**PWS Summary of Changes: Revision 2**

**5 May, 2020**

1. **Section 2.1 Concept of Operations - Added language on type of patients and added paragraph to reference site specific CONOPS for more detailed information.**
2. **Section 2.2 Site Modifications Required - Added language for a pre-condition facility survey to be completed per business rules checklist.**
3. **Section 2.2.2 Temporary/Portable Facilities to Support Patients & Medical Staff - Revised and added language under vestibules on hardware, other entrance considerations; added soap and paper towel dispenser to hand washing station for clarification on requirements; added item for patient discharge and re-arranged necessary support room separated from more service oriented options.**
4. **Section 3 Architecture - Added paragraph on modular concepts and equipment inventory and tracking.**
5. **Section 6, Plumbing/Medical Gas - added optional capabilities for Medical Air and Medical Vacuum**
6. **Section 5, Electrical - Revised to add NFPA 99, Type 1, explanation for Government; add modularity for quick set up and take down; add grammatical edits.**
7. **Section 8, Revised to add explanations of infrastructure requirements for medical/IT systems in the ACS environment.**
8. **Section 9, Added recommendations for implementation of electronic security systems and real time location tracking.**
9. **Section 11 Construction Period Services - Added paragraphs on pre-construction, testing and inspections and close out.**

**Performance Work Statement (PWS)**

**Convert a Convention Center into a Temporary Alternate Care Site (ACS)**

**COVID Non-Acute**

**5 May, 2020**

**Target Audience:** Primarily NFPA 99 Category 3 Patient, which is defined as patient care “activities in which the failure of equipment or a system is not likely to cause injury to patients, staff, or visitors but can cause discomfort” (NFPA 99 para. 4.1.3). In addition, a transition space is provided for those patients with higher acuity (NFPA 99 Category 2 Plus) prior to being transferred to an acute care facility.

*\*USACE: Italicized fonts within this PWS are for directions or recommendations unique to the Government. They generally precede or follow bracketed sections or statements of the PWS. These bracketed sections can be left remaining in the PWS, or removed depending on the site specific conditions and needs. Please remove all brackets and italicized font before issuing to the Contractor.*

**1. GENERAL**

This PWS provides minimum criteria for “sufficiency of care” to provide a rapid response to the expected need, therefore, it is critical that local authorities and/or Area Fire Marshal are involved in the development of the design and acceptance of this site.

The Coronavirus disease 2019 (COVID-19) is a respiratory infection caused by newly emergent coronavirus first recognized in Wuhan, China in December of 2019. For the purpose of this document non-acute COVID-19 patients are defined as those patients that do not require a ventilator, but may require oxygen and do require nursing support. Acute COVID-19 patients are those with advanced respiratory distress that require enhanced oxygen and ventilator support in addition to advanced nursing support and isolation.

The Contractor shall retrofit the selected space into an Alternate Care Site (ACS) **serving primarily non-acute COVID-19 patients plus some acute COVID-19 patients in transition to a medical facility which supports higher acuity care**. This effort is to provide an Alternate Care Site meeting basic healthcare functions with an emphasis on patient isolation, infection control, fire protection and life safety. Advantages to the user of this space are greater patient density enabling a reduction in healthcare workers and faster construction time as well as greater use of prefabricated construction (e.g. portable bathroom trailers, conex for patient & support service spaces etc.). The ACS shall serve as a satellite patient ward supported by a nearby full service hospital. The local full service hospital would provide the logistics, materials and waste management support, nutrition care etc.

The facility will include a transition space for acute COVID-19 patients. The transition space must be functionally separate from the other patients within the patient care area and meet the requirements as provided below.

[The Contractor shall be responsible for the demobilization and removal/disposal of all facilities and equipment upon completion of this work and the restoration of the permanent site as necessary in order to return it to its original state.] *This paragraph can be removed or edited as contract and site lease agreements dictate.*

**2. FUNCTIONAL REQUIREMENTS**

**2.1 Concept of Operations**

The facility shall serve as an Alternate Care Site (ACS) serving COVID-19 non-acute patients with private open cubes in a ward configuration along with an acute care transition space (with private patient isolation units) for patients that have transpired into the higher acuity level. This space is used as a staging area for the patient to stabilize and to prepare them for transport to the local hospital ICU for the proper emergency acute care. Open cubes for non-acute patients are considered to be NFPA 99 Category 3, which is defined as patient care “activities in which the failure of equipment or a system is not likely to cause injury to patients, staff, or visitors but can cause discomfort” (NFPA 99 para. 4.1.3). This Alternate Care Site (ACS) would act as a temporary satellite Ward supported by a nearby full service hospital. Patients are all considered ambulatory and capable of self-preservation, infectious but NOT on ventilators (i.e. the use of oxygen with either nasal tube or mask).

Private Patient Isolation Units for acute patients are considered to be Category 2 “Plus”, defined as NFPA 99 Category 2 (patient care “activities, systems, or equipment whose failure is likely to cause minor injury of patients, staff, or visitors”) (Reference NFPA 99 para. 4.1.2) PLUS additional Category 1 provisions (Critical Care – risk of major injury or death) as relates to the specific needs of an acute COVID-19 patient on a ventilator (NFPA 99 para. 4.1.). Patients are all considered non-ambulatory and not capable of self-preservation, infectious and on ventilators.

The Contractor shall divide the site into “zones” such as: Zone 1 - Utility zone outside the arena floor area, Zone 2 – Support outside the arena floor**,** Zone 3 – Patient Care Area defined by the enclosed arena floor. The Patient Care Area is considered infectious/hot and must be segregated from the rest of the facility. Some enclosed support areas need to be included within the patient care area to provide rapid access for the staff and patients. The Contractor shall provide all temporary facilities in order to execute a fully functional ACS within the arena/convention center space. This may include facilities such as: toilets, showers, medical waste, pharmacy, point of care laboratory, general waste, hand-washing facilities, and other requirements included herein. Provide each private open cube/room with piped or bottled medical gas (oxygen) and Medical Air and Medical Vacuum as described in section Plumbing/Medical Gas below. In addition, telemetry, pulse oximetry at bedside and camera for patient observation may be required.

Reference facility Concepts of Operations (CONOPS) for A2HC COVID-19 Positive Non-Acute Patients document for further information

**2.2 Site Modifications Required**

The following are the anticipated site modifications needed to convert an enclosed open space (e.g. convention center/arena) space to an ACS. Site selection should be based on confirming the critical technical features to achieve minimum life safety and infection control standards.

The Contractor shall provide all necessary labor, materials, and equipment to provide the following equipment and temporary/portable facilities in order to convert the selected space into an ACS.

Private patient open cubes segregated by temporary partitions (3 walls with curtain fronts) with an orientation that will maximize patient density while maintaining patient comfort, semi-privacy, and life safety requirements. Minimum area per patient space (open cube) is 10 feet wide x 10 feet deep (approximately 100 square feet) to accommodate patient beds and necessary medical and non-medical equipment. Patient private (single occupancy) open cubes should consist of three walls (back and two sides a minimum of 8 feet in height) or semi-private double rooms with three walls, curtain divider between patients and curtain fronts. Configuration of open cubes can be arranged in rows off secondary corridors in blocks focused or oriented around a central nurse station and necessary support rooms. Wall materials shall be non-combustible or limited combustible. Individual patient cube partitions may be prefabricated, constructed on site, or variations of as long as they conform to the non-combustible and patient ingress/egress requirements presented herein.

Consideration for a limited number of acute patient isolation units should be accounted for within the open arena/patient care area as a place for patients that have escalated to a higher acuity level requiring a ventilator with anticipation to be transferred to a local hospital ICU ward. This dedicated area shall be a controlled/ separated area from the open cubes with (9ft or 12 ft high) perimeter walls. This dedicated area shall contain a nurse station with direct views to each isolation pod and necessary support spaces all in compliance with the A2HC COVID Positive Acute-Care (Category 2 Plus) PWS guidelines.

A pre-condition survey of the facility must be completed in coordination with A2HC Non-Acute site selection business rules checklist.

**2.2.1 Patient Spaces for each Patient:**

*\*Note: Multiple Patient Space Options are available depending on availability and lead times of materials, labor, and pre-fabricated products. One of these solution types per site is preferable.*

*Prefabricated or Constructed*

Patient spaces shall be provided as follows: Acute patients shall be provided with a private patient isolation unit constructed as an enclosed space to include 4 walls and a ceiling, with single entrance door with vision panel. Non-acute patients shall be provided with either an patient isolation unit as provided for acute patients or a private open cube constructed with three walls and a curtained entrance. Open bay area without separation walls between multiple patients are not allowed for COVID positive patient spaces.

Provide patient isolation units and/or open cubes that conform, at a minimum, to the following requirements: Non-combustible or limited combustible structures or fire or flame retardant tent structures that conform to NFPA 701. The Contractor may elect to field construct the patient spaces. Floor area (size) of patient space shall be approximately 100 square feet and have dimensions of 10 feet (width) x 10 feet (depth). Open cubes shall have a curtain front to accommodate a mobile bed. Floor, wall surfaces and ceilings shall be cleanable and washable for disinfection. The Contractor shall provide a free-standing headboard or wall area for each patient room/open cube for the installation of receptacles and wall-mounted equipment. Wall materials shall be non-combustible or limited combustible and shall have a Class-A rating.

**2.2.2 Temporary/Portable Facilities to Support Patients & Medical Staff:**

Hand washing sinks must be provided within the patient care area for hand-washing: The Contractor must provide 1 sink per [2 or 3 patient cube spaces or patient isolation unit]. Temporary/portable hand-washing station must have the ability to maintain hot water in accordance with all applicable codes/requirements. The Contractor shall either utilize the site’s potable water/wastewater utilities and tap into these utilities where feasible OR provide the services to provide potable water and wastewater disposal services at a rate of [15 L/per day per Patient & Caregiver]. Temporary/portable structures shall be comprised of non-combustible materials or limited combustible and shop drawings/product data sheets shall be submitted to the Government for review and approval. Contractor shall take care that potable/sanitary lines do not interfere with ingress/egress and shall utilize means and methods (e.g. lift stations, etc.) as required by the site-specific conditions in order to achieve this.

Entrance and exit vestibules: Dedicated vestibules must be provided at the enclosed arena perimeter to be constructed for staff donning and doffing (PPE) with one designated on the “DIRTY” side and another on the designated “CLEAN” side of the open convention center/arena. The vestibule size, arrangement and door locations must be capable of accommodating a bed/gurney or stretcher. Other entrances must also be provided for designated patient and delivery/supply entrance.

Temporary/portable toilet rooms (dedicated for both Staff and Patient): The Contractor shall provide and install temporary/portable toilets with sinks to be located within the patient care area (infectious/hot zone 3) in close proximity to the patients. The number of toilets shall be [1 per 20 people] and be ADA compliant as required. The total number of temporary/portable units is based on the Contractor’s selection per the International Plumbing Code (IPC) with respect to the design/construction of the individual units (i.e. 2 toilets/sink per trailer, etc.). These temporary/portable facilities shall be tied into the existing potable/wastewater utilities where practicable. If this is not feasible, then the Contractor shall provide the services to maintain adequate potable water and waste disposal services for the duration of this requirement. Contractor shall take care that potable/sanitary lines do not interfere with ingress/egress and shall utilize means and methods (e.g. lift stations, etc.) as required by the site-specific conditions in order to achieve this.

Temporary/Portable Showers (Staff Only): The Contractor shall provide and install temporary/portable showers and locker rooms to be located within the site (Zone 2) in close proximity to the patient care area. The total quantity of individual showers shall be based on a need of [3 people per hour for 24 hours] and ADA compliance is required per IPC. The total number of temporary/portable units (i.e. 4 showers per trailer/conex, etc.) is based on the Contractor’s selection of the design/construction of the individual units. Contractor shall take care that potable/sanitary lines do not interfere with ingress/egress and shall utilize means and methods (e.g. lift stations, etc.) as required by the site-specific conditions in order to achieve this.

Temporary/Portable Soiled Linen Room: The Contractor shall provide and install temporary/portable soiled linen storage for the temporary holding of dirty/soiled bedding, sheets, towels and other contaminated linen, to be located inside the patient care area (Zone 3) in close proximity to the nurse station and/or patients. Storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable Clean Linen Room: The Contractor shall provide and install temporary/portable clean linen storage to be located inside the patient care area (Zone 3) in close proximity to the nurse station and/or patients. Storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable Soiled Utility: The Contractor shall provide and install temporary/portable soiled utility for the temporary holding of waste, bio-hazardous, used equipment, trash, medical waste along with a bedpan washer and service sink inside the patient care area (Zone 3) in close proximity to the nurse station and/or patients. Storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable Clean Utility: The Contractor shall provide and install temporary/portable clean utility to be located inside the patient care area (Zone 3) in close proximity to the nurse station and/or patients. Storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable Medication Room: The Contractor shall provide and install temporary/portable dedicated medication room for an automatic dispensing unit (pyxis) and crash cart to be located inside the patient care area (Zone 3) directly behind the nurse station.

Temporary/Portable Nourishment Room: The Contractor shall provide and install temporary/portable dedicated room and assembly space for nurses to assemble meals and nourishment for patients, to be located inside the patient care area (Zone 3) directly behind the nurse station.

Temporary/Portable Alcove Space: The Contractor shall provide and install temporary/portable equipment alcove space for nurses and doctors to have access to necessary equipment (Crash Cart, AED, Stretcher/litter, Wheelchair, Blanket Warmer and Portable X-Ray, etc. (Provided by others) to be located inside the patient care area (Zone 3) in close proximity to the nurse station and/or patients..

Temporary/Portable Break Area: The Contractor shall provide and install a temporary/portable designated area for nurses and doctors to take breaks to be located within the site (Zone 2) in close proximity to the patient care area.

Temporary/Portable Team Collaboration Room. The Contractor shall provide and install temporary/portable designated area for nurses and doctors to have meetings to be located within the site (Zone 2) in close proximity to the patient area.

Temporary/Portable Equipment Room: The Contractor shall provide and install temporary/portable general storage room for medical equipment with shelves to be located inside the patient care areas (Zone 3) in close proximity to the nurse station and/or patients. Storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable Respiratory Therapy Decontamination Room: The Contractor shall provide and install temporary/portable decontamination space for the cleaning and disinfection of ventilators, to be located within the site (Zone 2) in close proximity to the patient care area.

Temporary/Portable Point of Care Laboratory: The Contractor shall provide and install temporary/portable laboratory to be located within the size (Zone 2) in close proximity to the patient care area.

Temporary/Portable Janitor Closet: The Contractor shall provide and install temporary/portable janitor’s closet with mop sink, shelf and custodial equipment rack to be located inside the patient care area (Zone 3).

Nurse’s Stations: The Contractor shall provide and install centralized nurse’s stations to be located inside the patient care area (Zone 3), that can be fully equipped (by others) to accept all required equipment and materials for full-functionality of a typical primary-care site Nurses Station IAW NFPA 99.

Patient Discharge Area: The Contractor shall provide and install temporary/ portable discharge areas, a small doffing area dedicated for patients to shower, put on clean clothes (scrubs to keep) before leaving ACS.

*\*Note – The following paragraphs may need to be edited contingent on the agreement with the supporting medical care facilities for the operation of laundry/linens/medical waste/general waste. They may be supported by the site and their existing service contracts OR operated by the Contractor.*

[Temporary/Portable Laundry: The Contractor shall provide and install temporary/portable central laundry facilities to be located within the site (Zone 2) in close proximity to the patient care area. Laundry facilities shall include automatic washer & dryer (separate or two-in-one style units) and be able to service [250 sets of clothes daily] for all patients and caregivers. Water & sanitary sewer shall be tied into the site’s existing potable and sewer utilities where practicable. If not practicable, the Contractor shall provide services for potable water provision and wastewater disposal as necessary to allow for full functionally as described above. Contractor shall take care that potable/sanitary lines do not interfere with ingress/egress and shall utilize means and methods (e.g. lift stations, etc.) as required by the site-specific conditions in order to achieve this.

Temporary/Portable Bio-Hazard Waste Storage: The Contractor shall provide and install temporary/portable central Hazardous Material Storage area(s) to be located within the site (Zone 2) in close proximity to the patient care area. This storage area will be used to hold the following but not limited to highly infectious material and substances, low level radioactive waste, cytotoxic waste, chemical and pharmaceutical waste. This storage space must be leak proof and puncture proof. This storage space must be lockable and away from food prep and/or storage. Refer to ICRC Publication on medical waste for more information. Storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable Gas Cylinder Storage: The Contractor shall provide and install temporary/portable oxygen cylinder storage to be located inside the patient care area (Zone 3) in close proximity to the nurse station and/or patients. Temporary/portable structure shall be fabricated from non-combustible materials and conform to all applicable local/state/federal transportation and utilization criteria and laws. Med gas (oxygen) storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection based on quantity. Separation of full / empty tanks with appropriate signage, tank restraints or holding container per code. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable Ice Machines: The Contractor shall provide and install temporary/portable ice machines to be located inside the patient care area (Zone 3) in close proximity to the nurse station and/or patients. Equipment can be located inside the Nourishment Room. Provide ice at a rate of 5 lbs./day per patient, not to exceed 3,100 lbs./day. The Contractor shall tie the temporary/portable ice machine into the site potable water utility where practicable. If not practicable, the Contractor shall supply the ice machine with potable water in order to fulfill the requirements above. Contractor shall take care that potable/sanitary lines do not interfere with ingress/egress and shall utilize means and methods (e.g. lift stations, etc.) as required by the site-specific conditions in order to achieve this.

Temporary/Portable Medical Waste: The Contractor shall provide and install temporary/portable central medical waste facilities for the collection, storage, and removal of medical waste generated by this ACS, to be located within the site (Zone 2) in close proximity to the patient care area. Medical waste storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable General Waste: The Contractor shall provide and install temporary/portable general waste facilities for the collection, storage, and removal of all general waste generated by this ACS. To be located on site (Zone 2) in close proximity to the patient care area. Storage facilities shall be considered hazardous areas per NFPA 101. Provisions shall be provided for protection. Room shall be fully enclosed with necessary mechanical and electrical components. See other discipline sections for specific details.

Temporary/Portable Kitchen and Dining: The Contractor shall provide and install temporary/ portable kitchen for food preparation and dining area with tables and chairs or bench type seating.

Temporary/Portable Morgue: The Contractor shall provide refrigerators for expired patients. This should be located in the back of house area or at exterior/loading dock area.]

All temporary/portable facilities listed above can be, but are not limited to, prefabricated units (“off the shelf”), “conex”-type units converted for the uses required above, custom-build units for the applications required above, or a combination thereof. The units shall be fire-rated and comprised of sturdy, non-combustible, washable, materials that can be maintained and disinfected.

**3.0 Architectural**

The Contractor shall, prior to mobilization and execution of the facilities and spaces described above, place rubber, sheet vinyl, or other acceptable material that has the ability to be seamless (welded seams or other method of achievement) as the flooring for the entire space, including temporary/portable support facilities. Floor covering materials shall not be of the highly combustible nature. The proposed flooring material shall be washable and cleanable while maintaining a safe, non-slip surface.

The Contractor shall provide individual private or semi-private room/open cube arrangements within the patient care area meeting patient room criteria. The Contractor shall propose a layout that maximizes patient density, comply with head to toe patient orientation practices, while maintaining ingress/egress requirements, NFPA 101 Life Safety Code Requirements, patient access and visibility requirements, and ensures temporary/portable support facilities are located in close proximity to the patient zone. The minimum primary corridor/walkway widths shall be 8 feet and secondary corridor/walkway widths 6 feet. These patient open cubes can be aligned/configured/ arranged in linear rows or larger groupings to create multiple and larger capacity patient care.

Each patient area or “block” shall contain patient open cube spaces, nurse station with monitoring station, and required support areas. Such as; team collaboration room, laboratory, medication room, decontamination, gas cylinder storage, clean utility, break room (respite area) , janitors closet and all necessary equipment (Crash cart, Blanket warmer, wheelchair, patient lift, and portable x-ray), circulation, hand washing stations and vestibule for donning and doffing. Reference A2HC Non-Acte conceptual drawings for guidance.

Contractor must include designated space(s) for Mechanical, Electrical and Tele-communication services.

Contractor shall provide headwalls for each patient open cube/room sized for the full width and height of rear/wall for the installation of electrical outlets, data outlets, equipment, and optional wall mounted light fixture.

Provide a full size mockup of a patient open cube to establish the configuration for the other patient spaces. Include the headwall and all disciplines (electrical, mechanical, communication, fire protection etc.) along with temporary furnishing to validate the space configuration and functional intent.

Provide a full size mockup of an isolation pod to establish the configuration of all other pods. Include the headwall and all disciplines (electrical, mechanical, communication, fire protection etc.) along with temporary furnishing to validate the space configuration and functional intent. Lighting and HVAC (exhaust) must be functional in order to validate the transfer air inlet configuration and exhaust configuration to maximize ventilation effectiveness and achieve the negative pressure required. Internal heat loads of 500 watts should be simulated.

Modular Design: Contractor should consider modular concepts for design and construction of patient rooms, nurse station, support spaces, components (headwalls) and utilities (mechanical, electrical, communication, etc.). The assembly at the site to even dis-assmbly for future storage or transport to another location must be considered. Pre-fabrication of spaces, components and utility off site is essential in speeding up construction and potential reuse. Try to design around or provide features and products that are easily repaired or replaced by medical staff or maintenance personnel while keeping cost and schedule in mind. Implementation of modular component labeling, tracking and packaging for future logistics.

Equipment: Contractor shall take inventory of equipment and material with an appropriate method for tracking (labels, bar code, etc.) along with quantities.

**4.0 Mechanical**

The patient care area (zone 3) is to be considered dirty and must be negatively pressurized with respect to any surrounding clean spaces, and the remainder of the facility. Provide sufficient relative pressurization to achieve directional air flow from clean to dirty. Ideally a relative pressurization target of 0.01 inches water column should be achieved. Utilize vestibules between the patient care area (zone 3) and the surrounding clean areas where required and where necessary to establish and maintain directional airflow which will be impacted by the dynamics of the large atrium-like spaces (e.g. stack effect). Care should be taken to minimize any negative pressure areas from drawing unconditioned outside air through the building envelope. An effective means of achieving the relative pressurization requirement while minimizing infiltration of unconditioned outside air is to positively pressurize the surrounding clean areas rather than negatively pressurize the patient care area.

All clean areas outside the patient care area, such as the clean entry vestibule and staff lounge/ respite area, must be served from an HVAC system that does not exchange air with the patient care area. If the HVAC system cannot be segregated or changed to 100% outside air, then a HEPA filter must be provided for the supply air to clean areas.

All clean areas located within the patient care area, such as clean linen, clean utility, medication storage, patient nourishment, and point-of-care laboratory must be provided with positive pressure either utilizing conditioned outside air or HEPA filtered supply air.

All dirty areas, such as the doffing area, soiled linen, soiled utility, biohazard, waste and decontamination, must be negatively pressurized to provide directional air flow and exhaust directly outdoors discharging at least 25 feet away from air intakes, doors, operable windows, other building openings and any areas normally accessible to the staff or public. If those discharge constraints cannot be met, a HEPA filter must be provided on the exhaust.

All wet areas within the patient care area that may generate moisture such as showers or laundry must be provided with a separate exhaust system (separate from other dirty areas which do not anticipate wet exhaust) discharging to the outside complying with the minimum separation indicated above. Note that utilization of a HEPA filter instead of complying with the exhaust separation criteria is generally not feasible for exhaust from wet areas due to filter degradation/clogging.

The HVAC systems serving the patient care area must minimize the airborne contamination by implementing 100% outside air for dilution or HEPA filtering any recirculated air. The goal is to maximize air change rates, dilution and filtration. Existing systems must be carefully evaluated to determine the feasibility of implementing 100% outside air for all seasonal conditions. Systems should be operated at the highest outside air percentage possible without exceeding a discharge dew point equivalent to a space humidity of 60% using the prevailing dehumidification design ambient humidity ratio. If the HVAC system lacks the total cooling capacity to achieve 100% outside air, then return air from the patient care area must pass through a HEPA filter prior to being supplied to any space within the facility. This can be accomplished either in the return prior to mixing with outside air at the AHU or in the AHU after mixing with outside air. Relief or exhaust air from the patient care area must be either HEPA filtered or discharged outdoors at least 25 feet away from air intakes, doors, operable windows, other building openings and any areas normally accessible to the staff or public.

HEPA filters are required to meet IEST RP-CC-001. Consider the availability of replacement filters in the selection of the product. Provide pre-filters upstream of each HEPA filter where feasible to minimize HEPA filter replacement. Provide one full set of HEPA replacement filters.

Adjust, test, and balance the existing and new HVAC systems to achieve the required space pressurization and ensure patient comfort considering the additional heat load from people and equipment. Space temperature requirements are 68 deg. F winter and 75 deg. F (use 72 deg F. if patient isolation units with transfer air cooling are included), with maximum relative humidity of 60% summer. Modify existing systems or provide supplemental heating or cooling as needed to meet the requirements. Work must be performed by a qualified HVAC specialist and a certified and accredited TAB specialist.

The following paragraphs address the specific HVAC requirements for patient isolation units serving acute COVID patients. Patient isolation units must be negatively pressurized to 0.01 inches water column relative to the surrounding space to ensure a clean to dirty air flow path. Conditioning of the patient isolation units may rely upon transfer air from the Arena or be achieved by other direct means of space conditioning such as a DX mini-split or conditioned supply air.

For patient isolation units relying upon transfer air for space conditioning, provide a minimum of 12 air changes per hour of exhaust but not less than 200 cfm to maintain space conditions and pressurization. Placement of the exhaust grill and transfer air louver must be arranged to achieve displacement style ventilation with the exhaust located on the wall above the patient and the transfer air inlet louver located on the opposite wall about 12” above the finished floor. The overall space conditions in the Arena will need to be maintained at lower than normal temperatures (reduced from 75 to 72 degrees F) to facilitate the transfer air concept. Supplemental space cooling in the Arena must be provided as needed. It is estimated that the temperature in the patient isolation unit will be 5 to 7 degrees above ambient. Transfer air intake louver must be adjustable/lockable to facilitate TAB ensuring both minimum air changes and the required patient isolation unit space pressurization are met.

Where direct conditioning of the patient isolation unit is provided for by mini-split DX unit or conditioned supply air, the exhaust air change rate may be reduced to 6 air changes per hour but not less than 100 cfm greater than any ducted supply air to ensure space pressurization is maintained.

Exhaust from the patient isolation units must be either directly discharged to the outside or filtered through a HEPA filter before being returned to the Arena space. Various HEPA filter and fan configurations may be utilized including fan filter units (FFU’s), negative air machines or centralized exhaust. Where short runs of positively pressurized duct need to be within the building, they must be sealed in accordance with SMACNA duct leakage Seal Class A. If exhaust air is to be HEPA filtered and returned to the space, the design must account for the additional fan heat.

**5.0 Electrical**

[*This section must be revised if an NFPA 99, Type 1, essential electrical system is provided. A Type 1 essential electrical system has life safety, critical, and equipment branches. With a Type 1 system, patient care circuits will use the critical branch and wiring must be mechanically protected per NFPA 70 article 517.31C3, generally requiring rigid metallic raceway.*]

General: The Contractor shall comply with all national/state/municipal codes; including NFPA 70, 99, and 110. If conflicts occur with this PWS, the codes shall govern. The Contractor shall provide an NFPA 110, Type 10, Level 1, diesel generator (life safety, 10 second start-transfer) on a flatbed or on pad with skid mounted tank and weatherproof enclosure. Contractor to provide fuel supply in order to maintain continuous operation of generator for 24 hours before refueling. Contractor must meet state and local fuel containment and emissions requirements. The Contractor shall provide exterior switch board with automatic transfer switches; and connect switch board to generator power and site normal power to create an NFPA 99, Type 2, essential electrical system. The Type 2 essential electrical system has a life safety and equipment branch, but does not have a critical branch. Both the life safety and equipment branch must be restored within 10 seconds of an outage per NFPA 99 paragraph 6.7.6.4. If the site does not have normal power, normal power has insufficient capacity, or normal power does not have the required versatility; upgrade normal power as required, including the service transformer and medium voltage service to the service transformer. Depending upon existing, a separate normal power switch board may be required. The electrical system is required for the COVID19 emergency and may be installed under NFPA 70 article 590, Temporary Installations, noting article 517, Health Care, must be met. The generator may be configured as a second service as allowed by NFPA 70 article 230.2A, for special conditions. The patient care area is divided into category 3, basic care, and category 2, general care, and separate requirements are defined for each below.

Life Safety: If the existing site is an NFPA 101 assembly occupancy, for example an arena, and has an emergency generator supplying NFPA 101 emergency lighting and NFPA 70 alarm and alerting systems, confirm if this system qualifies as part of the life safety branch. If the site does not have a life safety branch, or if the branch is insufficient to connect new loads, the branch must be provided as part of the essential electrical system within the site with panels located as needed. Confirm and or connect all life safety loads to life safety branch panels, to include fire detection and alarm system, emergency lighting, and other alarm and alerting systems. If a fire pump is required for the sprinkler system, it shall be provided with its own listed controller. Provide egress and emergency illumination within all structures required by NFPA 101.

Branch panels: For open cube blocks with only category 3 beds, provide one power distribution panel to provide the normal branch (the equipment branch panel is not required). For areas serving acute category 2 patients, provide two power distribution panels in each patient isolation unit block, to supply patient beds from separate branches in accordance with NFPA 70 article 517.18A. One shall be connected to building normal power, which is the normal branch. One shall be connected to the essential electrical system switchboard, which is the equipment branch. Provide a connection between ground busses in the two panels serving patient care areas, as required by NFPA 70, article 517.14.

Branch circuits: For NFPA 99 category 3, basic care, patient beds, a circuit from the normal branch panel must be provided and it need not be dedicated. For transition patient isolation units with NFPA 99 category 2, general care, patient beds, a dedicated circuit from the normal branch panel and the equipment branch panel must be provided. For patient isolation units with air conditioners, an additional circuit from normal power is required. See paragraph Wiring in Patient Care below and comply with redundant grounding.

Bed receptacles: Head boards shall be provided at beds for mounting of receptacles, switches, and boxes. For each category 3, basic care, patient bed, provide 4 receptacles connected to normal power circuit. For each category 2, general care, patient bed, provide 8 receptacles; connect 4 to the normal power circuit and 4 to equipment power circuit.

Bed lighting: For category 3, basic care, open cubes, provide portable task lights as equipment. For each category 2, general care, patient bed in a patient isolation unit, provide three light fixtures connected to equipment branch; one fixture shall be a night light, one a task light (300 lux), and one an examination light (1100 lux).

Open cubes and patient isolation units: If the open cube or patient isolation unit is comprised of fabric material or is site-built, attached to the structure, connect branch circuits at head board to lighting and receptacles. If the patient isolation unit is a pre-manufactured portable assembly complete with utilities, provide NFPA 70 article 225.31 disconnect with circuit breaker for each circuit entering the unit. See paragraph Branch Circuits above and comply with NFPA 70 article 225.30, number of supplies. Wiring within the portable patient isolation unit shall comply with NFPA article 517.13, by utilizing metallic raceway or metallic armor, which qualifies as an equipment grounding conductor. The raceway/armor and green equipment grounding conductors in the portable patient isolation unit shall be bonded to a ground lug within the disconnect(s), and the lug within the disconnect(s) shall be bonded to unit structural steel. All metal elements of the portable patient isolation unit shall be made electrically continuous to unit structural steel. A green patient ground point shall be provided in the portable patient isolation unit as allowed by NFPA 99 paragraph 6.3.2.5.2, at the patient head board.

Other locations: All other temporary and or portable facilities and or containers shall be provided with power and lighting. Comply with NFPA 70 article 225.31 or 230.70 by providing disconnect and or overcurrent protection. Free standing personnel stations, which are illuminated from the super-structure above, must also be provided with task lights and receptacles. Provide nurse stations with task lights (700lux), strip receptacles at work stations, crash cart and medication unit receptacles; all circuited to the equipment branch. Provide medication and laboratory with task lights (1100 lux) and receptacles connected to equipment branch. Showers and toilets shall be provided with general illumination connected to normal power, and with task lights connected to equipment branch. Temporary structures shall have lighting in hallway corridors and fixtures at exterior entrances connected to the equipment branch, except emergency lighting circuited to life safety. Connect laundry, if provided, to normal power.

Equipment connections: Provide electrical connections to equipment in place and mechanical equipment, including heating and cooling equipment, water heaters, pumps, and AHU’s. Connect patient isolation unit exhaust AHU’s to the equipment branch. Connect other mechanical equipment to the normal branch.

Wiring in patient care: Wiring in patient care areas must be provided with redundant grounding per NFPA 70 article 517.13. Redundant grounding requires both an insulated equipment grounding conductor routed with the branch circuit and a metal raceway or armor qualifying as same, for example EMT or medical grade armored cable. Patient care areas include all category 2 and 3 spaces. [*This paragraph should be edited after consultation with the customer and AHJ to define the wiring method to be used in patient care areas if code cannot be met. Many facilities have existing distribution panels and wiring which can be easily used for patient areas. Where the redundant grounding conductor is not existing, NFPA 99 paragraph 6.3.2.5.1.3, allows use of the system provided that voltage and impedance measurements are performed to confirm effectiveness of the grounding system. The AHJ should consider circuit tests to confirm existing grounding only where the emergency does not allow replacement. The AHJ should consider other temporary wiring methods, for example flexible cables, only when the emergency precludes providing redundant grounding (EMT or medical grade armored cable). The AHJ should first consider redundant grounding in category 2 areas and temporary methods in category 3 areas, before temporary methods (flexible cables) in all areas.*]

Power design: Receptacles shall be duplex 20 ampere. Provide hospital grade in patient care areas and red bodies or plates where connected to the generator. Branch circuits shall be minimum size #12. There shall be no more than 6 receptacles in patient care areas connected to a single circuit. Panels and disconnects must be lockable to comply with NFPA 99 paragraph 6.3.2.4.3. Life safety and equipment branch wiring must be separated from all other wiring per NFPA 99 paragraph 6.7.6.3.1. Life safety branch wiring must be mechanically protected per NFPA 70 article 517.31C3. Raceway and wiring shall not be installed in a manner in which it is a trip hazard or subject to damage; provide overhead support as required, using methods in conformance with NFPA 70.

Lighting design: Critical spaces require a high level of color discrimination to reduce medical errors and allow true color rendition for medical evaluation. Light fixtures shall be 80 CRI minimum, except fixtures for medication preparation areas shall be 90 CRI for LED and 85 CRI for other types of sources (due to spectral power density). Illumination levels shall comply with IESNA unless more stringent levels are specified herein. Avoid placing non-exam lighting directly over a location where a patient lying in a bed or gurney will be. Provide independent switching for general, task, and night lights. Type of light fixture and mounting depends on location, e.g. open cubes, fabric patient isolation unit, hard surface patient isolation unit or temporary structure, free standing nurse station open to super-structure.

Modularity. Provide boxes at head wall to allow dis-connection of branch circuits, when head wall placed in storage. Provide hangers or “feet” for panels and transformers, to allow quick set up and take down. Label all equipment and circuits with respective open cube or patient isolation unit, including block-module-cluster-neighborhood, so everything can be placed in storage and returned to original location. Provide slack loop in circuits at open cubes and patient isolation units to allow re-assembly. Consider use of cable tray for supporting circuits for ease of installation and take down. Consider renting generator and related switchboard and automatic transfer switches. Consider providing light fixtures as equipment which can easily be set up and taken down.

Electrical design submittal: The Contractor shall prepare a design submittal before beginning work and submit to the Government for action as determined by the AHJ. Contractor is responsible for design, selection, and sizing of equipment to meet this PWS and all codes. Contractor shall prepare drawing(s) showing locations of all new equipment, connections to existing equipment, one-line diagrams with sizes, supporting calculations, proposed installation methods for wiring and equipment, and specifications as applicable. The design submittal shall be stamped and signed by a registered electrical engineer.

**6.0 Plumbing / Medical Gas**

The Contractor shall provide and install water and sanitary services to serve the temporary/portable facilities as required and in accordance with the International Plumbing Code. Provide piped sanitary vent to the exterior. Provide sanitary collection tanks and lift stations as needed to automatically pump waste to a sanitary sewer connection, to avoid the need for gravity drainage, enabling routing of utilities without obstruction of egress areas.

*For oxygen supply, select either the first paragraph if only portable bottles will be utilized or select the following paragraphs for a centrally piped oxygen system. Centrally piped oxygen should generally be provided unless only non-acute patients are anticipated.*

[No centralized medical gas will be provided. Bottled oxygen will be utilized and stored in dedicated hazardous storage rooms. Patient daily oxygen demands for storage and logistics is estimated at 8,600 liters per non-acute patient per day and 25,000 liters per acute patient per day.]

[Medical oxygen needs will initially be met utilizing portable bottles and therefore hazardous storage areas must be provided. Patient daily oxygen demands for storage and logistics considerations is estimated at 8,600 liters per non-acute patient per day and 25,000 liters per acute patient per day.

Provide a piped medical oxygen system to all patients compliant with NFPA 99 as a Category 1 system. Provide one oxygen outlet per patient bed to deliver 15 liters/min per non-acute bed and 20 liters/min per patient isolation unit. No diversity should be applied to the design demand for pipe sizing. Valves and pressure control devices must be in accordance with NFPA 99. Medical gas outlet connection style to be coordinated with the State Health department. Medical gas verifiers (ASSE 6030 and 6035) must not be hired by the installing contractor but shall be hired directly by the prime contractor. Valves and pressure control devices must be in accordance with NFPA 99. Zone valve quantity and placement should be determined in conjunction with the CONOPS and how each patient area will be staffed and supervised but no more than 100 non-acute patients should be on a zone valve and each group of patient isolation units served by a single nurses station (approximately 15 patient isolation units) must be provided with a dedicated zone valve box . Master alarm must be provided at the main Nurse Station. Area alarms must be both at the Nurse Station and at the master alarm panel.

Provide bulk oxygen supply in accordance with NFPA 55. The oxygen system(s) must be piped to an outside connection point, coordinated with the bulk oxygen supplier, where the bulk liquid tanks with vaporizers will be sited. Bulk storage sizing must be based on an estimated daily demand of 8,600 liters per non-acute patient per day (i.e. 6 lpm per patient) plus 25,000 liters per acute patient per day (i.e. 17.4 lpm per patient). Bulk storage tank sizing must be coordinated with the supplier but must not be less than two days storage for the primary tank and one day for the reserve tank. Provide an emergency oxygen supply connection on the building exterior near a loading dock or other connection point coordinated with the supplier. For liquid oxygen bulk storage, provide appropriate off-loading provisions per NFPA 55 including concrete off-loading pad.]

*Coordinate with the local health authorities on the need for Medical Air and Medical Vacuum. These are typically only needed for acute patients on a ventilator. The lack of Medical Air may restrict the patient care capabilities and types of ventilators which can be utilized. Lack of Medical Vacuum may impose an additional burden on the clinical staff for manual suction. Select the following two paragraphs as needed.*

[Provide a piped Medical Air system to all patient isolation units compliant with NFPA 99 as a Category 1 system. Provide medical air producers compliant with NFPA 99. Air intake must be from the exterior at least 25 ft from any other exhaust or other potential contamination source (e.g. loading docks etc.). Provide one Medical Air outlet per bed with piping sized for 75 lpm per bed. No diversity should be applied to the design demand for pipe sizing. Producer sizing should be based on 40 lpm per patient. Valves and pressure control devices must be in accordance with NFPA 99. A zone valve must be provided for each group of patient isolation units served by a single nurses station (approximately 15 patient isolation units) . Master alarm must be provided at the main Nurse Station. Area alarms must be both at the local Nurse Station and at the master alarm panel.]

[Provide a piped Medical Vacuum system to all patient isolation units compliant with NFPA 99 as a Category 1 system. Provide medical vacuum producers compliant with NFPA 99. Exhaust discharge should be a minimum of 25 ft from any other air intake or building opening. Provide one Medical Vacuum inlet per patient bed with the piping and producers sized for 7 liters per minute per patient. No additional diversity should be applied. Valves and pressure control devices must be in accordance with NFPA 99. A zone valve must be provided for each group of patient isolation units served by a single nurses station (approximately 15 patient isolation units). Master alarm must be provided at the main Nurse Station. Area alarms must be both at the local nurse station and at the master alarm panel.]

**7.0 Fire Protection / Life Safety**

This is a conceptual design, therefore, it is critical the local Authority Having Jurisdiction (state/county/city/municipality) and/or area Fire Marshal must be involved in the development of the final design and acceptance of this ACS facility.

Fire Protection Engineer qualifications: The contractor shall provide the services of a qualified registered fire protection engineer (FPE) who holds a current valid professional engineer (P.E.) license in the field of fire protection issued by the state/territory in which the ACS is located. A qualified registered fire protection engineer (FPE) shall be a registered professional engineer (P.E.) who has passed the National Council of Examiners for Engineering and Surveys (NCEES) fire protection engineering written examination and has relevant fire protection engineering experience. The FPE shall be an integral part of the design team and shall be involved in all aspects of the design of the fire protection system. The FPE shall witness all final tests for the fire protection systems. The FPE shall perform Fire Protection and Life Safety Code Review and submit a life safety plan to the local Authority Having Jurisdiction (AHJ) (state/county/city/municipality) for review, acceptance, coordination, and document all Interim Life Safety Measures (ILSM’s). The FPE (and their employer) shall also hold any licenses/certifications required by the state/county/city/municipal government of the ACS location. [*For ACS facilities located on property owned by the United States Government, or located in states/territories which do issue P.E. licenses in the field of fire protection, the FPE’s current valid P.E. license in the field of fire protection may be issued by any United States state/territory*]

The Contractor Fire Protection Engineer must assist the ACS Safety Officer and/or Fire Marshal in the development of the following items listed below prior to the acceptance of the ACS site.

• The ACS Safety Officer on site shall develop a Fire Safety Plan in compliance with NFPA 101 and/or local state/county/city/municipality regulations. .

• Dedicated fire watch must be provided 24/7 on-site. This fire watch person cannot be part of the medical staff.

• Medical staff and fire watch personnel must be trained to the Fire Safety Plan.

• Permit applications and/or documentation required by the local Fire Department

Fire extinguishers shall be provided in circulation corridors throughout the arena floor area IAW NFPA 10.

Manual fire alarm stations shall be extended into the arena floor area and located within or adjacent to nurses stations IAW NFPA 101.

Provide a 120 VAC smoke alarm within each hazardous room.

Contractor shall properly firestop all penetrations within fire rated barriers.

Not less than two exits shall be accessible from patient areas, and egress shall be permitted through adjacent patient areas modules, provided that the two required egress paths are arranged so that both do not pass through the same adjacent modules. Marking of means of egress shall be provided IAW NFPA 101.Dead ends are prohibited.

All plastic and tent fabric shall meet the flame propagation performance criteria contained in NFPA 701.

Hazardous areas in accordance with NFPA 101 shall be separated from adjacent areas via 1- hour fire rated barrier and provided with a ¾-hour fire rated door assembly.

Medical gas storage shall comply with NFPA 99.

**Provide the additional safeguards below for the acute care, non-ambulatory patient isolation pods.**

Nurse’s stations shall be arranged to provide a direct line of sight of patients and minimize staff travel distances, and increase efficiency during code emergencies.

Provide a fire sprinkler system for each isolation unit/pod with non-ambulatory patients. Use quick response sprinklers that are UL-Listed and FM-Approved. Size system piping to support sprinklers operating simultaneously in the three adjacent units that are the most hydraulically remote. The means and methods of installation must be approved by the local Authority Having Jurisdiction. Sidewall sprinklers are preferred to minimize ceiling penetrations.

Provide a 120 VAC smoke alarm within each non-ambulatory patient isolation pod. This will assist nursing staff with identifying fire emergencies within patient pods.

The Contractor shall provide the means to shut down the HVAC serving the pods, readily available to the nurse’s stations.

**8.0 Communications**

The Contractor shall utilize existing broadband capabilities for clinicians to VPN into their regional center for health record accessibility and other needs. This VPN connection will enable leveraging the main hospital's cybersecurity posture. Existing outside plant cabling shall consist of 12 strand fiber optic cabling upgradable to at least 1 Gbps otherwise it shall be provided as part of the contract.

*\*\*Note NFPA 99 requirements for this type of care would require two independent outside plant pathways for telecommunication cabling. However, this is unfeasible based on cost on schedule. Therefore the goal is to survey for at least two independent methods of service such as cellular distributed antenna systems, WIFI and wired infrastructure.*

Units intended for acute patients outside the immediate line of site from the nursing stations shall provide [wired/wireless] camera infrastructure if identified lacking from the site survey. Patient cameras shall display in real time (not recorded) at the nursing stations.

The open space will require enhanced wired/wireless communications on the newly established clinical spaces. At least two lockable, breathable cabinets house PoE switches connecting to Wireless Access Points into existing power and data. Two RU, 48 port patch panels shall be provided to terminate ports from telecommunication outlets, WAPs, RTLS, VOIP phones and other devices. Additional cabinets are required per design for larger open spaces to meet actual port counts.

The contractor shall provide infrastructure (conduit, cabling, cable trays, and termination boxes) for DAS, WAP for facilities where coverage is lacking. Contractor shall provide a heat map indicating total coverage of the clinical space based upon manufacturers’ recommendation. Otherwise, assume WAP placement for every 500 square feet.

The contractor shall provide a nurse call tone visual (NCTV) system with basic functions at each patient location and in bathroom stalls. The NCTV system shall allow each patient to communicate with/signal to the nurse’s station and allows the nurse’s station to identify the specific patient/location of the call. The NCTV system shall be UL 1069 listed. Each patient bedside shall have a voice communication system to the nurse station. This can be part of the nurse call system, VOIP phone and/or integrated into a video camera with speaker/microphone.

*\*\*Note uncertain availability and features of medical equipment make utilization of bedside RJ-45 ports imperative. IT solutions can elevate PPE and clinician staffing shortfalls.*

The contractor shall provide VOIP telephones at each nurse work station and a fully populated Cat6A, RJ-45, 4 port telecommunication outlet. The Contractor shall install Cat5E (or better), RJ-45, 4 port telecommunication outlet immediately adjacent to all patient bed locations. All ports will be terminated and run back to the telecommunication cabinet patch panels. All category cabling shall be physically protected within conduit and/or cable trays. All cabling shall have a 3 foot service loop at the device end.

**9.0 Electronic Security Systems (ESS)**

Electronic security features are highly site specific and should be coordinated with the customer based on site plan, patient and logistic flow, exterior cordon, security staff, and existing systems. Recommend significant edits of the following sections to meet site needs. *Electronic Security Systems not desired by the customer can be removed from the PWS*.

The contractor shall install pathways, cabling and termination boxes for [number] of external security camera at entrances. Cameras shall be [wired/wireless] [2MP] purchased under OI&T by the end user.

The contractor shall install pathways, cabling and termination boxes for [number] of external security camera at entrances. Cameras shall be [wired/wireless] [2MP] and connect to network video storage of which will be purchased under OI&T by the end user. Recommend interior cameras at key corridors and high value storage areas.

The contractor shall install [number] of card readers for clinical staff to access storage, medication and other medical personnel spaces. The card reader shall be [PIV/proximity/magnetic stripe]. Consideration will be placed into utilizing the same system staff already use for simplicity.

If no existing space present the contractor shall fit out a dedicated [100 sq ft] security monitoring room to include [number] of [42] inch monitor(s) for camera viewing and workspace for badging.

The Contractor shall provide Real-Time Locating System (RTLS) system infrastructure if the system is desired by the health care authority having jurisdiction. RTLS provides location of patients, equipment and clinicians. Radio Frequency Identification (RFID) tags are placed on assets and their location can be pinpointed. The Contractor shall design RTLS and WAP antenna placement dependent upon architectural footprint. RTLS accuracy shall be within [3] meters throughout the clinical spaces.

The contractor shall provide [0] vehicle access entry points for the facility to control entry and exit. If installed, coordination shall be made with emergency management services to ensure access.

**10.0 Schedule**

The Contractor shall submit a schedule to the Government within 24 hours of Notice-To-Proceed (NTP).

**11.0 Construction Period Services**

**11.1 Pre-Construction Meeting**

The Contractor shall set up a pre-construction meeting prior to work with the AE, medical staff, USACE, state fire marshal/ local fire department and any other critical team members, which includes walking the site.

**11.2 Inspection and Testing**

The Contractor/ AE shall perform numerous pre-inspection/ walkthroughs on weekly or daily intervals as appropriate or as otherwise agreed to in writing, to become familiar with the progress and quality of the work completed, to share information with team/ shifts and one (1) final inspection of work all based on project schedule (fast tracked). Documentation shall be generated and forward to the local USACE District office with explanations of found deficiencies and/or omissions in work and recommended correctives.

**11.3 Close Out**

The Contractor shall prepare and submit AS-BUILT drawings as developed from the Construction activities re-lined as-built. Drawings shall reflect the actual as-built conditions. Stamp drawings in large red bold letters “AS-BUILT” in the lower right hand corner of all drawings. Drawings shall be submitted at the end of project or within 30 days after project completion.

The Contractor shall submit all specification, binder of materials, equipment and product data/ cut sheets, and all required contract submittals at end of project or within 30 days after project completion.

The Contractor shall provide necessary on-site training to medical staff or provide video media on all major components and systems prior to final approval/closeout and occupancy.