deficiencies in the Project Site which should have been identified by Contractor and corrected by Owner prior to the execution of the Contract Documents.

**7.4 Information; Communication; Coordination.** The Owner's Project Representative shall examine any documents or requests for information submitted by the Contractor and shall advise Contractor of Owner's decisions pertaining thereto within a reasonable period of time to avoid unreasonable delay in the progress of the Contractor's services. Contractor shall indicate if any such documents or requests warrant priority consideration. However, decisions pertaining to approval of the Project Schedule as it relates to the date of Substantial Completion, the Project Cost, Contractor's compensation, approving or changing the Contract Sum shall only be effective when approved by Owner in the form of a written Change Order or amendment to the Contract Documents. Owner reserves the right to designate a different Owner's Project Representative provided Contractor is notified in writing of any such change. Owner and Architect/Engineer may communicate with Subcontractors, materialmen, laborers, or suppliers engaged to perform services on the Project, but only for informational purposes. Neither the Owner nor the Architect/Engineer shall attempt to direct the Work of or otherwise interfere with any Subcontractor, materialman, laborer, or supplier, or

otherwise interfere with the Work of the Contractor. Owner shall furnish the data required of Owner under the Contract Documents promptly.

**7.5 Governmental Body.** The Contractor recognizes that the Owner is a governmental body with certain procedural requirements to be satisfied. The Contractor has and will make reasonable allowance in its performance of services for such additional time as may be required for approvals and decisions by the Owner and any other necessary government agency.

**7.6 Pre-Completion Acceptance.** The Owner shall have the right to take possession of and use any completed portions of the Work, although the time for completing the entire Work or such portions may not have expired, but such taking possession and use shall not be deemed an acceptance of any Work not completed in accordance with the Contract Documents.

**7.7 Ownership and Use of Drawings, Specifications and Other Instruments of Service.**

- (1) The Architect/Engineer and the Architect/Engineer's consultants shall be deemed the authors and owners of their respective instruments of service, including the Project Plans and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the instruments of service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be constructed as publication in derogation of the Architect/Engineer's or Architect/Engineer's consultants' reserved rights.
- (2) The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the drawings and specifications provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Project Plans and Specifications or other instruments of service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the drawings or specifications on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect/Engineer and the Architect/Engineer's consultants.

**7.8 Owner's Project Representative.** Owner's Project Representative is Owner's Agent, who will act as directed by and under the supervision of the Owner, and who will confer with Owner/Architect/Engineer regarding his actions. The Owner's Project Representative's dealings in matters pertaining to the on-site Work shall, in general, be only with the Owner/Architect/Engineer and Contractor and dealings with Subcontractors shall only be through or with the full knowledge of Contractor.

A. Responsibilities. Except as otherwise instructed in writing by Owner, the Owner's Project Representative will:

- (1) Attend preconstruction conferences; arrange a schedule of progress meetings and other job conferences as required in consultation with Owner/Architect/Engineer and notify those expected to attend in advance; and attend meetings and maintain and circulate copies of minutes thereof;
- (2) Serve as Owner/Architect/Engineer's liaison with Contractor, working principally through Contractor's superintendent, to assist in understanding the intent of the Contract Documents. As requested by Owner/Architect/Engineer, assist in obtaining additional details or information when required at the job site for proper execution of the Work;
- (3) Report to Owner/Architect/Engineer whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents;
- (4) Accompany visiting inspectors representing public or other agencies having jurisdiction over the project; record the outcome of these inspections and report to Owner/Architect/Engineer;
- (5) Review applications for payment with Contractor for compliance with the established procedure for their submission and forward them with recommendations to Owner/Architect/Engineer; and
- (6) Perform those duties as set forth elsewhere within the Contract Documents.

B. Limitations. Except upon written instructions of Owner, Owner's Project Representative shall not:

- (1) Authorize any deviation from the Contract Documents or approve any substitute materials or equipment;
- (2) Exceed limitations on Owner/Architect/Engineer's authority as set forth in the Contract Documents;
- (3) Undertake any of the responsibilities of Contractor, Subcontractors or Contractor's superintendent, or expedite the Work;
- (4) Advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents;
- (5) Advise on or issue directions as to safety precautions and programs in connection with the Work;

- (6) Authorize Owner to occupy the project in whole or in part; or
- (7) Participate in specialized field or laboratory tests.

**ARTICLE VIII  
RESOLUTION OF DISAGREEMENTS;  
CLAIMS FOR COMPENSATION**

**8.1 Owner to Decide Disputes.** The Owner shall reasonably decide all questions and disputes, of any nature whatsoever, that may arise in the execution and fulfillment of the services provided for under the Contract Documents, in accordance with the Procurement Ordinance.

**8.2 Finality.** The decision of the Owner upon all claims, questions, disputes and conflicts shall be final and conclusive, and shall be binding upon all parties to the Contract Documents, subject to judicial review as provided in Section 8.5 below.

**8.3 No Damages for Delay.** If at any time Contractor is delayed in the performance of Contractor's responsibilities under the Contract Documents as the result of a default or failure to perform in a timely manner by Owner or Owner's agents or employees, Contractor shall not be entitled to any damages except for compensation specifically authorized in Article III. Contractor's sole remedy will be a right to extend the time for performance. Nothing herein shall preclude Contractor from any available remedy against any responsible party other than Owner. Contractor shall be responsible for liquidated damages for delay pursuant to Section 3 of the Agreement.

**8.4 Permitted Claims Procedure.** Where authorized or permitted under the Contract Documents, all claims for additional compensation by Contractor, extensions of time affecting the Substantial Completion Date, for payment by the Owner of costs, damages or losses due to casualty, Force Majeure, Project Site conditions or otherwise, shall be governed by the following:

- (1) All claims must be submitted as a request for Change Order in the manner as provided in Article V.
- (2) The Contractor must submit a notice of claim to Owner's Project Representative and to the Architect/Engineer within fifteen (15) days of when the Contractor was or should have been aware of the fact that an occurrence was likely to cause delay or increased costs. Failure to submit a claim within the requisite 15-day period shall constitute a waiver of the right to pursue said claim.
- (3) Within twenty (20) days of submitting its notice of claim, the Contractor shall submit to the Owner's Project Representative its request for Change Order, which shall include a written statement of all details of the claim, including a description of the Work affected.

- (4) After receipt of a request for Change Order, the Owner's Project Representative, in consultation with the Architect/Engineer, shall deliver to the Contractor, within twenty (20) days after receipt of request, its written response to the claim.
- (5) In the event the Owner and Contractor are unable to agree on the terms of a Change Order, the Owner shall have the option to instruct the Contractor to proceed with the Work. In that event, the Owner shall agree to pay for those parts of the Work, the scope and price of which are not in dispute. The balance of the disputed items in the order to proceed will be resolved after completion of the Work, based upon completed actual cost.
- (6) The rendering of a decision by Owner with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment) will be a condition precedent to any exercise by Owner or Contractor of such right or remedies as either may otherwise have under the Contract Documents or by laws or regulations in respect of any such claim, dispute or other matter.

**8.5 Contract Claims and Disputes.** After completion of the process set forth in Section 8.4 above, any unresolved dispute under this Agreement shall be decided by the Purchasing Official in accordance with Section 2-26-63 of the Manatee County Code of Laws, subject to an administrative hearing process as provided in Section 2-26-64. The decision of the Board of County Commissioners in accordance with Section 2-26-64 of the Manatee County Code of Laws shall be the final and conclusive County decision subject to exclusive judicial review in circuit court by a petition for certiorari.

**8.6 Claims for Consequential Damages.** The Contractor and Owner waive claims against each other for consequential damages arising out of or relating to this Agreement. This mutual waiver includes:

- (1) damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- (2) damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article XIV. Nothing contained in this Section 8.6 shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

## **ARTICLE IX INDEMNITY**

### **9.1 Indemnity.**

A. Indemnification Generally. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect/Engineer, Architect/Engineer's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor or anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 9.1.

B. Claims by Employees. In claims against any person or entity indemnified under this Section 9.1 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 9.1.A. shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

**9.2 Duty to Defend.** The Contractor shall defend the Owner in any action, lawsuit mediation or arbitration arising from the alleged negligence, recklessness or intentionally wrongful conduct of the Contractor and other persons employed or utilized by the Contractor in the performance of the Work. So long as Contractor, through its own counsel, performs its obligation to defend the Owner pursuant to this Section, Contractor shall not be required to pay the Owner's costs associated with the Owner's participation in the defense.

## **ARTICLE X ACCOUNTING RECORDS; OWNERSHIP OF DOCUMENTS**

**10.1 Accounting Records.** Records of expenses pertaining to all services performed shall be kept in accordance with generally accepted accounting principles and procedures.

**10.2 Inspection and Audit.** The Contractor's records shall be open to inspection and subject to examination, audit, and/or reproduction during normal working hours by the Owner's agent or authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments or claims submitted by the Contractor or any of its payees during the performance of the Work. These records shall include, but not be limited to, accounting records, written policies and procedures, Subcontractor files (including proposals of successful and unsuccessful bidders), original estimates, estimating worksheets, correspondence, Change Order files (including documentation covering negotiated settlements), and any other supporting evidence necessary to substantiate charges related to the Contract Documents. They shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs (including overhead allocations) as they may apply to costs associated with the Contract Documents. For the purpose of such audits, inspections, examinations and evaluations, the Owner's agent or authorized representative shall have access to said records from the effective date of the Contract Documents, for the duration of Work, and until three (3) years after the date of final payment by the Owner to the Contractor pursuant to the Contract Documents.

**10.3 Access.** The Owner's agent or authorized representative shall have access to the Contractor's facilities and all necessary records in order to conduct audits in compliance with this Article. The Owner's agent or authorized representative shall give the Contractor reasonable advance notice of intended inspections, examinations, and/or audits.

**10.4 Ownership of Documents.** Upon completion or termination of the Contract Documents, all records, documents, tracings, plans, specifications, maps, evaluations, reports, transcripts and other technical data, other than working papers, prepared or developed by the Contractor under the Contract Documents shall be delivered to and become the property of the Owner. The Contractor at its own expense may retain copies for its files and internal use.

## ARTICLE XI PUBLIC CONTRACT LAWS

### 11.1 Equal Opportunity Employment.

A. Employment. The Contractor shall not discriminate against any employee or applicant for employment because of race, creed, sex, color, national origin, disability or age, and will take affirmative action to insure that all employees and applicants are afforded equal employment opportunities without discrimination because of race, creed, sex, color, national origin, disability or age. Such action will be taken with reference to, but shall not be limited to, recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of training or retraining, including apprenticeship and on-the-job training.

B. Participation. No person shall, on the grounds of race, creed, sex, color, national origin, disability or age, be excluded from participation in, be denied the proceeds of, or be subject to discrimination in the performance of the Agreement.

**11.2 Immigration Reform and Control Act of 1986.** Contractor acknowledges that it is responsible for complying with the provisions of the Immigration Reform and Control Act of 1986, located at 8 U.S.C. Section 1324, et seq., and regulations relating thereto. Failure to comply with the above statutory provisions shall be considered a material breach and shall be grounds for immediate termination of this Agreement.

**11.3 No Conflict of Interest.** The Contractor warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Contractor to solicit or secure this Agreement, and that it has not paid or agreed to pay any person, company, corporation, individual, or firm other than a bona fide employee working solely for the Contractor, any fee, commission, percentage, gift or any other consideration, contingent upon or resulting from the award or making of this Agreement.

A. No Interest in Business Activity. By accepting award of this Agreement, the Contractor, which shall include its directors, officers and employees, represents that it presently has no interest in and shall acquire no interest in any business or activity which would conflict in any manner with the performance of services required hereunder, including without limitation as described in the Contractor's own professional ethical requirements. An interest in a business or activity which shall be deemed a conflict includes but is not limited to direct financial interest in any of the material and equipment manufacturers, suppliers, distributors, or contractors who will be eligible to supply material and equipment for the Project for which the Contractor is furnishing its services required hereunder.

B. No Appearance of Conflict. The Contractor shall not knowingly engage in any contractual or professional obligations that create an appearance of a conflict of interest with respect to the services provided pursuant to the Contract Documents. The Contractor has provided the Affidavit of No Conflict, incorporated into the Contract Documents as Exhibit "C", as a material inducement for Owner entering into the Contract Documents. If, in the sole discretion of the County Administrator or designee, a conflict of interest is deemed to exist or arise during the term of this Agreement, the County Administrator or designee may cancel this Agreement, effective upon the date so stated in a written notice of cancellation, without penalty to the Owner.

**11.4 Truth in Negotiations.** By execution of the Contract Documents, the Contractor certifies to truth-in-negotiations and that wage rates and other factual unit costs supporting the compensation are accurate, complete and current at the time of contracting. Further, the original Contract Sum and any additions thereto shall be adjusted to exclude any significant sums where the Owner determines the Contract Sum was increased due to inaccurate, incomplete or non-current wage rates and other factual unit costs. Such adjustments must be made within one (1) year after final payment to the Contractor.

**11.5 Public Entity Crimes.** The Contractor is directed to the Florida Public Entity Crimes Act, Section 287.133, Florida Statutes, specifically section 2(a), and the Owner's requirement that the Contractor comply with it in all respects prior to and during the term of the Agreement.

**ARTICLE XII**  
**FORCE MAJEURE, FIRE OR OTHER CASUALTY**

**12.1 Force Majeure.**

A. Unavoidable Delays. Delays in any performance by any party contemplated or required hereunder due to fire, flood, sinkhole, earthquake or hurricane, acts of God, unavailability of materials, equipment or fuel, war, declaration of hostilities, revolt, civil strife, altercation or commotion, strike, labor dispute, or epidemic, archaeological excavation, lack of or failure of transportation facilities, or any law, order, proclamation, regulation, or ordinance of any government or any subdivision thereof, or for any other similar cause to those enumerated, beyond the reasonable control and which with due diligence could not have been reasonably anticipated, shall be deemed to be events of Force Majeure and any such delays shall be excused. In the event such party is delayed in the performance of any Work or obligation pursuant to the Contract Documents for any of the events of Force Majeure stated in this Section 12.1, the date for performance required or contemplated by the Contract Documents shall be extended by the number of calendar days such party is actually delayed

B. Concurrent Contractor Delays. If a delay is caused for any reason provided in 12.1.A. or as a result of an extension of time provided by Change Order, and during the same time period a delay is caused by Contractor, the date for performance shall be extended as provided in 12.1.A. but only to the extent the time is or was concurrent.

C. Notice; Mitigation. The party seeking excuse for nonperformance on the basis of Force Majeure shall give written notice to the Owner, if with respect to the Contractor, or to the Contractor if with respect to the Owner, specifying its actual or anticipated duration. Each party seeking excuse from nonperformance on the basis of Force Majeure shall use its best efforts to rectify any condition causing a delay and will cooperate with the other party, except that neither party shall be obligated to incur any unreasonable additional costs and expenses to overcome any loss of time that has resulted.

**12.2 Casualty; Actions by Owner and Contractor.** During the construction period, if the Project or any part thereof shall have been damaged or destroyed, in whole or in part, the Contractor shall promptly make proof of loss; and Owner and Contractor shall proceed promptly to collect, or cause to be collected, all valid claims which may have arisen against insurers or others based upon such damage or destruction. The Contractor shall diligently assess the damages or destruction and shall prepare an estimate of the cost, expenses, and other charges, including normal and ordinary compensation to the Contractor, necessary for reconstruction of the Project substantially in accordance with the Project Plans and Specifications. Within fifteen (15) days following satisfaction of the express conditions described in subsections (1), (2) and (3) below, the Contractor covenants and agrees diligently to commence reconstruction and to complete the reconstruction or repair of any loss or damage by fire or other casualty to the Project to substantially the same size, floor area, cubic content, and general appearance as prior to such loss or damage:

- (1) Receipt by the Owner or the trustee of the proceeds derived from collection of all valid claims against insurers or others based upon such

damage or destruction, and receipt of other sums from any source such that the funds necessary to pay the Project Cost and any additions to the Project Cost necessitated for repair or reconstruction are available;

- (2) Written agreement executed by the Contractor and the Owner, by amendment to the Contract Documents or otherwise, authorizing and approving the repair or reconstruction and any additions to the Project Cost necessitated thereby, including any required adjustment to the Contract Sum; and
- (3) Final approval by the Owner of the Project Plans and Specifications for such repair or reconstruction and issuance of any required building permit.

**12.3 Approval of Plans and Specifications.** The Owner agrees to approve the plans and specifications for such reconstruction or repair if the reconstruction or repair contemplated by such plans and specifications is economically feasible, and will restore the Project, or the damaged portion thereof, to substantially the same condition as prior to such loss or damage, and such plans and specifications conform to the applicable laws, ordinances, codes, and regulations. The Owner agrees that all proceeds of any applicable insurance or other proceeds received by the Owner or the Contractor as a result of such loss or damage shall be used for payment of the costs, expenses, and other charges of the reconstruction or repair of the Project.

**12.4 Notice of Loss or Damage.** The Contractor shall promptly give the Owner written notice of any significant damage or destruction to the Project, defined as loss or damage which it is contemplated by Contractor will increase the Contract Sum or extend the Substantial Completion Date, stating the date on which such damage or destruction occurred, the then expectations of Contractor as to the effect of such damage or destruction on the use of the Project, and the then proposed schedule, if any, for repair or reconstruction of the Project. Loss or damage which the Contractor determines will not affect the Contract Sum or Substantial Completion Date will be reported to Owner and Architect/Engineer immediately, and associated corrective actions will be undertaken without delay.

### **ARTICLE XIII REPRESENTATIONS, WARRANTIES AND COVENANTS**

**13.1 Representations and Warranties of Contractor.** The Contractor represents and warrants to the Owner that each of the following statements is presently true and accurate:

A. The Contractor is a construction company, organized under the laws of the State of \_\_\_\_\_, authorized to transact business in the State of Florida, with \_\_\_\_\_ as the primary qualifying agent. Contractor has all requisite power and authority to carry on its business as now conducted, to own or hold its properties, and to enter into and perform its obligations hereunder and under each instrument to which it is or will be a party, and is in good standing in the State of Florida.

B. Each Contract Document to which the Contractor is or will be a party constitutes, or when entered into will constitute, a legal, valid, and binding obligation of the Contractor enforceable against the Contractor in accordance with the terms thereof, except as such enforceability may be limited by applicable bankruptcy, insolvency, or similar laws from time to time in effect which affect creditors' rights generally and subject to usual equitable principles in the event that equitable remedies are involved.

C. There are no pending or, to the knowledge of the Contractor, threatened actions or proceedings before any court or administrative agency, within or without the State of Florida, against the Contractor or any partner, officer, or agent of the Contractor which question the validity of any document contemplated hereunder, or which are likely in any case, or in the aggregate, to materially adversely affect the consummation of the transactions contemplated hereunder, or materially adversely affect the financial condition of the Contractor.

D. The Contractor has filed or caused to be filed all federal, state, local, or foreign tax returns, if any, which were required to be filed by the Contractor, and has paid, or caused to be paid, all taxes shown to be due and payable on such returns or on any assessments levied against the Contractor.

E. Neither Contractor nor any agent or person employed or retained by Contractor has acted fraudulently or in bad faith or in violation of any statute or law in the procurement of this Agreement.

F. The Contractor shall timely fulfill or cause to be fulfilled all of the terms and conditions expressed herein which are within the control of the Contractor or which are the responsibility of the Contractor to fulfill. The Contractor shall be solely responsible for the means and methods of construction.

G. It is recognized that neither the Architect/Engineer, the Contractor, nor the Owner has control over the cost of labor, materials, or equipment, over a Subcontractor's methods of determining bid prices, or over competitive bidding, market, or negotiating conditions.

H. During the term of the Contract Documents, and the period of time that the obligations of the Contractor under the Contract Documents shall be in effect, the Contractor shall cause to occur and to continue to be in effect those instruments, documents, certificates, and events contemplated by the Contract Documents that are applicable to, and the responsibility of, the Contractor.

I. The Contractor shall assist and cooperate with the Owner and shall accomplish the construction of the Project in accordance with the Contract Documents and the Project Plans and Specifications, and will not knowingly violate any laws, ordinances, rules, regulations, or orders that are or will be applicable thereto.

J. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective, and that Owner,

representatives of Owner, governmental agencies with jurisdictional interests will have access to the Work at reasonable time for their observation, inspecting and testing. Contractor shall give Architect/Engineer timely notice of readiness of the Work for all required approvals and shall assume full responsibility, including costs, in obtaining required tests, inspections, and approval certifications and/or acceptance, unless otherwise stated by Owner.

K. If any Work (including Work of others) that is to be inspected, tested, or approved is covered without written concurrence of Architect/Engineer, it must, if requested by Architect/Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Architect/Engineer timely notice of Contractor's intention to cover the same and Architect/Engineer has not acted with reasonable promptness in response to such notice. Neither observations by Architect/Engineer nor inspections, tests, or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

L. If the Work is defective, or Contractor fails to supply sufficient skilled workers, or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof and terminate payments to the Contractor until the cause for such order has been eliminated. Contractor shall bear all direct, indirect and consequential costs for satisfactory reconstruction or removal and replacement with non-defective Work, including, but not limited to fees and charges of Architect/Engineers, attorneys and other professionals and any additional expenses experienced by Owner due to delays to other Contractors performing additional Work and an appropriate deductive change order shall be issued. Contractor shall further bear the responsibility for maintaining the schedule and shall not be entitled to an extension of the Contract Time or the recovery of delay damages due to correcting or removing defective Work.

M. If Contractor fails within seven (7) days after written notice to correct defective Work, or fails to perform the Work in accordance with the Contract Documents, or fails to comply with any other provision of the Contract Documents, Owner may correct and remedy any such deficiency to the extent necessary to complete corrective and remedial action. Owner may exclude Contractor from all or part of the site, take possession of all or part of the Work, Contractor's tools, construction equipment and machinery at the site or for which Owner has paid Contractor but which are stored elsewhere. All direct and indirect costs of Owner in exercising such rights and remedies will be charged against Contractor in an amount approved as to reasonableness by Architect/Engineer and a Change Order will be issued incorporating the necessary revisions.

N. If within three (3) years after the Substantial Completion Date or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract Documents, any Work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective Work or if it has been rejected by Owner, remove it from the site and replace it with non-defective Work. If Contractor does not promptly comply with the terms of such instruction, Owner may have the defective Work corrected/removed and all direct, indirect and consequential costs of such removal and

replacement will be paid by Contractor. Failing payment by the Contractor and notwithstanding any other provisions of the Contract Documents to the contrary, Owner shall have the right to bring a direct action in the Circuit Court to recover such costs.

**13.2 Representations of the Owner.** To the extent permitted by law, the Owner represents to the Contractor that each of the following statements is presently true and accurate:

A. The Owner is a validly existing political subdivision of the State of Florida.

B. The Owner has all requisite corporate or governmental power and authority to carry on its business as now conducted and to perform its obligations under the Contract Documents and each Contract Document contemplated hereunder to which it is or will be a party.

C. The Contract Documents and each Contract Document contemplated hereby to which the Owner is or will be a party has been duly authorized by all necessary action on the part of, and has been or will be duly executed and delivered by, the Owner, and neither the execution and delivery thereof nor compliance with the terms and provisions thereof or hereof: (a) requires the approval and consent of any other person or party, except such as have been duly obtained or as are specifically noted herein; (b) contravenes any existing law, judgment, governmental rule, regulation or order applicable to or binding on the Owner; or (c) contravenes or results in any breach of, default under, or result in the creation of any lien or encumbrance upon the Owner under any indenture, mortgage, deed of trust, bank loan, or credit agreement, the charter, ordinances, resolutions, or any other agreement or instrument to which the Owner is a party, specifically including any covenants of any bonds, notes, or other forms of indebtedness of the Owner outstanding on the date of the Contract Documents.

D. The Contract Documents and each document contemplated hereby to which the Owner is or will be a party constitutes, or when entered into will constitute, a legal, valid, and binding obligation of the Owner enforceable against the Owner in accordance with the terms thereof, except as such enforceability may be limited by applicable bankruptcy, insolvency, or similar laws from time to time in effect which affect creditors' rights generally, and subject to usual equitable principles in the event that equitable remedies are involved.

E. There are no pending or, to the knowledge of the Owner, threatened actions or proceedings before any court or administrative agency against the Owner which question the validity of the Contract Documents or any document contemplated hereunder, or which are likely in any case or in the aggregate to materially adversely affect the consummation of the transactions contemplated hereunder or the financial or corporate condition of the Owner.

F. The Owner shall use due diligence to timely fulfill or cause to be fulfilled all of the conditions expressed in the Contract Documents which are within the control of the Owner or which are the responsibility of the Owner to fulfill.

G. During the pendency of the Work and while the obligations of the Owner under the Contract Documents shall be in effect, the Owner shall cause to occur and to continue

to be in effect and take such action as may be necessary to enforce those instruments, documents, certificates and events contemplated by the Contract Documents that are applicable to and the responsibility of the Owner.

H. The Owner shall assist and cooperate with the Contractor in accomplishing the construction of the Project in accordance with the Contract Documents and the Project Plans and Specifications, and will not knowingly violate any laws, ordinances, rules, regulations, orders, contracts, or agreements that are or will be applicable thereto or, to the extent permitted by law, enact or adopt any resolution, rule, regulation, or order, or approve or enter into any contract or agreement, including issuing any bonds, notes, or other forms of indebtedness, that will result in the Contract Documents or any part thereof, or any other instrument contemplated by and material to the timely and effective performance of a party's obligations hereunder, to be in violation thereof.

#### **ARTICLE XIV TERMINATION AND SUSPENSION**

**14.1 Termination for Cause by Owner.** This Agreement may be terminated by Owner upon written notice to the Contractor should Contractor fail substantially to perform a material obligation in accordance with the terms of the Contract Documents through no fault of the Owner. In the event Owner terminates for cause and it is later determined by a court of competent jurisdiction that such termination for cause was not justified, then in such event such termination for cause shall automatically be converted to a termination without cause pursuant to Section 14.2.

A. Nonperformance. If the Contractor fails to timely perform any of his obligations under the Contract Documents, including any obligation the Contractor assumes to perform Work with his own forces, or if it persistently or repeatedly refuses or fails, except in case for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or fails, without being excused, to maintain an established schedule (failure to maintain schedule shall be defined as any activity that falls thirty (30) days or more behind schedule) which has been adopted by the Construction Team, or it fails to make prompt payment to Subcontractors for materials or labor, or disregards laws, rules, ordinances, regulations, or orders of any public authority having jurisdiction, or otherwise is guilty of substantial violations of the Agreement the Owner may, after seven (7) days written notice, during which period the Contractor fails to perform such obligation, make good such deficiencies and perform such actions. The Contract Sum, or the actual Cost of the Project, whichever is less, shall be reduced by the cost to the Owner of making good such deficiencies, and the Contractor's compensation shall be reduced by an amount required to manage the making good of such deficiencies. Provided, however, nothing contained herein shall limit or preclude Owner from pursuing additional damages from Contractor as a result of its breach.

B. Insolvency. If the Contractor is adjudged bankrupt, or if it makes a general assignment for the benefit of its creditors, or if a receiver is appointed on account of its insolvency, then the Owner may, without prejudice to any other right or remedy, and after giving the Contractor and its surety, if any, fourteen (14) days written notice, and during which period

the Contractor fails to cure the violation, terminate the Agreement. In such case, the Contractor shall not be entitled to receive any further payment. Owner shall be entitled to recover all costs and damages arising as a result of failure of Contractor to perform as provided in the Contract Documents, as well as reasonable termination expenses, and costs and damages incurred by the Owner may be deducted from any payments left owing the Contractor.

C. Illegality. Owner may terminate the Agreement if Contractor disregards laws or regulations of any public body having jurisdiction.

D. Rights of Owner. The Owner may, after giving Contractor (and the Surety, if there is one) seven (7) days written notice, terminate the services of Contractor for cause; exclude Contractor from the Project Site and take possession of the Work and of all Contractor's tools, construction equipment and machinery at the Project Site and use the same to the full extent they could be used (without liability to Contractor for trespass or conversion); incorporate in the Work all materials and equipment stored at the Project Site or for which Owner has paid Contractor but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case, Contractor shall not be entitled to receive any further payment beyond an amount equal to the value of material and equipment not incorporated in the Work, but delivered and suitably stored, less the aggregate of payments previously made. If the direct and indirect costs of completing the Work exceed the unpaid balance of the Contract Sum, Contractor shall pay the difference to Owner. Such costs incurred by Owner shall be verified by Owner in writing; but in finishing the Work, Owner shall not be required to obtain the lowest quote for the Work performed. Contractor's obligations to pay the difference between such costs and such unpaid balance shall survive termination of the Agreement. In such event and notwithstanding any other provisions of the Contract Documents to the contrary, Owner shall be entitled to bring a direct action in the Circuit Court to recover such costs.

**14.2 Termination without Cause by Owner.** The Owner, through its County Administrator or designee, shall have the right to terminate the Agreement, in whole or in part, without cause upon sixty (60) calendar days' written notice to the Contractor. In the event of such termination for convenience, the Owner shall compensate Contractor for payments due through the date of termination, and one subsequent payment to cover costs of Work performed through the date of termination, subject to the terms and conditions of Section 3.1. The Contractor shall not be entitled to any other further recovery against the Owner, including, but not limited to, anticipated fees or profit on Work not required to be performed, or consequential damages or costs resulting from such termination.

A. Release of Contractor. As a condition of Owner's termination rights provided for in this subsection, Contractor shall be released and discharged from all obligations arising by, through, or under the terms of the Contract Documents, and the Payment and Performance Bond shall be released. Owner shall assume and become responsible for the reasonable value of Work performed by Subcontractors prior to termination plus reasonable direct close-out costs, but in no event shall Subcontractors be entitled to unabsorbed overhead, anticipatory profits, or damages for early termination.

B. Waiver of Protest. Contractor hereby waives any right to protest the exercise by Owner of its rights under this Section that may apply under the Procurement Ordinance.

**14.3 Suspension without Cause.** Owner may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety (90) days by written notice to Contractor, which will fix the date on which Work will be resumed. Contractor shall be allowed an increase in the Contract Sum or an extension of the Contract Time, or both, directly attributable to any suspension if Contractor makes an approved claim therefor.

**14.4 Termination Based Upon Abandonment, Casualty or Force Majeure.** If, after the construction commencement date (i) Contractor abandons the Project (which for purposes of this paragraph shall mean the cessation of all construction and other activities relating to the Project, excluding those which are necessary to wind down or otherwise terminate all outstanding obligations with respect to the Project, and no recommencement of same within one hundred twenty (120) days following the date of cessation), or (ii) the Project is stopped for a period of thirty (30) consecutive days due to an instance of Force Majeure or the result of a casualty resulting in a loss that cannot be corrected or restored within one hundred twenty (120) days (excluding the time required to assess the damage and complete the steps contemplated under Section 12.2), the Owner shall have the right to terminate the Agreement and pay the Contractor its compensation earned or accrued to date.

**14.5 Vacation of Project Site; Delivery of Documents.** Upon termination by Owner pursuant to Section 14.2 or 14.4, Contractor shall withdraw its employees and its equipment, if any, from the Project Site on the effective date of the termination as specified in the notice of termination (which effective date shall not be less than two (2) working days after the date of delivery of the notice), regardless of any claim the Contractor may or may not have against the Owner. Upon termination, the Contractor shall deliver to the Owner all original papers, records, documents, drawings, models and other material set forth and described in the Contract Documents.

**14.6 Termination by the Contractor.** If, through no act or fault of Contractor, the Work is suspended for a period of more than ninety (90) consecutive days by Owner or under an order of court or other public authority, or Owner fails to act on any Application for Payment or fails to pay Contractor any sum finally determined to be due; then Contractor may, upon fourteen (14) days written notice to Owner terminate the Agreement and recover from Owner payment for all Work executed, any expense sustained plus reasonable termination expenses. In lieu of terminating the Agreement, if Owner has failed to act on any Application for Payment or Owner has failed to make any payment as aforesaid, Contractor may upon fourteen (14) days written notice to Owner stop the Work until payment of all amounts then due.

Exhibit A  
Title(s) of Drawings

Chiller and Exhaust Fan Replacement  
4751 65<sup>th</sup> Street West  
Bradenton, FL 334210

**COVER PAGE**

**MECHANICAL**

CH-M0.1 – Mechanical Specifications  
CH-M1.1 – Mechanical Plan: Demolition  
CH-M1.2 - Mechanical Plan  
CH-M2.1 – Mechanical Piping Flow Diagram  
CH-M3.1 – Mechanical Schedules  
CH-M3.2 – Mechanical Details  
EF-M1.0 - Mechanical Renovation Plan  
EF-M2.0 – Mechanical Schedules and Details

**ELECTRICAL**

CH-E0.0 – Electrical Legend, Notes and Specs  
CH-E1.0 – Electrical Demolition Plan  
CH-E2.0 – Electrical Renovation Plan  
CH-E3.0 – Electrical Riser and Schedules  
EF-E0.0 – Electrical Legend, Notes and Specs  
EF-E1.0 – Electrical Demolition and Renovation Plan  
EF-E2.0 – Electrical Riser and Schedules

(16 total pages: Issue Date: July 24, 2017)

Exhibit B  
Title(s) of Specifications

Chiller and Fan Replacement  
Water Treatment Lab  
65<sup>th</sup> Street West  
Bradenton, FL

**MASTER MECHANICAL SPECIFICATION**

**DIVISION 15 – Index 10**

- 15010 Basic Mechanical Requirements
- 15140 Supports and Anchors
- 15170 Motors
- 15190 Mechanical Identification
- 15242 Vibration Isolation
- 15260 Piping Insulation
- 15280 Equipment Insulation
- 15400 Testing of Piping Systems
- 15510 Hydronic Piping
- 15515 Hydronic Specialties
- 15540 HVAC Pumps
- 15545 Chemical (Water Treatment)
- 15682 Air Cooled Packages Water Chiller (Rotary Screw Type)
- 15875 Power Roof Ventilators
- 15990 Testing, Adjusting, and Balancing

(98 total pages)

**ELECTRICAL SPECIFICATIONS**

**DIVISION 16**

- 16010 Basic Electrical Requirements
- 16060 Electrical Demolition for Remodeling
- 16111 Conduit
- 16120 Building Wire and Cable
- 16130 Boxes
- 16190 Supporting Devices
- 16440 Disconnect Switches

(30 total pages)

**EXHIBIT "C"**  
**AFFIDAVIT OF NO CONFLICT**

COUNTY OF \_\_\_\_\_,

STATE OF \_\_\_\_\_,

BEFORE ME, the undersigned authority, this day personally appeared,  
\_\_\_\_\_, a principal with full authority to bind  
\_\_\_\_\_ hereinafter the "Lessee"), who  
being first duly sworn, deposes and says:

(a) is not currently engaged or will not become engaged in any obligations, undertakings or contracts that will require the Lessee to maintain an adversarial role against the County or that will impair or influence the advice, recommendations or quality of work provided to the County; and

(b) has provided full disclosure of all potentially conflicting contractual relationships and full disclosure of contractual relationships deemed to raise a question of conflict(s); and

(c) has provided full disclosure of prior work history and qualifications that may be deemed to raise possible question of conflict(s).

Affiant makes this affidavit for the purpose of inducing Manatee County, a political subdivision of the State of Florida, to enter into this Agreement for

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

SUBSCRIBED to and sworn before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

[Notary Seal]

Notary Public

My commission expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Personally Known \_\_\_\_\_ or Produced Identification \_\_\_\_\_  
Type of Identification Produced \_\_\_\_\_

Exhibit D  
Contractor's Certificate(s) of Insurance

Exhibit E  
Contractor's Payment and Performance Bond

<b>APPLICATION FOR PAYMENT</b>		Request No.: _____	Project No.: _____
Project: _____		Purchase Order No.: _____	
From: _____	To: _____	County Bid No.: _____	
		Consultant: _____	

CONTRACT PAYMENT SUMMARY					
Original Contract Amount:				\$	-
Change Order(s):				\$	-
Change order summary:					
Number	Date Approved	Additive	Deductive		
<b>SUBTOTALS:</b>				\$	-
Net change order subtotal (Additive less Deductive):				\$	-
Current Contract Amount (CCA): (Original Amount + Change Order(s))				\$	-
		Previous Status	Total WIP		
Value of the Work in Place (WIP)		\$	\$		
Value of Stored Materials		\$	\$		
Total Earned (\$ and % of CCA)		\$	\$		
Retainage (\$ and % of CCA)		\$	\$		
Net Earned (Total earned minus retainage)				\$	-
<b>TOTAL PREVIOUS PAYMENTS</b>				\$	-
<b>AMOUNT DUE THIS PAYMENT</b> (Net Earned minus Previous Payments)				\$	-

CONTRACTOR'S AFFIDAVIT OF NOTICE	
<p><b>CERTIFICATE:</b> The undersigned CONTRACTOR certifies that all items and amounts shown on this Application for Payment are on account of work performed, materials supplied and/or materials stored on site and paid for by Contractor in accordance with the Contract Documents with due consideration for previous Payment(s), if any, received by the Contractor from the County, and that the Amount Due this Payment shown is now due.</p>	
<p><b>NOTARY:</b></p> <p>State of Florida, County of _____</p> <p>Sworn to (or affirmed) and subscribed before me this _____ day of _____ by _____</p> <p style="text-align: center;">(Name of person giving notice)</p> <p>_____ (Signature of Notary Public - State of Florida) Print, Type or Stamp Commissioned Name of Notary Public:</p> <p>Personally Known _____ or Produced Identification _____ Type of Identification Produced: _____</p>	<p><b>CONTRACTOR:</b></p> <p>Name of person authorized to sign Affidavit of Notice _____</p> <p style="text-align: center;">TITLE _____</p> <p>Contractor name, address and telephone no.: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>

VERIFICATION, RECOMMENDATION, CONCURRENCES AND APPROVALS		
	(Signatures)	(Date)
Quantities verified by:	_____	_____
Consultant/Engineer:	_____	_____
Project Management:	_____	_____
Department Head:	_____	_____
Payment approved by the Board of County Commissioners:	_____	_____
Attested to by the Clerk of Circuit Court:	_____	_____

**PAY APPLICATION SCHEDULE (CONTINUATION SHEET)**

PAGE \_\_\_\_ OF \_\_\_\_ PAGES |

KEY: COLS. A THROUGH F ARE FROM ORIGINAL BID

COL. G IS THE CHANGE ORDER NUMBER

WIP = WORK IN PLACE

COL "Q" = 100 x P / (P + J) - MAY NOT EXCEED 100%

ITEM NO.	DESCRIPTION OF WORK	UNIT	UNIT PRICE	QTY	VALUE	CHANGE ORDERS				PREVIOUS WIP		CURRENT WIP		TOTAL WIP.	%		
						#	QTY	+/-	+/- VAL	QTY	VALUE	QTY	VALUE	QTY		VALUE	
																	G
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	
					\$	-					\$	-			\$	-	# DIV/OI

ATTACH STORED-MATERIAL SCHEDULE

# CONTRACT CHANGE ORDER

(for Total Contract Adjusted Amount Greater than \$1,000,000)

PROJECT: \_\_\_\_\_

Change Order No.: \_\_\_\_\_

Contract Amount  
(Present Value)

Project Number: \_\_\_\_\_

NO. OF ITEM	DESCRIPTION OF ITEM AND CHANGE	DECREASE	INCREASE
	<p>BY EXECUTION OF THIS CHANGE ORDER THE CONTRACTOR AGREES THAT ALL CLAIMS FOR ADDITIONAL CONTRACT TIME AND FEES FOR THE ITEMS IN THIS CHANGE ORDER HAVE BEEN SATISFIED.</p>		

**TOTAL DECREASE:**

**TOTAL INCREASE:**

Contractor: \_\_\_\_\_

Address: \_\_\_\_\_

City / State: \_\_\_\_\_

Contractor

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

THE NET CHANGE OF  
ADJUSTS THE CURRENT CONTRACT AMOUNT FROM  
\_\_\_\_\_ TO  
\_\_\_\_\_ CALENDAR DAYS ARE ADDED TO THE SCHEDULE  
WHICH CHANGES THE FINAL COMPLETION DATE TO  
MONTH DAY, YEAR

### RECOMMENDATION, CONCURRENCES AND APPROVALS

**SIGNATURES**

**DATE**

Consultant / Engineer: \_\_\_\_\_

Project Manager: \_\_\_\_\_

Division Manager: \_\_\_\_\_

Jeff Streitmatter III, P.E., Project Management Division Manager

Manatee County Purchasing: \_\_\_\_\_

Melissa M. Wendel, CPPO, Purchasing Official

Authority to execute this contract per Manatee County Code, Chapter 2-26,  
and per the delegation by the County Administrator effective 1/28/2009

**JUSTIFICATION FOR CHANGE**

**Change Order No :**

**Project Number:**

**1. NECESSITY FOR CHANGE:**



2. Is change an alternate bid? (If yes, explain)

3. Does change substantially alter the physical size of the project? (If yes, explain)

4 Effect of this change on other "Prime" contractors?

5 Has the Surety and insurance company been notified, if applicable? **CONTRACTOR RESPONSIBILITY**

# ADMINISTRATIVE CONTRACT ADJUSTMENT

Project Name: \_\_\_\_\_

Contract Adjustment No.: \_\_\_\_\_

Contract Amount: \_\_\_\_\_

Project Number: \_\_\_\_\_

ITEM	DESCRIPTION OF ITEM AND CHANGE	DECREASE	INCREASE
	BY EXECUTION OF THIS ADMINISTRATIVE CONTRACT ADJUSTMENT, THE CONTRACTOR AGREES THAT ALL CLAIMS FOR ADDITIONAL CONTRACT TIME AND FEES FOR THE ITEMS IN THIS ADMINISTRATIVE CONTRACT ADJUSTMENT HAVE BEEN SATISFIED.		

<b>TOTAL DECREASE:</b>	<b>TOTAL INCREASE:</b>
------------------------	------------------------

Contractor: _____ Address: _____ City/State: _____ Contractor Signature: _____ Date: _____	THE NET CHANGE OF ADJUSTS THE CURRENT CONTRACT AMOUNT FROM TO  CALENDAR DAYS ARE ADDED TO THE SCHEDULE WHICH CHANGES THE FINAL COMPLETION DATE FROM
---	---

### RECOMMENDATION, CONCURRENCES AND APPROVALS

	SIGNATURES	DATE
Consultant / Engineer:	_____	_____
Project Manager:	_____	_____
Division Manager:	_____	_____
Department Director / Deputy Director:	Jeff Streitmatter III, P.E., Project Management Division Manager _____ Sia Mollanazar, P.E., Deputy Director, Engineering Services _____	_____

**JUSTIFICATION FOR CHANGE**

**Contract Adjustment No.:** \_\_\_\_\_

**Project Number:** \_\_\_\_\_

1. Necessity for Change:

2. Does this change alter the scope of work?  
(If yes, explain)

3. Effect of this change on other "Prime" contractors.

4. It is the contractor's responsibility to notify the bonding agency.



**FINAL RECONCILIATION, WARRANTY PERIOD DECLARATION  
AND CONTRACTOR'S AFFIDAVIT**

Project Title: \_\_\_\_\_

Date Submitted: \_\_\_\_\_

Contractor Data:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Project No: \_\_\_\_\_

Warranty (months): \_\_\_\_\_

This Final Reconciliation is for the work performed for Manatee County by the above named contractor, hereinafter called CONTRACTOR, pursuant to the contract dated \_\_\_\_\_ as amended, and acts as an addendum thereto.

It is agreed that all quantities and prices in the attached Final Pay Estimate No. \_\_\_\_\_ are correct and that the amount of \$ \_\_\_\_\_ including retainage is due to the CONTRACTOR, that no claims are outstanding as between the parties, and that the above stated sum represents the entirety of monies owed the CONTRACTOR.

It is further agreed that the warranty period for CONTRACTOR'S work pursuant to the Contract is from \_\_\_\_\_ to \_\_\_\_\_

As (title) \_\_\_\_\_ for CONTRACTOR, I have authority to bind said CONTRACTOR, and as such make this final reconciliation, declaration and affidavit for the purpose of inducing Manatee County to make final payment to CONTRACTOR for work done at/upon \_\_\_\_\_ under said contract:

CONTRACTOR has paid all social security and withholding taxes accrued in connection with the construction project.

CONTRACTOR has paid all workers' compensation and other insurance premiums incurred in connection with this construction project.

CONTRACTOR has paid for all required permits in connection with this construction project.

All laborers, material, men, suppliers, subcontractors and service professionals who worked for and/or supplied materials, equipment and/or services to the CONTRACTOR under this construction contract have been paid in full.

\_\_\_\_\_  
(Affiant Signature)

NOTARY:

State of Florida, County of \_\_\_\_\_, Sworn to (or affirmed) and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ ( person giving notice ).

Signature of Notary Public - State of Florida: \_\_\_\_\_

Print, Type or Stamp Commissioned Name of Notary Public: \_\_\_\_\_

Personally Known  or Produced Identification

Type of Identification Produced \_\_\_\_\_

**Exhibit F**  
**Standard Forms**

1. **Application for Payment**
2. **Contract Change Order**
3. **Administrative Contract Adjustment (ACA)**
4. **Certificate of Substantial Completion**
5. **Final Reconciliation Warranty Period  
Declaration and Contractor's Affidavit**
6. **Public Construction Bond**

**MANATEE COUNTY GOVERNMENT  
PUBLIC CONSTRUCTION BOND**

Bond No. \_\_\_\_\_  
(Enter bond number)

BY THIS BOND, We \_\_\_\_\_, located at \_\_\_\_\_, as  
(Name of Contractor) (Address)  
Principal and \_\_\_\_\_, a corporation, whose address is  
(Name of Surety)

are bound to Manatee County, a political subdivision of the State of Florida, herein called County, in the sum of \$ \_\_\_\_\_, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

WHEREAS, the Contractor has entered into Contract No. 17-2001OV with the County for the project titled Chiller and Exhaust Fan Replacement at the Water Treatment Lab, 4751 65<sup>th</sup> Street West, Bradenton, FL 34210, with conditions and provisions as are further described in the aforementioned Contract, which Contract is by reference made a part hereof for the purposes of explaining this bond.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs Contract No. 17-2001OV, between Principal and County for construction of

Chiller and Exhaust Fan Replacement at the Water Treatment Lab, 4751 65th Street West, Bradenton, FL 34210,

(Title of Project)

the Contract being made a part of this bond by reference, at the times and in the manner prescribed in the Contract; and

2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the Work provided for in the Contract; and

3. Pays County all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that County sustains because of a default by Principal under the Contract; and

4. Performs the guarantee of all Work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise it remains in full force.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.

Any changes in or under the Contract documents and compliance or noncompliance with any formalities connected with the Contract or the changes does not affect Surety's obligation under this bond.

DATED ON \_\_\_\_\_.

**CONTRACTOR AS PRINCIPAL**

**SURETY**

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name & Title

\_\_\_\_\_  
Print Name & Title

*(Corporate Seal)*

*(Corporate Seal)*

**AGENT or BROKER**

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Address

\_\_\_\_\_

\_\_\_\_\_  
Telephone

Licensed Florida Insurance Agent?  Yes  No

License #: \_\_\_\_\_

State of: \_\_\_\_\_

County of: \_\_\_\_\_

City of: \_\_\_\_\_