SYSTEM START UP AND COMMISSIONING

All units shall be started and any problems shall be troubleshooted until units perform satisfactorily and meet the capacity requirements outlined in the schedule.

All ductwork must be clean and free of debris at system start-up. Provide rough filters during system operation prior to Project Closeout. Change filters at Project Closeout with new.

All building HVAC systems shall be subject to Level 2 Commissioning.

A complete Test and Balance (T&B) of the subject systems shall be accomplished, including air side and water side balancing. All T&B work shall be done in accordance with published industry standards and procedures, and as referenced in AABC and NEBB guidelines.

BASIS OF ELECTRICAL DESIGN

This electrical design for this project will meet **LEED "certified" level (26 points)**, in accordance with LEED-NC (New Construction) rating system. Sustainable techniques and materials will be used to the greatest extent possible. Overall the design will consider integrated design solutions that provide the best value for the facility. Analysis shall be performed and submitted per Appendix G of ASHRAE 90.1

Lighting

The following codes and standards shall be applied to the lighting design of this project:

National Electrical Code (NEC)

ASHRAE Standard 90.1 - 2004 – Energy Efficient Buildings

Underwriters' Laboratories (UL)

Electrical Testing Laboratories (ETL)

American National Standard Institute (ANSI)

Illuminating Engineering Society (IES)

General electrical requirements (UFC-3-500-10N)

Interior electrical systems (UFC-3-520-01)

SSTD-8070-0081-ELEC

UFC 3-535-01 Navigation Lights

Lighting layouts and their corresponding maintained foot candle levels shall meet the recommended levels of the RFP set forth in the room requirements.

A complete lighting system will be provided consisting of exit and emergency lighting. Lighting will be accomplished with T-8 or compact fluorescent lamps with electronic ballasts rated less than 10% THD. All fixtures shall contain fast blow fuses, and RFI/EMI filters.

Automatic lighting shutoff will be supplied in accordance with ASHRAE 90.1 –2004.

A complete exterior lighting system will be provided. Exterior lighting shall be high pressure sodium and provide 0.5 foot-candles in parking lots and around the building perimeter. Light fixtures will be cutoff type and be either building mounted or pole

mounted. Pole mounted lights will be mounted min 30' A.G. Poles shall be aluminum with cutoff type shoebox fixtures mounted on concrete foundations. Lighting will be photocell and time clock controlled in accordance with RFP and SSC standards.

Computerized calculations with points on 10 foot centers will be provided for exterior lighting.

Motion activated occupancy sensors shall be provided in all occupied spaces with manual override. Ultrasonic activated occupancy sensors shall be provided in toilet rooms. Mechanical and electrical rooms shall have manual switching only, but will be connected to lighting control system for programmed shutdown.

The exit fixtures shall be green LED style fixtures.

Emergency lighting shall be provided via connection to emergency generator.

Navigation lights for the Helipad shall be provided in accordance with requirements for standard VFR arrangement. Additional lighting will be provided as determined during design phase regarding approach lighting and any additional navigation lighting.

Power

The following codes and standards shall be applied to the power distribution design of this project:

National Electrical Code (NEC)

Underwriters' Laboratories (UL)

Electrical Testing Laboratories (ETL)

American National Standard Institute (ANSI)

General electrical requirements (UFC-3-500-10N)

Interior electrical systems (UFC-3-520-01)

SSTD-8070-0081-ELEC

Primary power will be provided from the existing 13.8kV delta overhead distribution system. The secondary voltage shall be 480/277V. All underground medium voltage circuits will be #1/0 AWG, type MV-90, 133% insulation, EPR jacket, installed in concrete encased ductbank, 2-6" conduit.

A new pad mounted, loop feed, transformer with lightning arrestors will be provided in accordance with UFC3-500-10N. Estimated maximum size shall be 300KVA. It will be provided with a separate kilowatt demand meter per SSC standards.

An emergency generator, maximum size 300kW, shall be provided. Generator shall meet all requirements of the RFP, NFPA 100, and provided with outdoor enclosure, critical grade exhaust silencer, and a sub-base fuel tank sized for minimum full load run time of three days or greater. The generator shall provide back up to entire operations facility, including Boat maintenance and Boat storage spaces, via connection through a service entrance rated automatic transfer switch. Monitoring of generator and ATS shall be provided in Building 2603.

Duplex 20A receptacles will be provided per the RFP set forth in the room requirements.

Grounding of all electrical systems shall be in accordance with NFPA 70 and IEEE1100 and UFC 3-520-01. Single point grounding bus bar shall be provided at service entrance.

All device plates shall be stainless steel.

Fire Alarm System

The following codes and standards shall be applied to the design of the fire alarm system of this project:

National Electrical Code (NEC)

National Fire Alarm Code (NFPA 72)

Life Safety Code (NFPA 101)

Underwriters' Laboratories (UL)

Electrical Testing Laboratories (ETL)

American National Standard Institute (ANSI)

General fire protection requirements (UFC-3-600-10N)

A complete electrically supervised, addressable intelligent, manual and automatic, fire alarm system shall be provided in accordance with respective NFPA codes and the RFP. Compliance with the requirements for the fire protection system will be determined by a review of the design by a registered fire protection engineer.

The system shall consist of a fire alarm control panel, remote annunciator, manual stations, smoke detectors, duct detectors, A/V devices, radio transmitter, and electrical supervision of the sprinkler system. System shall also be compatible for future hardwire connection to Base monitoring system per RFP and SSC standards.

A mass notification system shall be provided in accordance with the RFP, including exterior coverage of Boat Storage and developed site. System shall meet all requirements of UFC 4-021-01.

SPECIAL SYSTEMS

The following codes and standards shall be applied to the special system design of this project:

National Electrical Code (NEC)

General electrical requirements (UFC-3-500-10N)

Interior electrical systems (UFC-3-520-01)

Electronic Industries Association Standards

Telecommunication Industries Association Standards

A telecommunications distribution system shall be provided, consisting of horizontal and backbone cabling, and interconnection to head end location in building 2606, in accordance with the RFP. System shall consist of site underground raceways as necessary for extension of existing distribution system and innerducts through existing conduits.

Separate horizontal cabling shall be provided for the NIPRNet and SIPRNet systems. NIPRNet horizontal cabling shall be CAT5E UTP, and SIPRNet horizontal cabling shall be CAT5E STP. Color coding of jacks and wiring will be provided per standard established at Building 2603.

CATV shall be provided in the Operations Facility, and connected to the base distribution system per the RFP. System shall be complete and operational, and include all underground distribution cabling to point of connection, and all inside wiring, amplifiers and taps as necessary.

Intercom/Public Address system shall be provided per the RFP, via telephone handsets and dedicated stations and speakers as required. System will interface with system in

Building 2603, with expansion module and associated hardware added to system in Building 2606.

An interior/exterior integrated electronic security system shall be provided, consisting of access control, intrusion detection, and CCTV. All requirements of the RFP shall be met, including interface to Building 2603.

A CCTV/security system conduit system shall be provided to cover areas stated in the RFP. Materials and installation of the equipment shall be by the government.

A public address system shall be provided in all common spaces and at outside activity areas. This system shall be interfaced with the mass notification system and the telephone system.

Lightning Protection

Lighting protection will be provided per the RFP for the Operations Facility, Boat Maintenance and Boat Storage Buildings. Installation shall be in accordance with LPI and UL, and receive the UL Master Label.

Wash Rack Facility

All electrical installations for the Wash Rack Facility shall be provided in accordance with the plans and specifications provided in the RFP.

Helipad Facility

Navigation lights for the Helipad shall be provided in accordance with requirements for standard VFR arrangement. Additional lighting will be provided as determined during design phase regarding approach lighting and any additional navigation lighting.

Service to the Helipad shall originate at the point of connection shown in the RFP, with underground 13.8kV distribution to the Helipad site. A new pad mounted, loop feed, transformer with lightning arrestors will be provided in accordance with UFC3-500-10N. Estimated maximum size shall be 30KVA. It will be provided with a separate kilowatt demand meter per SSC standards.

A static grounding system shall be provided per UFC 3-260-01.

APPROACH TO SUSTAINABLE DESIGN

The Broadmoor Design Team understands the expectation of all our clients that we provide a high level of sustainability and life-cycle savings throughout the owner's use of the structure. To that end, we will develop integrated design solutions that:

- Emphasize durability, ease of operation and simplicity of maintenance
- Safeguard against health and safety hazards
- Promote occupant comfort and productivity
- Conserve natural resources and reduce energy consumption
- Avoid adverse effect to the environment
- Consider the future modification of the structure by this owner or subsequent occupants.

The Broadmoor Construction Team likewise recognizes the importance of proper procedures and oversight of field activities in providing both immediate and the long term value to the owner. They will employ measures that:

- Address storm water management and pollution prevention during construction
- Limit disturbance of the site to the most practical extent possible
- Limit the impact of construction activities on neighbors and the environment
- Establish procedures for hazardous or regulated materials.
- Recognize recycling opportunities and assure proper solid waste disposal

Broadmoor also recognizes that our clients must also participate proactively in creating sustainable value as the project progresses by;

- Considering design and cost options that may add initial expense, but will return long term savings and life-cycle value
- Committing to operational policies that sustain or reinforce the value-added features that are built into the project (tobacco use, dust control, waste management)
- Assuring that their current and future personnel are properly trained in the operation and maintenance of the building systems.

We believe that our focus on goals such as these is essential in providing our clients the level of service that has made Broadmoor the leader in the local Design and Construction industry.

Achieving sufficient credits for Certification under the USGBC scoring process, requires commitment from all stakeholders – Design Team, Construction Team and Owner. Broadmoor's standard methodology in the delivery of Design/Build services is centered on interdisciplinary dialogue at all stages of the project development. This process of establishing joint goals and strategies to achieve them is also essential in delivering LEED Certification for the project.

We understand the requirements of the RFP in regards to LEED Certification:

- Preparation of a LEED 2.2 analysis indicating that the Administration Building portion of the project would qualify for at least the minimum points required to meet the LEED classification of "Certified" – 26 credits.
- Pre-register the project with the USGBC
- Submit LEED 2.2 checklist and supporting data to USGC FDDCCLANT for Self-Certification.
- Monitor implementation of LEED strategies during construction.

Stennis Space Center
Riverine Training Facility

Mechanical Design Basis

General:

This section describes the general Basis of Design for the Mechanical systems serving the Riverine and Combatant Craft Operations Facility at Stennis Space Center. The mechanical systems described herein include the plumbing and HVAC systems only. The intent of this description is to adequately and accurately describe the design intent, and prove compliance with the system requirements outlined in the contract.

The project intent is to meet or exceed LEED® Certified requirements. As such, certain design approaches, system configurations, and equipment selections have been tailored to increase operating efficiencies while minimizing operational costs and system complexities.

Mechanical HVAC

The building is served by a central chilled water plant designed specifically for the Riverine Facility. The primary component is a single high-efficiency air-cooled chiller with multiple compressors. The system is designed for 100% of the anticipated, calculated load, but includes multiple compressors to enhance redundancy within the refrigeration system. The final system design is predicated on the following conditions:

Outdoor Design Conditions

Cooling Season:	92°F DB / 82°F WB
Heating Season:	31°F DB

Indoor Design Conditions:

Conditioned Spaces ~

Cooling Season:	75°F DB / 50%RH
Heating Season:	68°F DB

Ventilated / Heated Spaces ~

Cooling Season:	95°F DB
Heating Season:	55°F DB

The system includes a variable primary pumping scheme, which allows the chilled water flow to modulate in response to real-time fluctuations in HVAC cooling load. This capability will significantly enhance the energy consumption characteristics of the facility while increasing the useful life of the pumping equipment. Due to the anticipated small system volume, a buffer tank is included to minimize hard starts / stops by the chiller equipment. The chilled water system includes chemical treatment for rust, corrosion, and scale inhibition.

Air-side system design incorporates the use of central station modular air handlers with variable speed fans (controlled by variable frequency drives). Fan speed is adjusted in real time to deliver only the amount of air required to adequately condition the subject spaces. The building is divided into several zones, predicated on common use, exposure, or specific environmental control

requirements. Each zone is served by a dedicated VAV (variable air volume) terminal unit with electric reheat. The Communications Room is served by a dedicated DX split system sized specifically for the internal load requirements of the space, including equipment, lights, personnel, etc.

Based on the calculated loads for each zone, the electric heat option provides greater system flexibility, reduced operating and maintenance costs, and increased reliability versus a centralized heating hot water boiler system. The heating load for the proposed building is minimal, and the building will require simultaneous heating and cooling throughout portions of the year. Conditions would be common where a natural gas boiler system (comprised of pumps, boilers, controls, etc.) would require operation to satisfy an extremely small heat or reheat load within a small zone or office. In order to eliminate these gross inefficiencies, electric heaters are integrated into the VAV boxes to provide heat (and reheat, where required) to each individual zone without the need for operation of a central heating plant.

The central control system monitors all applicable conditions within the building, and provides system control to automatically maintain appropriate temperature conditions within each zone. User-level interface (thermostats) provides a range of setpoint adjustment; the range is controlled by the master central system. Each central station AHU utilizes a CO2 sensor to implement a Demand Control Ventilation (DCV) strategy, which allows the reduction of outside air delivery during times when the building is sensed to be partially occupied. The Armory zone includes active humidity control in order to preserve the contents of the space during high ambient humidity conditions. The central system interfaces seamlessly with the existing Stennis Siemens® APOGEE® system.

The Boat Maintenance wing of the facility is served by heating and ventilation systems only. Such systems are comprised of electric resistance unit heaters and roof-mounted centrifugal exhaust fans, thermostatically controlled with user-level override.

The Boat Storage Building is served by heating and ventilation systems only. These systems include electric resistance unit heaters and roof-mounted centrifugal exhaust fans on automatic thermostatic controls.

Plumbing Systems

The plumbing systems consist of all necessary fixtures, valves, piping, connections, and trim to form complete and functioning systems. All fixtures are selected based on low-consumption performance characteristics that meet or exceed the LEED requirement for a minimum 20% reduction in water consumption. Water heating is accomplished by utilizing central electric water heaters which exceed the standby loss provisions of ASHRAE 90.1. A recirculating hot water return system is used to ensure prompt delivery of hot water at each fixture while minimizing energy consumption based on piping heat loss.

Fixtures are based on the following characteristics:

Water closets:
Low-Consumption flush valve vit china (Accessible where required)

Urinals:
Low-Consumption flush valve vit china (Accessible where required)

Wall-Mounted Lavatories:
White vit china with 4" centerset low-consumption faucet (Accessible where required).

Showers:
Pressure-balanced valves and trim, accessible personal handshower and support bars where required.

Service Sinks:
Floor-mounted cast terrazzo style mop sink with drop front, mop hanger, and bumper guard.

Kitchen / Break Room Sinks:
Self-rimming stainless steel sink with 8" centerset high arc gooseneck low-consumption faucet with wristblade handles.

Shower / Eyewash Stations:
Pedestal supported combination shower and eyewash per applicable safety standards, including tempered water supply.

Drinking Fountains:
Dual-height push-button wall-mounted water coolers for accessible applications, single station electric water coolers for non-ADA/UFAS applications.

All wall mounted fixtures are supported from the floor using adjustable floor-mounted fixture supports. Wall hangers are not used.

The incoming water service is protected using an approved reduced pressure principle (RPP) backflow preventer per AWWA guidelines. All connections between the potable supply and the mechanical HVAC water systems are through an approved RPP backflow preventer per AWWA.

All mechanical rooms have wall hydrants for cleaning operations. Wall hydrants are installed along the building exterior to permit access along every point of the perimeter with a 100' long hose.

Piping specifications are as follows:

> Underground Sanitary Waste: Schedule 40 PVC with solvent weld joints.
> Above Ground Waste and Vent: No-hub service weight cast iron pipe and fittings.
> Internal Roof Drainage: None Required.
> Compressed Air Systems (Non-Medical Use): Galvanized steel with screwed fittings OR Type L copper with soldered fittings.
> Domestic Water Supply: Type L copper with soldered fittings.
> Chilled Water Piping: Schedule 40 Steel (larger sizes) or Type L copper with soldered fittings. Connections between dissimilar metals shall be prohibited. Dielectric unions or flanges shall be used where applicable.

The Boat Maintenance Building is served by a continuous trench drain and area floor drains discharging into an oil-water separator prior to release to the sanitary sewer system.

In the Boat Maintenance wing of the main facility, the area is served by a rotary air compressor with refrigerated dryer, aftercooler, and filter. Piping is routed through the bay with a minimum of 4 drops, which include a filter pressure regulator and quick-disconnect for attachment of operator tools.

END OF MECHANICAL DESIGN BASIS SUMMARY

ELECTRICAL BASIS OF DESIGN

Design Standards

The following is a list of all design standards used in the design and decision making process:

UFC 3-500-10N	Electrical Engineering
UFC 3-501-03N	Electrical Engineering Preliminary Considerations
UFC 3-520-01	Interior Electrical Systems
UFC 3-530-01	Interior and Exterior Lighting and Controls
UFC 3-580-01	Telecommunications Building Cabling Systems Planning and Design
UFC 3-600-01	Fire Protection Engineering for Facilities
UFC 4-010-01	DoD Minimum Anti-Terrorism Standards for Buildings
UFC 4-021-01	Design and O&M: Mass Notification Systems

Power Distribution

The primary source for power to the facility shall be the existing overhead distribution lines on Lower Gainesville Road. The overhead distribution is 13.8 kV, 3-phase delta. This represents a change from the RFP, which has been approved by the Engineering Department at Stennis Space Center, and the Contracting Officer. The change provided a shorter route to the facility, which stays within the limits of construction. The overhead connection and riser pole was installed for temporary construction power, and permanent power, and has been fully inspected and approved.

The Engineering Department at Stennis Space Center has determined that the overhead distribution is adequate to handle the load of the Facility, based upon an estimate of 300 KVA.

Permanent underground conduit to the facility transformer shall be installed in accordance with Stennis Space Center standards SSTD-8070-0081-ELEC, and consists of 2-4" conduits, concrete encased, with #1/0 AWG, type MV-105, 15kV cables, insulated with 133% EPR.

The pad-mount transformer shall be provided and installed in accordance with Stennis Space Center Standards SSTD-8070-0081-ELEC, with manufacturer submittal approved prior to order. The installation shall include a digital multi-measurement meter, mounted to the pad-mount transformer, also in accordance with Stennis Space Center Standards.

The connected load for the Facility is currently calculated at 459 KVA, which includes all loads based upon actual manufacturer data for all contractor provided equipment. Government furnished equipment is currently estimated, as minimal manufacturer data has been provided at this time. The connected load includes both heating and air-conditioning loads. All loads are listed in the attachment entitled "Electrical Load Analysis" at the end of this document. Based upon and analysis of the loads, in accordance with UFC 3-501-03N Electrical Engineering Preliminary Considerations, and further considerations of end user utilization, the estimated maximum demand load for the facility is 223 KVA.

Based upon these results, the size of the pad-mount transformer shall be 300 KVA. With a total building square footage of 24,005 sq. ft., this represents 12.49 VA/sq. ft., which is under the maximum allowable 13 VA/sq. ft. The next size smaller pad-mount transformer is 225 KVA, which does not provide adequate capacity to satisfy the future growth requirements of 25%.

The primary utilization voltage for the facility shall be 277/480V, 3-phase, 4-wire. This selection is based primarily on the HVAC loads, which consist of a single packaged air-cooled chiller, and electric heat. The most economical and efficient operating voltage for these loads is 480 volts, 3-phase. The use of 277/480V, 3-phase, 4-wire service limits the incoming service capacity to 500 amps, which is most economically provided using panelboard construction.

The service entrance is sized at 277/480V, 3-phase, 4-wire, 500 amps, solid-grounded wye. The calculated fault current at the service entrance is 9021 amps maximum, and is currently based upon infinitely availability on the 13.8 kV distribution system, and a transformer impedance estimated at 4.00 %Z. The impedance will be updated with manufacturer nameplate data when available. The calculations are listed in the attachment entitled "Three Phase calculations short circuit and voltage drop" at the end of this document.

The service entrance equipment will have a bus rating of 600 amps, with 14 KIAC interrupting capacity. All wiring shall be copper, with 600V type THHN insulation, with the exception of the service entrance conductors for both normal and emergency services. These conductors shall be 250 kcmil A-8800 aluminum alloy. All conductors shall be installed in conduit, PVC for below grade, and EMT/rigid above grade.

All transformers shall be copper wound, high efficiency, includes both the pad-mount and dry-type distribution transformers.

An emergency generator, sized at 250 kW, 312.5 KVA at 0.8 power factor, shall be provided to back up the entire facility. This will be accomplished through a 600A transfer switch with by-pass isolation. Generator shall be diesel-driven, with a sub-base fuel tank. The fuel tank capacity shall be selected in accordance with user requirements, and due consideration of emergency operational needs and re-fueling criteria.

Lighting

All interior lighting consists of fluorescent lamps operated by electronic ballasts. The design follows the criteria as set forth in UFC 3-530-01 Interior and Exterior Lighting and Controls, and matching the existing facilities on site where appropriate. The illuminance calculations, including target and calculated footcandles are listed in the attachment entitled "Illuminance Calculation Schedule" at the end of this document. Full point-by-point calculations are provided in the "supplemental documents" portion of the pre-final submittal.

All exterior lighting consists of high-pressure sodium lamps, either building mounted or pole mounted. Full point-by-point calculations are provided in the "supplemental documents" portion of the pre-final submittal.

Lighting controls shall be accomplished in accordance with ASHRAE 90.1 –2004, through the use of a lighting control relay panel. The relay panel shall provide the capability to automatically turn on or shut off all or select lighting loads per the end users needs, and includes all lighting loads (interior and exterior), with the exception of the Boat Storage Building. The Boat Storage Building lighting shall be controlled through the use of mechanical timer switches, which is appropriate given the very limited occupancy periods expected. Exterior wall-mounted HPS fixtures shall be controlled by photocell.

Fire Alarm/Mass Notification System

A complete electrically supervised, addressable intelligent, manual and automatic, fire alarm system has been designed in accordance with respective NFPA/UFC standards and the RFP. Compliance with the requirements for the fire alarm/Mass notification system will be determined by a review of the design and shop drawing submittals by a registered fire protection engineer.

The primary system in the Operations/Maintenance Building consists of a fire alarm control panel, remote annunciator, manual pull stations, smoke detectors, duct detectors, A/V devices, radio transmitter, and supervision of the sprinkler system. The radio transmitter provides reporting to the Base Fire Department. All audio devices in the Operations/Maintenance Building are speakers which will provide Mass notification for the interior and exterior areas around the building.

The Boat Storage Building system consists of a fire alarm control panel, manual pull stations, A/V devices, and supervision of the sprinkler system. All audio devices are horns, as no mass notification is required in the Storage Building.

Telecommunications Cabling System

A telecommunications distribution system shall be provided, consisting of a single distribution frame on the second floor, and horizontal cabling to all outlets as shown on the plans. Per notification by the end user, tempest 2-95 requirements do not apply to this facility. However the horizontal cabling shall still be separated between secure and non-secure systems. Secure cabling shall now be unshielded in lieu of shielding as required by Tempest. All secure and non-secure horizontal cables shall be installed in separate sides of the center hung cable tray on the second floor. Separate outlets shall be provided for secure and non-secure cabling. All outlets have been shown on the drawings per direction of the end user, and coordinated with the concept design submittal of the interior furnishings. Upon acceptance of the interior furnishings, final coordination shall be performed, and all riser diagrams shall be prepared and submitted as shop drawings.

The distribution frame shall be connected to the head end equipment in Building 2606 via an underground ductbank consisting of 6-4" conduits per the RFP and Stennis Space Center Standards. Due to the distance between the New Facility and Building 2606, no multi-mode fiber will be installed as requested in the RFP due to the distance limitations of multi-mode fiber. All fiber shall now be single mode, and consist of two cables, 1-24 strand and 1-48 strand. An additional copper cable, 25-pair, 24 AWG, CAT3, shall also be provided in accordance with the RFP.

CATV

CATV distribution shall be provided in the Operations Facility, utilizing a star topology, with the source in the telecommunications room on the second floor. Cable shall be RG-6 Quad shield. All outlets have been shown on the drawings per direction of the end user, and coordinated with the concept design submittal of the interior furnishings. Upon acceptance of the interior furnishings, final coordination shall be performed, and all riser diagrams shall be prepared and submitted as shop drawings. All equipment shall be installed in the telecommunications room, including amplifiers, taps, compensators, and filters as necessary. Connection to the head end located in Building 2606 shall be accomplished via single mode fiber, with media converters provided at both ends.

Intercom/Public Address System

The RFP requested the installation of an Aiphone system, interconnected to the head end at Building 2606. A request for change has been submitted to upgrade the system to a digital system by Linel, which will integrate into the Electronic Security system. The Aiphone system in the existing buildings may potentially be removed and replaced by the Linel system. At this time, no specifications or equipment submittals have been provided, pending the resolution of the request for change. Device locations have been provided on the drawings, and coordination with the end user will continue while the request for change is considered.

Electronic Security System

An interior/exterior integrated electronic security system device layout has been provided in the pre-final submittal, and consists of access control devices, intrusion detection devices, and CCTV cameras. Further coordination and review with the end user is needed prior to development of specifications, riser diagrams, and shop drawings. All of the above shall be accomplished and submitted under separate cover prior to Final submittal.

Lightning Protection

Lighting protection design has been provided per the RFP for the Operations Facility, Boat Maintenance and Boat Storage Buildings. Installation shall be in accordance with LPI and UL, and receive the UL Master Label. Specifications, shop drawings, and equipment data have been provided in the pre-final submittal.

MILCON P210, SOF RIVERINE & COMBATANT CRAFT OPS FACILITY (SBT-22) STENNIS SPACE CENTER, MS

Fire Protection Basis of Design -

Applicable Codes –

1) UFC 3-600-01, Fire Protection Engineering for Facilities
2) UFC 3-600-10N, Fire Protection Engineering
3) NFPA 101, Life Safety Code
4) NFPA 13, Installation of Sprinkler Systems
5) NFPA 72, National Fire Alarm Code
6) NFPA 10, Standard for Portable Fire Extinguishers
7) IBC, International Building Code

Building 2440/2441 Operations and Maintenance Buildings

Sprinkler System –

System Type - Wet Pipe (all areas are heated)

Hazard Classifications –

Light Hazard - Offices, Conference Rooms, Corridors, Restrooms, Locker Rooms, etc.

Ordinary Hazard Group 1 - Mechanical Rooms, Electrical Rooms, Janitor's Closets, Storage Rooms (under 8').

Ordinary Hazard Group 2 - Boat Maintenance Area.

System Design Area - 3000 ft²
Adjusted down as per NFPA 13:11.2.2.3.1.
Adjusted up 30% as per NFPA 13:11.2.3.2.4.

Boat Maintenance Area - 3900 ft² final design area.

System Density –

Light Hazard - 0.10 gpm/ft²

Ordinary Hazard Group 1 – 0.15 gpm/ft²

Ordinary Hazard Group 2 - 0.20 gpm/ft²

Sprinkler Spacing (maximum)–

Light Hazard - 225 ft²

Ordinary Hazard Group 1 – 130 ft²

Ordinary Hazard Group 2 - 130 ft²

Extended Coverage Sprinklers shall NOT be used.

Piping Materials –

2" and smaller - Schedule 40 Black Steel.

2½" and larger - Schedule 10 Black Steel.

Floor Control Valve Assembly - Each Floor shall have a Floor Control Valve Assembly including a control valve, check valve, pressure gauge, flow switch, and test and drain valve.
All control valves shall have tamper switches.

Supervision -	All control valves and flow switches shall be supervised by the building Fire Alarm Control Panel as per the National Fire Alarm Code.
Hydraulic Calculations -	Systems shall be hydraulically calculated as per NFPA 13 using the Hazen-Williams Equation.
Backflow Preventer -	12 psi friction loss shall be included for each backflow preventer as per UFC 3-600-10N, 2-3.1.1.1.
Hose Allowance -	As per discussions with NAFAC, the Outside Hose Allowance shall be zero (0 psi) since the inclusion of the 500 gpm hose allowance referenced in UFC 3-600-01, Table 4-1 will require the installation of a fire pump.
Seismic Bracing -	Seismic Bracing shall be installed as per NFPA 13, the IBC, and ASCE 7.
Painting -	Sprinkler piping shall be painted with one coat of red alkyd gloss enamel as per UFC 3-600-10N, 2-3.1.7.
Fire Extinguishers -	Portable Fire Extinguishers shall be installed as per NFPA 10.

Building 2442 – Boat Storage Building

Sprinkler System –

System Type -	Wet Pipe (all areas are heated)
Hazard Classifications –	Ordinary Hazard Group 2
System Design Area -	3000 ft²
	Adjusted up 30% as per NFPA 13:11.2.3.2.4.
	3900 ft² final design area.
System Density –	0.20 gpm/ft²
Sprinkler Spacing –	130 ft² maximum.

Extended Coverage Sprinklers shall NOT be used.

Piping Materials –

2" and smaller -	Schedule 40 Black Steel.
2½" and larger -	Schedule 10 Black Steel.
Supervision -	All control valves and flow switches shall be supervised by the building Fire Alarm Control Panel as per the National Fire Alarm Code.

Hydraulic Calculations -	Systems shall be hydraulically calculated as per NFPA 13 using the Hazen-Williams Equation.
Backflow Preventer -	12 psi friction loss shall be included for each backflow preventer as per UFC 3-600-10N, 2-3.1.1.1.
Hose Allowance -	As per discussions with NAFAC, the Outside Hose Allowance shall be zero (0 psi) since the inclusion of the 500 gpm hose allowance referenced in UFC 3-600-01, Table 4-1 will require the installation of a fire pump.
Seismic Bracing -	Seismic Bracing shall be installed as per NFPA 13, the IBC, and ASCE 7.
Painting -	Sprinkler piping shall be painted with one coat of red alkyd gloss enamel as per UFC 3-600-10N, 2-3.1.7.
Fire Extinguishers -	Portable Fire Extinguishers shall be installed as per NFPA 10.

David L. Miller, P.E.
Engineered Fire Protection, LLC