SFEIR ARCHITECTS

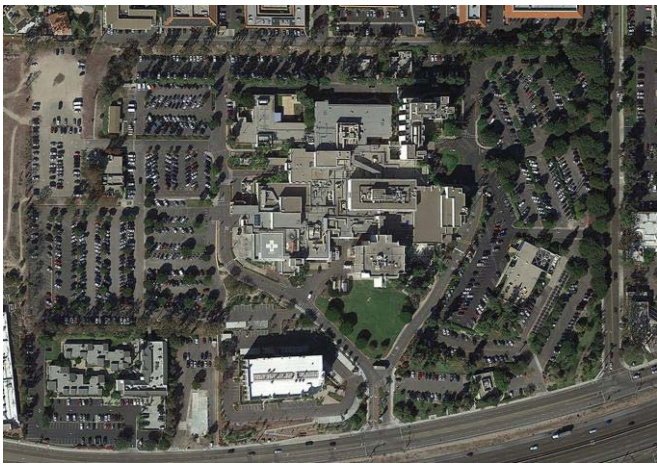
Tri-City Medical Center

Request for Proposals

Medical Center Campus Project

Sfeir Architects Project No. 01634.00

September 21, 2017



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II. BASIS OF DESIGN

A. PROJECT OVERVIEW:

1- BACKGROUND

Tri-City Medical Center is located in Northern San Diego County and serves the cities of Vista, Carlsbad and Oceanside. The 361 bed Hospital provides a wide range of health care services in the North County including Heart care, Orthopedic and Spine Institute, Robotic Surgery, Cancer treatment and Women's services.

Tri-City Medical Center has grown since 1960 with multiple additions in 1974, 1980 and 1990. Currently most of the rooms are double occupancy and the hospital intends to move towards single occupancy. The existing infrastructure and central energy plan are old and need to be upgraded and/or replaced. The following is a summary of the current conditions:

- Site: 1,536,917 square feet
- Parking Spaces: 1221
- Building Total: 459,235 square feet
- Licensed for: 361 beds

Recently Tri-City Medical Center completed a conceptual campus development plan. The first phase includes the addition of a new tower to address moving from double to single occupancy, enhancing hospital access including a new main hospital entrance, replacing emergency and ICU services, expanding orthopedic services and upgrading the central energy plant (CEP) and infrastructure.

2- GOALS

1- Add new hospital tower with no added licensed beds.
2- Add new hospital entrance.
3- Expand CEP, relocate loading docks and materials management.
4- Add new pedestrian bridges.
5- Achieve state-of-the-art design and latest healthcare trends.
6- Keep hospital open during construction.
7- No loss of parking.

3- PROJECT BOUNDARY

The boundary of this design build RFP is limited to the areas and buildings shown in Exhibit 1 Site Plan Scope under section III.

B. PROJECT SCOPE DESCRIPTION:

1- NEW HOSPITAL TOWER:

Locate the new hospital tower at the southern part of the existing hospital abutting the existing emergency department, loading docks and the south tower.
Connect the new hospital tower to the existing hospital on the ground and first levels. Design Build team to address all existing on grade exits and maintain exits to exterior. Modify the current hospital site entrance, located on the east side of the existing MOB along Vista road, to allow for a reconfigured new parking area, emergency department ambulance and walk-in entrance and driveways. The parking to the north side of the existing MOB is to be eliminated to allow for the tower addition and site circulation. Maintain clear area around the south tower for future structural upgrades.

The new tower will be composed of the following, see Exhibit 3 and 4:

- Ground level: Emergency Department and Imaging.
- First level: Orthopedics / Medical Surgical patient rooms
- Second level: ICU / Stepdown – Telemetry patient rooms
- Third level: Shell space for future medical / surgical patient rooms.
- Fourth level: Utilities penthouse.
- Roof: Helipad.

The placement of the departments listed above may be relocated to a different floor.

2- NEW HOSPITAL ENTRANCE:

Locate the new hospital entrance on the western side of the existing hospital. This new building addition will be in front of the existing emergency department.

The new hospital entrance will be composed of the following, see Exhibit 3:

- Main lobby.
- Registration.
- Gift shop.
- Meditation room.
- Waiting area.

Construct an extension of the future main entrance boulevard (N.I.C.) and connect to the new hospital entrance.

3- CENTRAL ENERGY PLANT EXPANSION:

The central energy plant will be expanded to include the following, see Exhibit 3 and section B 10, 11, & 12:

- Emergency Generator Room.
- Compressor Room.

- Chiller Room.
- Primary Pump Room.
- Secondary Pump Room.
- Condenser Water Pump Room.
- Electrical 12 kV Service Room.
- Paralleling Switchgear Room.
- CEP Elec. Distribution Room.
- Cogen Room. (Add Alternate).
- Cooling Tower Area.

4- LOADING DOCKS – MATERIAL MANAGEMENT:

Relocate existing loading docks and materials management to make room for the new hospital tower. Loading docks to be equipped with dock levelers. Provide three sixteen-wheeler spaces and three straight body truck spaces, minimum. Ideal dock configuration, layout, and truck docking approaches to be designed after Civil grading analysis. Provide for regular trash and recycling containers sized for hospital operations, screened from public view. Locate a secured area for portable medical gas canisters storage, screened from public view.
The materials management department shall include distribution, shipping, receiving, offices and conference room and shall be located in the existing hospital basement level convenient to the exterior loading dock area.

5- MORGUE:

Relocate morgue to the existing hospital basement level. Morgue to include at a minimum autopsy facility, cadaver room with number of drawers to be determined, and support spaces as listed in the program – see Exhibit 3.

6- NEW PEDESTRIAN BRIDGES:

Add two new pedestrian bridges. The first bridge will connect the future parking structure (N.I.C.) to the new hospital tower. The second pedestrian bridge will connect the existing MOB to the new hospital tower. Vertical transportation and fire exits shall be provided at each connection. The bridges must be designed to enhance the pedestrian travel experience and be protected from the environment; HVAC is not required. See Exhibit 1 and 3.

7- SITE CIRCULATION:

Pedestrian:

Provide an accessible route for handicapped and disabled from Vista road to the new hospital main entrance. All new building entrances shall be connected to each other and to existing buildings with a network of sidewalks. All new street

crossings shall be provided with warning yellow flashing lights to be activated by pedestrians.

Vehicular

Visitor, Patient, staff, and service driveways shall be provided as shown in Exhibit 1.

8- FAÇADE MINIMUM DESCRIPTION:

The new tower and hospital entry are intended to be the updated, modern 'face' of the hospital. Design of the exterior elevations of these structures shall be completed to a higher standard of aesthetics and materials. Acceptable materials include curtain walls, composite aluminum panel, concrete, and other materials commonly used in quality modern building projects. The following are the approximate designed percentages of the materials listed above:

- 60% Curtain Wall
- 30% Composite Aluminum Panel
- 10% Concrete

When selecting materials and designing the façade, 75% of focus should be on the energy efficiency of the material, and 25% on aesthetics.
Facades shall not have large, unbroken flat planes. Facades shall have a minimum 30% of mass articulation, breaks, and setbacks.

9- EXISTING HOSPITAL CORRIDORS (ADD ALTERNATE):

Refinish existing hospital corridors to match design, materials, and aesthetic quality of new hospital entry. To be provided as an add alternate in bidding documents. See Exhibit 10 for proposed extent of corridor renovation.

10- BASIS OF DESIGN - MECHANICAL

A. General

The following illustrates some of the design or engineering criteria that may need to be addressed during the design phase of project development. Appropriate mechanical design and implementation is an important factor leading to the success of this project, in large measure because of the initial and life-cycle costs of these systems and the impact of these systems on the operations of the facility. The issues illustrated below should be interpreted as minimum performance requirements only. During the next phase of project development, these and other engineering and system design criteria will be investigated more fully.

The intent of this document is to provide a baseline design guide of minimum requirements. The Design-Build Team is are expected to address all of the topics addressed herein, but is expected to augment these minimum requirements to add

value. It is important to note that the proposed designs will be judged against an intended 60-year facility life.

a. Provide Comfortable Environments / Enhance Indoor Environmental Quality

- During the facility design, the Design-Build Team is to design to a comprehensive, integrated design that provides comfortable environments and enhances indoor environmental quality, that maintains comfort and security, that provides better than Title 24 efficiency, that provides reliability and reduces maintenance. Examples of potential alternatives and efficiencies include:
- Reduce heating and cooling loads through climate-responsive design
- Employ renewable energy sources such as passive solar heating and geothermal
- Supply adequate levels of ventilation and outside air
- Incorporate natural ventilation
- Analyze room configurations and HVAC distribution layouts to ensure all parts of a room are receiving adequate ventilation
- Specify efficient HVAC systems that consider part-load conditions
- Optimize system control strategies by Utilizing CO2 sensors to assess the air quality of spaces to adjust ventilation
- Employ energy modeling programs to justify design decisions.

Within this process, the teams are to analyze system operational and functional costs, and provide all alternatives, options, and analyses considered to the Owner for review.

b. Codes

Systems shall be designed in accordance with, but not limited to, the following codes:

- California Building Code, 2016.
- California Mechanical Code, 2016.
- California Plumbing Code, 2016.
- National Electrical Code with California amendments.
- State of California Code of Regulations (CCR).
- Title 24 Energy Conservation Code.
- OSHPD PIN's and CAN's.

c. Standards

The following reference standards shall be used in design:

- AMCA Air Movement and Control Association International, Inc.
- ANSI Safety Code for Mechanical Refrigeration.
- ARI Air Conditioning and Refrigeration Institute.
- ASHRAE Handbooks.
- SMACNA Fire and Smoke Damper Installation Guide.

- SMACNA Guidelines for Seismic Restraints of Mechanical Systems.
- SMACNA Standards for Duct Construction.
- UL Underwriters' Laboratories, Inc.
- NFPA 90A Air Conditioning and Ventilating Systems.
- NFPA 99 Standard for Healthcare Facilities
- NFPA 101 Life Safety Code.

B. Design Criteria

a. Design Conditions – Outdoors and Indoors

This section specifies minimum outdoor and indoor temperature conditions for use in preparing heating and cooling load calculations.

- System load calculation shall be based on the following outdoor design conditions:
  Summer: ASHRAE 0.1%
  Winter: ASHRAE 0.1%
- Design Conditions - Indoors

The system will be designed to maintain the following conditions:

Space	Winter °F	Summer °F	Relative Humidity %
General Air Conditioned Areas	70	74	No control*
Unoccupied Areas	55	85	No control

'* Unless required by Code.

b. Internal Air Conditioning Loads Assumptions

We expect that all normal and customary engineering practices will be followed in performing heating and cooling load calculations. However, the following does provide some specification where there are reasonable options.

- Sensible heat gain: 255 BTU/person
- Latent heat gain: 245 BTU/person
- Safety Factors: In calculating heating and cooling loads use a minimum of 10% additional on top of calculated cooling loads and 25% on heating loads.
- Ventilation rate – refer to Table 4A of the CMC.

c. Noise levels:

Consideration shall be given to acoustics throughout the patient spaces. Sound transmission shall be studied in areas where patient confidentiality is important. Noise levels shall be controlled throughout to provide a reasonably pleasant experience.

- Refer to ASHRAE Applications, 2007, Table 42.

d. Temperature Controls and Zoning

This section describes the desired level of quality with regard to temperature control and zoning. It describes a medium level of quality – balancing cost and control.

- Individual temperature control zones will be based on functions, exposure, and Owner request. For example, groups of doctors' offices and groups of exam rooms will be served with separate zone control.
- One zone per maximum of six similar spaces.
- No separate zoning for rest rooms and corridors.
- Terminal units shall be provided with hot water heating coils for each zone. Alternative methods of terminal zone control will be considered.
- Engineer will consider providing variable air volume control wherever possible.
- Generally, an air handling unit shall be applied to a unique type of space – e.g. Emergency Department, Labor and Delivery, etc. – rather than having a single air handler service more than one unique type of space.

C. Heating, Ventilating and Air Conditioning Systems

a. General Requirements

This section describes general requirements, which are applicable to the design of all mechanical subsystems.

- When designing HVAC systems that require the use of water, the Design-Build team shall determine if the water is compatible with the equipment being recommended. If not, then the water will be conditioned to meet the manufacturer's specifications.
- Carefully consider soil conditions relative to buried piping, and provide appropriate corrosion protection.
- Note that the "Center Tower" building is being removed from Acute Care Services as part of this project; and that most piped utilities pass through that building to serve other Acute Care buildings. Design shall correct this condition.

b. Chilled Water Systems

The purpose of this section is to identify certain minimum levels with regard to technology, redundancy, energy efficiency, materials quality, and design quality of the chilled water system.

The existing Central Energy Plant has six chillers and two cooling towers:

- CH-1 – Trane CVHE-500, 500-ton, centrifugal, R-11 refrigerant
- CH-2 – Trane CVHE-320, 320-ton, centrifugal, R-11 refrigerant
- CH-3 – Trane CVHE-320, 320-ton, centrifugal, abandoned in place
- CH-4 – Trane RTHA-255FC, 255-ton, screw, R-22 refrigerant, for ice production
- CH-5 – Trane RTHA-255FC, 255-ton, screw, R-22 refrigerant, for ice production
- CH-6 – Trane ABTF, 500-ton, absorption, 83 psig, 6366 PPH.

- o CT-1 and CT-2 – Permalite model #216-8B, 1000 tons, each (1564 gpm, 102.9º / 74º wb, 85º LWT, each). 40 hp fans with VFD's.

Preliminary calculations indicate the need, after this expansion is completed, for either four chillers at 800 tons each, or five chillers at 600 tons each. Assume replacing chillers, and elimination of ice storage system in scope.

- Design-Build Team shall perform analysis of various options – centrifugal, screw, scroll, absorption, variable-speed drives, various refrigerants and efficiencies, various supply/return temperatures, various condenser heat rejection technologies, etc. – to determine the best system with regard to first cost, energy efficiency, reliability, long-term life cycle and operating costs, and maintenance. Provide analysis for Owner review.
- Sufficient redundancy shall be provided so that, in the event of a single chiller, tower fan, or pump failure, there shall be sufficient cooling capacity to maintain less than or equal to the miNimum space temperatures (as defined above) everywhere at the summer design temperature.
- Design-Build Team shall provide temporary services so as to prevent system downtime during system modifications and replacement.
- Chilled water circulation shall be provided by a variable flow, primary/secondary pumping system.
- Chilled water coils: two-way control valves shall control coil capacity. Maximum face velocity shall be 450 FPM. Counter flow pattern shall be used on all coils.
- Chilled and condenser water piping: Galvanized schedule 40 steel, or hard copper tube and fittings, Type L copper and soldered joints.
- Expansion loops shall be used to compensate for pipe expansion.
- Where piping runs through seismic joints, flexible fittings shall be provided to account for anticipated movement.
- Piping shall be sized for a maximum friction loss of 3 feet w.g. per 100 feet of straight pipe and a maximum velocity of 7 FPS; whichever is less.
- Piping shall not be routed over electrical rooms, telephone rooms, or stored records.

c. Heating Hot Water System

The purpose of this section is to identify certain minimum levels with regard to technology, redundancy, energy efficiency, materials quality, and design quality of the heating hot water system.

Heating hot water is presently produced via steam-to-hot water heat exchangers that are located in the various buildings.

Preliminary calculations indicate a peak heating hot water load of 4100 MBH for the expansion. Design-Build Team will confirm loads and provide steam-to-HHW capacity for the actual calculated load.

- Design-Build Team shall perform analysis of various options – steam-to-hot water heat exchangers, high efficiency hot water boilers with flue gas economizers, various supply/return temperatures, etc. – to determine the best system with regard to first cost, energy efficiency, reliability, long-term life cycle and operating costs, and maintenance. Provide analysis for Owner review.
- Sufficient redundancy shall be provided so that, in the event of a single heating equipment or pump failure, there shall be sufficient heating capacity to maintain better than minimum building temperatures (as defined above) everywhere at winter design temperature.
- Design-Build Team shall provide temporary services so as to prevent system downtime during system modifications and new construction.
- Heating water circulation shall be provided by variable volume pumping system.
- Heating water coils: two-way control valves shall control coil capacity. Maximum face velocity shall be 550 FPM. Counter flow pattern shall be used on all coils.
- Heating water piping: Hard copper tube and fittings, Type L copper and soldered joints.
- Expansion loops shall be used to compensate for pipe expansion.
- Where piping runs through seismic joints, flexible fittings shall be provided to account for anticipated movement.
- Piping shall be sized for a maximum friction loss of 3.5 feet w.g. per 100 feet of straight pipe and a maximum velocity of 7 FPS; whichever is less.
- Piping shall not be routed over electrical rooms, telephone rooms, or stored records.

d. Steam System

The purpose of this section is to identify certain minimum levels with regard to technology, redundancy, energy efficiency, materials quality, and design quality of the steam and condensate return systems.
Steam is used throughout the campus for production of heating hot water and domestic water production, for sterilization, and for humidification.

There are two existing gas and oil fired 600 horsepower steam boilers in the Central Plant; capable of 20,700 PPH, each. We estimate that the existing peak load is 9200 PPH, and the new total load will be 12,400 PPH for existing plus new loads. Provide three steam boilers at 250 hp each; which will provide n+1 redundancy. Two 250 hp steam boilers will produce 17,250 PPH of steam.

- Provide analysis of make-up water chemistry and provide necessary treatment to meet boiler manufacturer's recommendations.
- Design-Build Team shall perform analysis of various options to serve the new loads – separate high and low pressure systems, local electric humidifiers, etc. - to determine the best system with regard to first cost,

energy efficiency, reliability, long-term life cycle and operating costs, and maintenance. Provide analysis for Owner review.

- Sufficient redundancy shall be provided so that, in the event of a single equipment failure, there shall be sufficient steam capacity to maintain all services.
- Steam piping: Schedule 40 black steel.
- Steam condensate piping: Schedule 80 black steel.
- Traps and condensate return systems shall be sized for system start-up and normal operation.
- Expansion loops shall be used to compensate for pipe expansion.
- Where piping runs through seismic joints, flexible fittings shall be provided to account for anticipated movement.
- Steam piping shall be sized for a maximum velocity of 6,000 fpm. Steam and condensate piping shall not be routed over electrical rooms, telephone rooms, or stored records.

e. Equipment

The intent is to specify a better than average level of quality for HVAC equipment – something that will last a long time, require low maintenance, and not compromise the health of the patients, while providing best reliable energy efficiency.

- Air Handling Units for Medical Areas: Double-wall rooftop units with cooling coil, supply and return fans, VFDs and economizer control.
- Air Handling Units for Non-medical Areas: Single-wall rooftop units with cooling coil, supply and return fans, VFDs and economizer control.
- Packaged Gas/Electric Air Conditioners: Use only for specific remote conditions where providing chilled water and heating hot water would be cost prohibitive.
- Constant volume air terminal and variable volume air terminal boxes: Provide constant volume boxes for medical areas. Consider airflow set-back wherever possible. Provide variable volume boxes for non-medical areas. Ensure that outdoor air levels are maintained, via CO2 measurement where VAV terminals are furnished. Provide hot water reheat coils in either case, except provide electric reheat in remote areas where providing heating hot water would be cost prohibitive.
- Provide cooling supply to IDF's and MDF's via main building HVAC system, and provide back-up via split system fan-coil units.

f. Thermostats

- Thermostats controlling psychiatric patient-accessible areas shall be of the remote sensor type, where the sensor is located in the return air ductwork.
- New thermostats will be provided with warmer/colder control,
- Thermostats in Administrative areas will be provided with night-setback override capability.

g. Ductwork

The purpose of this section is to identify certain minimum levels with regard to energy efficiency, materials quality, and design quality of the various ductwork systems.

- All ductwork sheet metal will be galvanized, with the exception of ductwork serving wet locations – shower rooms, Central Sterile, downstream of humidifiers, etc. – which shall be of aluminum or stainless steel construction.
- Supply ducts upstream of air boxes: SMACNA minimum of 3" w.g. duct pressure classification, and as required.
- Return duct, supply duct downstream from air boxes, and general exhaust ducts: SMACNA 2" w.g. duct pressure classification.
- All supply and exhaust ducts upstream of terminal boxes shall be leak and pressure tested for a maximum of class per SMACNA.
- Flexible Ducts: Limited to 6' in length, and only for connection to grilles, registers and diffuser. No flexible duct in exposed areas.
- Exposed supply and return ducts: 2" thick rigid board fiberglass insulation with canvas wrap.
- Internal duct liner: One or two inches thick, 3# density fiberglass duct liner with vinyl facing and taped joints. Return and exhaust ducts only.
- Exhaust ducts: Not insulated except for acoustical liner where required.
- Outdoor supply and return ductwork: Aluminum or stainless steel jacket over insulation.

h. Vibration Isolation

- All motor operated equipment outside the Central Plant shall be provided with vibration isolation mounting to prevent transmission of vibration or noise to the building.
- Piping connecting to motor operated equipment shall be provided with vibration isolation hangers for a distance to be determined by the design engineer.

i. Seismic Restraints

- Piping and equipment shall be provided with adequate anchorage and restraints conforming to the 2016 California Building Code and ASCE Chapter 7.

j. Testing, Adjusting and Balancing:

- The Owner will provide an independent testing and balancing contractor, AABC or NEBB certified, to balance all air and water systems and heating and cooling equipment to the required quantities; and to verify the capacity and operating conditions of each piece of equipment. Contractor will provide all required aid and services in assistance of the balancing contractor.

k. Temperature Control System and Building Management Systems (BMS)

The intent is to describe a direct digital control (DDC) system which can be monitored, maintained and controlled from a location selected by the Owner.

- The system shall monitor, control, and alarm all functions of the HVAC Systems, and be able to monitor energy usage and efficiency for both electrical and natural gas systems.
- The system shall be able to access two weeks of complete system history.
- Perform control of HVAC systems with a field programmable digital controller, microprocessor based, which incorporates:
  - digital control,
  - energy management functions,
  - lead/lag control,
  - run-time leveling,
  - temperature set-back for chillers, boilers, and air handlers,
  - space temperature monitoring and control
  - night setback for Administrative areas,
  - automated fault detection,
  - convenient adjustments of all variables at the permanently mounted network terminal.
- The local digital controllers shall perform their assigned control functions as a stand-alone units. Their communication interface shall provide compatibility of incorporation into the existing Global Computerized Management System. On failure of the communication interface, each digital controller shall continue to perform its full control functions. On failure of any 1 controller, only related systems shall be affected.
- The BMS shall track energy usage and efficiency for all major systems.
- The new BMS will be able to interface with the existing BMS, and thereby be able to utilize data to perform energy efficiency measures at the Central Plant.

l. Commissioning

- Provide full support for the complete commissioning of all mechanical systems by an independent commissioning agent. The commissioning agent will be retained by the Owner.

m. Acceptable Equipment Manufacturers

System will be designed using the following manufacturers of equipment:

- Air Handlers: Temtrol, Haakon, Energy Labs, Climate Craft, Scott Springfield
- Chillers: Trane, Carrier, JCI, Daikin
- Boilers: Parker, Bryan, Fulton, Cleaver Brooks, Ajax
- Packaged Gas/Electric Air Conditioners: Aaon (no known equal)
- Temperature Controls: Johnson Controls, Siemens, Trane, ALC, Allerton

n. Energy Conservation Features:

- Economizer cycle – The air handling units and air conditioners larger than 2,000 cfm will vary the percentage of outside air and return air based on outside air temperature.
- Return Fans – Provide return fans for all air handlers.
- Variable Frequency Drives (VFD's) – Provide VFD's on all supply and return fans for all air handlers.
- Supply air temperature reset – Provide a feature to automatically reset the temperature off the cooling coil upward based on the zone requiring the most cooling.
- Chilled Water supply temperature reset – Provide a feature to automatically reset the chilled water temperature based on return temperature.
- Heating Hot Water supply temperature reset – Provide a feature to automatically reset the heating hot water temperature based on return temperature.

o. Cogeneration (Additive Alternate):

- As an additive alternate, furnish a cogeneration plant, to be located in the Central Energy Plant.
- Unit will be of modular design, consisting of multiple smaller units with n+1 redundancy. Modular so that (1) it can be expanded in the future, (2) so that if one module fails it can be taken out of service and repaired without creating Utility Demand Charges.
- Contractor will study options for technology – micro-turbines, IC engines, fuel cells, etc.
- Contractor will price the cogeneration plant at (1) 800 kW to meet the estimated the minimum steam load, (2) 600 kW to meet the estimated minimum electrical load, and (3) 1,200 kW output to meet the estimated maximum output as limited by infrastructure.
- Provide analysis of technologies, sizes, and estimated simple payback for Owner review.

11-BASIS OF DESIGN- ELECTRICAL

A. Electrical Equipment

The following preliminary electrical issues are presented to illustrate some of the design or engineering criteria that may need to be addressed during the co-opetition and/or subsequent design phase of project development. Appropriate electrical design and implementation is an important factor leading to the success of these projects, in large measure because of the initial and life-cycle costs of these systems and the impact of these systems on the operations of the facility. The issues illustrated below

should be interpreted as minimum performance requirements only. During the next phase of project development, these and other engineering and system design criteria will be investigated more fully.

The intent of this document is to provide a baseline design guide of minimum requirements. The teams are expected to address all of the topics addressed herein, but are expected to augment these minimum requirements to add value. It is important to note that the proposed designs will be judged against an intended 100-year facility life.

B. Design Criteria

a. Applicable Codes, and Standards

- California Building Code, 2016
- California Electrical Code, 2016
- NFPA 101, Life Safety Code.
- NFPA 72
- NFPA 99 Health Care Facilities.
- ADA requirement for handicapped as it relates to mounting heights and visual and audible alarm device requirements.
- Institute of Electrical and Electronic Engineers (IEEE).
- American National Standards Institute (ANSI).
- Underwriters' Laboratories (UL).
- National Fire Protection Associates Standard 99 (Health Care Facilities)
- Illuminating Engineering Society (IES)

b. Electrical Service

The purpose of this section is to identify certain minimum levels with regard to technology, redundancy, energy efficiency, materials quality, and design quality of the electrical power systems. We expect that all normal and customary engineering practices will be followed in performing the design of the electrical distribution systems. However, the following does provide some specification where there are reasonable options.

- DESIGN-BUILD Teams to perform analysis of various options to determine the best system with regard to first cost, energy efficiency, reliability, long-term life cycle and operating costs, maintenance, and LEED.
- The Campus normal power is provided at 12,470V.
- The existing service to campus will need to be relocated to the Central Plant and upgraded to provide an adequate service for the existing, new and future load. New service shall be sized for about 4.25 MVA for the building load plus any additional mechanical load need in the Central Plant. Design-Build team shall provide detailed load calculations to owner to show system is capable of handling new and future loads.

- Reconnect all normal connection as required to keep the existing facility operational.
- The existing generators located in the electrical service building shall be removed but the existing ATS's transformers and panels shall remain. Reconnect ATS's, transformers and panels as necessary.
- New Phase I Tower electrical service shall be sized for about 1.2 MVA of load for normal power. Design assumes 6 VA/SF.
- Central Plant normal service need to be evaluated for size. Provide load calculation with 30 day load reading to determine if the 4000A size of the Switchgear is adequate for the additional mechanical equipment. Switchboard shall provide normal power for new life safety, critical and equipment branch ATSs located in new emergency electrical room.
- The existing generator system for the campus will need to be relocated and upgraded. The emergency electrical service shall consist of new three 1.2 Megawatt diesel generators (n+1 redundancy) paralleled together via new paralleling switchgear. Provide provisions and conduit for a fourth generator. Generators and paralleling gear shall be located in Central plan building. Suggested generator voltage is 4160V but not required. Paralleling gear shall be sized to handle 4.8MVA worth of load.
- The new Phase I Tower third floor shall be shell space. Provide all below slab infrastructure and all electrical equipment on the third floor to minimize future construction impact. Design space shall be similar to first floor.
- Reconnect all existing emergency connections as required. Provide step down transformers as required to reconnect the system. Refer to master plan for locations of building.
- Central Tower electrical system needs to be reconfigured such that it has Life Safety, Critical and Equipment branch power. Provide new distribution from Central Plant. Reconnect existing loads to correct service. Design Build Team shall provide electrical load calculations to confirm sizes of equipment.
- Life Safety Branch – In the new emergency electrical room in the Central Plant, a new critical branch shall be created. ATS and Switchboard shall be sized to handle a minimum of 75KVA load. Assume 0.25 VA/SF for Phase 1 Plant.
- Critical Branch – In the new emergency electrical room in the Central Plant, a new critical branch shall be created. ATS and Switchboard shall be sized to handle a minimum of 750KVA load. Assume 2.5 VA/SF
- Equipment Branch– In the new emergency electrical room in the Central Plant, a new Equipment branch shall be created. ATS and Switchboard shall be sized to handle a minimum of 125KVA for building load plus any additional Central Plant equipment. Assume 0.5 VA/SF excluding mechanical equipment and imaging equipment.
- Provide new automatic transfer switches, new panelboards, and new step down transformers to distribute the power in equipment, critical, and life safety branches per NFPA 99 and the NEC.
- All substations, switchboards, and panels to have 25-percent spare amperage capacity for future growth.

- All substations, switchboards, and panels to have 25-percent spare breaker space for future growth.
- Electrical rooms to have 10-percent spare wall space, as measured in linear feet, for future growth at the end of the project.
- Provide monitoring of main gear, unit substations, and main distribution panels thru the Building Management System. Refer to the Mechanical Basis of Design for more information regarding the BMS.
- The generators shall be provided with day tanks and an aboveground main fuel storage tank(s) to allow for 72 hours of full capacity, for 1.2 MVA per generator for four generators.
- All imaging equipment shall be on the equipment branch with UPS backup power. UPS shall have a 5 minute run time. Imaging PC shall be connected to UPS power. Provide all connections as
- All transformer shall have copper windings.
- All panels shall have copper bus bars.

c. Branch Circuits

- All conduits are concealed EMT except in mechanical and electrical rooms which are exposed IMT conduit
- Galvanized ridged steel conduit is used in concrete slabs and below grade. Where subject to corrosion, rigid steel conduit will be provided with factor-applied coating.
- EMT is used in hung ceilings and non-masonry walls.
- Conductors sizes are No. AWG minimum for power and No. 14 for controls and signals.
- Flexible steel conduit is used to connect unit heaters, motors, lay-in lighting fixtures and transformers. Liquid-tight flexible steel conduit is used in damp and wet location.
- IMC conduit with threaded fitting to be used just outside and in mechanical rooms. EMT conduit with set-screw fitting to be used else-where.
- Safety-type outlets to be used in public areas.
- For non-emergency Brach circuits, where allowed by code, healthcare rated MC cabling may be used. In all areas, use EMT conduit with copper conductors.
- All conductors shall be copper wire with THHN or THWN insulation and enclosed in raceways.
- Multi-wire branch circuits using multi-pole circuit breakers will not be permitted. Provide a separate neutral conductor for each circuit.
- All boxes and enclosures shall be metal, except non-metallic boxes and enclosures may be used in corrosive environments.
- Provide 20 amp hospital grade wiring devices in patient care areas and specification grade devices elsewhere.
- All medical refrigerators and freezers shall be on emergency power.
- All feeder and branch circuits shall include a green grounding conductor.

- Provide power and equipment connections for mechanical and HVAC equipment as required.
- Provide power to all medical equipment.
- Provide duplex receptacle in all corridors at 40' on center.
- Typical offices will have one duplex receptacle per wall.
- Emergency power provisions will be as follows:

Department / Room	Power Provisions	
	Emergency	Normal
Offices	-	All
Workrooms	Computer Receptacle	All lighting and convenience receptacles
Lounge	-	All
Exam and Treatment Rooms	Exam Light 1 Receptacle	General Lighting All other receptacles
Per op and Recovery	Lighting and Power	1 receptacle on normal power per space
Procedure	All equipment	-
Waiting Rooms	-	All
Consulting Rooms	Computer Receptacle	All lighting and convenience receptacles
Imaging	Minimal Lighting 1 Receptacle Imaging Equipment	General Lighting All other receptacles
Mech/Elec Rooms	50% of Lighting and Receptacles	Balance of Lighting and Receptacles
IT Rooms	All (UPS)	-

d. Lighting

The purpose of this section is to identify certain minimum levels with regard to technology, energy efficiency, materials quality, and design quality of the building lighting systems.

- Provide lighting levels as indicated in the table below. For spaces not included on table, provide lighting levels in accordance with IES guidelines.
- Lamp and fixture types shall be selected to result in the highest efficiency consistent with the application.
- All interior lighting and exterior lighting shall be led with dimming. Acceptable manufacturers are Lithonia, Philips and associated brands, Kenall, Cooper and associated brands, Cree LED, Focal Point, GE, Gotham, AcityBrands, H.E. Williams, Kirlin, and Focal Point.
- Occupancy sensors, daylighting, timeclocks, and/or other automatic controls shall be provided in interior spaces where appropriate.
- Egress lighting and exit signs shall have an internal battery pack and shall be connected to the emergency power system. Exit fixtures shall not be provided in patient accessible areas as permitted by Code.
- Exterior lighting shall be designed to provide an average to minimum foot candle ratio not exceeding three to one, and a maximum to minimum ratio not exceeding five to one.

- Exterior lighting shall be controlled with a lighting control panel with photocell controlled and a manual override switch.
- All exterior lighting shall comply with the California Energy Codes.
- All lighting in non-I2 occupancy shall comply with the California Energy Codes.
- Provide egress lighting where under normal conditions provide 1 ftc minimum when the space is occupied. Under emergency conditions, egress lighting shall be 1ft average with a minimum of 0.1 ftc

AREA	F.C. (AT 30" AFF) WORKING	Lighting Controls
Operating Room (general lighting)	Zone 1: 300 Zone 2: 100-125 Zone 3: 60-75	Scene Control and Multi-Zone Dimming/Switching
Offices	30	Manual Dimming Daylight dimming as applicable. Vacancy
Consultation Rooms	15 (conversation) 40 (reading)	Manual Dimming Daylight dimming as applicable. Vacancy
Conference Rooms	30 - 40	Scene Control and Multi-Zone Dimming Vacancy Sensor
Exam and Treatment Rooms	50 (consultation) 100 (examination)	Manual Dimming
Corridors	5	Manual Dimming
Toilets	15	Vacancy Sensor
Stairs	10	Occ. sensor dimmed to 10% when non-occupied
Electrical, mechanical	30	Manual Switching
Waiting	20	Manual Dimming Daylight dimming as applicable.
Recovery Rooms	20	Manual Dimming
Lab	30 (ambient) 100 (task)	Manual Dimming and Occupancy Sensors
Imaging	10 (scanning) 75 (equipment)	Scene Control and Zoned Manual
Shell	10	Occupancy Sensors

e. Telecommunications/Low Voltage Systems

The purpose of this section is to identify certain minimum levels with regard to technology, materials quality, and design quality of the low-voltage pathways.

- Provide underground conduits from the utility provider to the main Telecommunications room. Provide 50-percent spare conduits.

- Provide 4" J-hook main distribution down corridors. Size J-hook path to accommodate all low voltage cabling systems. Each system shall be bundled separately.
- Provide outlet boxes and conduits stubbed out above an accessible ceiling to allow for wire installation and termination by others. Locations of boxes per owners requirements.
- Extend the existing PACS system to new tower.
- Extend the existing Serner system to new tower.

f. Fire Detection, Alarm, and Control System

The purpose of this section is to identify certain design features where there are options for the designer.

- The new fire alarm system shall be compatible with the existing system.
- The existing fire alarm panels for the campus are located in the lower level in the south portion of th e"U-Shaped" building.
- Fire alarm annunciators are located in the existing PBX room on the north side of the central Plant in non-compliant space. Coordinate location of PBX.
- Fire alarm annunciator shall be located in the new PBX.
- Provide an addressable, voice-capable, fire alarm control system.
- Provide pull stations, smoke and heat detectors and notification appliances as required by NFPA 101 and NFPA 72.
- Interface the fire alarm system with the HVAC system to provide fan shutdown, fire/smoke damper monitoring and closure, and fire door hold-opens.
- All fire alarm conductors shall be installed in conduit.
- Provide duct-mounted detectors in supply and return ducts of the HVAC system.

g. Commissioning

Provide full support for the complete commissioning of all electrical and low-voltage systems by an independent commissioning agent. The commissioning agent will be retained by the Owner. Acceptance testing as required by the California Energy Code is the responsibility of the Design-Build Contractor.

h. Cogeneration (Additive Alternate):

- Refer to Mechanical BOD for additional information on the three options for pricing the cogeneration plant.
- In addition to the Mechanical BOD, design-build team is responsible for all interconnection requirements. Coordinate with Utility company.
- Where cogeneration plant is connected to the electrical service, breakers in that gear shall be electrically operated. Current proposed location is the normal electrical service for the Central Utility Plant. Contractor is responsible for verifying location of connection will support the three

design options. Contractor may propose an alternative location if it reduces cost and allows for expandability.
- Cogeneration plant shall be able to be placed in island mode to supply power to the facility during extended outages.
- Cogeneration plant shall be able to reduce electrical load output to match demand load.
- Provide analysis of technologies, sizes, and estimated simple payback for Owner review. Provide Owner with interconnection requirement for exporting power to the Utility company.

12-BASIS OF DESIGN - PLUMBING

A. Plumbing and Fire Protection Equipment

The following preliminary plumbing issues are presented to illustrate some of the design or engineering criteria that may need to be addressed during the design phase of project development. Appropriate plumbing design and implementation is an important factor leading to the success of this project, in large measure because of the initial and life-cycle costs of these systems and the impact of these systems on the operation of the facility. The issues illustrated below should be interpreted as minimum performance requirements only. During project development, these and other engineering and system design criteria are to be investigated more fully. The intent of this document is to provide a baseline design guide of minimum requirements for all plumbing to 5 feet outside of the building(s) perimeter(s). The Design-Build Team is expected to address all of the topics addressed herein, but is expected to augment these minimum requirements to add value. It is important to note that the proposed designs will be judged against an intended 60-year facility life.

a. Protect and Conserve Water

During the facility design, the Design-Build Teams are challenged to design to a comprehensive, integrated perspective that seeks to protect and conserve water use that maintain comfort and security, improve efficiency, increase reliability, and reduce maintenance. Examples of potential alternatives and efficiencies include:

- Reduce, control, and treat surface runoff
- Use low impact development principles (vegetated swales, pervious paving materials, etc.)
- Use ultra water - efficient plumbing fixtures, and other water saving devices
- Design landscaping and irrigation for water efficiency.
- Specify non-lead polluting materials.
- Use non-sewage wastewater and roof water for onsite activities
- Implement Best Management Practices for water conservation

Within this process, the teams are to analyze system operational and functional costs, and provide all alternatives, options, and analyses considered to the Owner for review.

B. Scope of Work

a. Work Included

- Sanitary waste, roof drainage, and vent system.
- Domestic cold water system.
- Domestic hot water system.
- Medical gas systems.
- Condensate drain system.
- Plumbing fixtures and equipment.
- Fuel Oil system.
- Wet and pre-action automatic sprinkler systems, as required.

C. Basis of Design

Systems will be designed in accordance with listed applicable Codes, Standards and Authorities Having Jurisdiction, the Underwriters Laboratories and in accordance with current engineering practices.

a. Codes

- California Building Code, 2016.
- California Mechanical Code, 2016.
- California Plumbing Code, 2016.
- California Electrical Code, 2016.
- State of California Code of Regulations (CCR).
- OSHPD PIN's and CAN's.

b. Standards

- AGA American Gas Association.
- ANSI American National Standards Institute.
- ASME American Society of Mechanical Engineers.
- ASSE American Society of Sanitary Engineering.
- ASTM American Society for Testing and Materials.
- AWS American Welding Society
- AWWA American Water Work Association.
- CEC California Energy Commission.
- CISPI Cast Iron Soil Pipe Institute
- CS Commercial Standards
- DOE Department of Energy
- EPA Environmental Protection Agency
- NEMA National Electrical Manufacturers Association

- NFPA National Fire Protection Association

NFPA 13 - Installation Sprinkler Systems.
NFPA 30 - Fuel Oil
NFPA 99 - Health Care Facilities.

- NSF National Sanitation Foundation
- PDI Plumbing and Drainage Institute
- UL Underwriters' Laboratories

c. General Requirements

This section describes general requirements, which are applicable to the design of all plumbing subsystems.

- When designing Plumbing systems that require the use of water, the team shall determine if the water is compatible with the equipment being recommended. If not, then the water will be conditioned to meet the manufacturer's specifications.
- Carefully consider soil conditions relative to buried piping, and provide appropriate corrosion protection.
- Over-size main utility lines to provide capacity for future 10-percent growth in demand.
- Provide valves so as to be able to isolate reasonably small sections of piping systems to allow for maintenance and future remodel.
- Commissioning: Provide full support for the complete commissioning of all plumbing systems by an independent commissioning agent. The commissioning agent will be retained by the Owner.

d. Storm Drainage System

This section provides certain minimum levels with regard to materials quality, and design quality of the roof drainage systems.

- The storm drain system will drain all rainwater from roof and deck areas to civil street connections.
- Provide provision for connection to future on-site storm water retainage.
- All piping and accessories will be ductile iron; no-hub fittings.

e. Sanitary Waste and Vent System

This section provides certain minimum levels with regard to materials quality, and design quality of the sanitary drainage and vent systems.

- The sanitary waste and vent system will convey waste from plumbing fixtures, by gravity, to the municipal system outside the fence perimeter.
- Provide provision for connection to future on-site waste storage.
- All piping and fittings and accessories will be cast iron for waste, and cast iron, steel, or copper for vent; no-hub fittings.

f. Domestic Cold Water System

This section provides certain minimum levels with regard to materials quality, environmental conservation, and design quality of the domestic cold water systems.

- All fixtures shall be selected to minimize their water usage, and shall conform to Title 24 Energy Conservation Code.
- Protection against backflow shall be maintained with approved backflow prevention devices.
- System will be designed to maintain a maximum velocity of 7 fps at design flow conditions.
- Provide provision for connection to future back-up water supply.
- All piping will be of Type “L” copper; soldered fittings.

g. Domestic Hot Water System

The purpose of this section is to identify certain minimum levels with regard to technology, redundancy, energy efficiency, materials quality, and design quality of the domestic hot water system.

- IPD Teams to perform analysis of efficiencies and technologies to determine the best system with regard to first cost, energy efficiency, reliability, long-term life cycle and operating costs, and maintenance.
- Sufficient redundancy shall be provided so that, in the event of a single domestic water heater or pump failure, there shall be sufficient water heating capacity to meet all domestic hot water needs.
- A domestic hot water system will provide:

105°F to 120°F hot water to all lavatories, sinks, and showers,
120°F to medical sinks and hand wash fixtures,
140°F to the kitchen, and
180°F for the dishwasher and to the can wash area.

- Provide domestic hot water via steam/water heat exchangers (steam from the central plant).
- Electric point-of-use water heaters may only be provided at specific remote conditions where providing piped domestic hot water would be cost prohibitive.
- Provide a hot water recirculation system. Limit dead-legs to 25 feet, horizontal run, plus vertical drop.

h. Medical Gas System

The purpose of this section is to provide certain minimum levels with regard to materials quality, and design quality of the medical/dental gas and vacuum systems.

- Design and construct the system in accordance with the requirements of NFPA 99.
- Provide piped Oxygen, Nitrogen, Nitrous Oxide, Medical Air and Medical Vacuum systems as required by Code to the new patient spaces.
- Medical Air:

  - Existing Medical Air Compressor consists of three compressors at 15 hp, each.
  - Assumed existing capacity = 117 SCFM with two operating and one on standby.
  - Estimated required capacity after this project = 200 SCFM
  - Provide new capacity to meet the entire campus requirements.
- Medical Vacuum:
  - Existing Medical Vacuum Pump consists of three pumps at 20 hp, each.
  - Assumed existing capacity = 274 SCFM with two operating and one on standby.
  - Estimated required capacity after this project = 345 SCFM.
  - Provide new capacity to meet the entire campus requirements.
- Oxygen:
  - Assumed existing demand = 125 SCFM
  - Estimated required capacity after this project = 165 SCFM.
  - Existing Oxygen storage is adequate. Provide new main from existing tank to new building.

i. Condensate Drain System

This section provides certain minimum levels with regard to materials quality, and design quality of the condensate drainage systems.

- Condensate drain receptors shall be provided at each air handling unit and shall be connected with trap to either the roof drainage system, or to the domestic waste system. Verify location with local utilities.

j. Fuel Oil

This section provides certain minimum levels with regard to materials quality, and design quality of the fuel oil storage and piping systems.

- Provide double-wall underground tanks and piping for fuel oil for emergency generators.
- Provide sufficient fuel storage for 72 hours of emergency power generation. We estimate that the resulting demand will be 24,580 gallons. Therefore provide two tanks at approximately 20,000 gallons, each.
- Provide tank level monitoring, and tank and piping leak detection; similar to Veeder-Root.
- Provide automatic fuel polishing system to maximize fuel life.
- Include removal of the existing single-wall underground tanks.

k. Natural Gas

This section provides certain minimum levels with regard to materials quality, and design quality of the natural gas storage and piping systems.

- All piping will be black steel, schedule 40, threaded or welded.

l. Plumbing Fixtures and Equipments

This section provides certain minimum levels with regard to materials quality, environmental conservation, and design quality of the plumbing fixtures and equipment.

- Fixtures will be provided with chrome plated brass trim and individual stop valves.
- Water closets will, as a minimum, be siphon jet, 1.28 GPF water conserving flushometer type.
- Public water closets and lavatories will be sensor-operated.
- Consider use of “waterless” urinals.
- Showers will include manual mixing valves, with, as a maximum, 2.0 gpm flow restrictors in head.
- Staff lavatories will be provided with 0.5 gpm flow restrictors using self closing metered faucets.
- Appropriate fixtures will be provided for the handicapped.
- Sinks with appropriate control valves will be provided.

m. Wet Automatic Sprinklers

The intent is for the facility to be fully sprinklered in accordance with NFPA 13. The following specifics items of work that are to be included in that scope.

- Provide electric booster pumps as required to furnish necessary fire flow.
- Provide provision for connection to future on-site back-up water supply for fire-fighting.
- Provide pre-action systems for all I.T. rooms over 200 square feet.

n. Pre-Action Sprinklers

Please provide an Additive Alternate cost to provide a pre-action sprinkler system for the MRI and CT Scan Rooms, and related Control and Equipment Rooms.

- Provide double-interlock pre-action sprinkler system: Automatic sprinklers are attached to piping containing low-pressure air. Actuation of a fire-detection system, located in same area as sprinklers, opens deluge valve, permitting water to flow into sprinkler piping. A closed solenoid valve in the sprinkler piping is opened by another fire-detection device; water will then discharge from opened sprinklers.
- Zone the system so that water is released only to the room where fire/smoke is detected.

13-STRUCTURAL BASIS OF DESIGN

Central Plant Emergency Upgrade
Support frame, foundation for new cooling tower, seismic anchorage for replacement

equipment.

Relocate Receiving Dock
New CMU building with metal deck over steel beam roof framing.

Phase I New Tower
Construct new 4-story steel structure. Steel Moment Frame in East-West direction and Buckling-Restrained Braced Frame in North-South direction. Concrete over metal decking supported by steel beams for the floor and roof framing.

Bridge and Elevator Connect to Medical Office Building
Seismic independent steel frame structures.

New Main Lobby
New entrance canopy and addition structure for the new entrance.

Central Plant Expansion
Added concrete shear wall building to tie into existing central plant concrete shear wall building or seismic independent new concrete shear wall building to meet the needs of the mechanical and electrical expansion.

14-CIVIL SCOPE

1. **Existing Building and Site Plans** – (by Civil Engineer)
    a. Designer(s) shall coordinate existing conditions as applies to implementing the Design including but not limited to:
        i. Property lines
        ii. Existing Building Limits, dimensions, and elevations
        iii. Coordination of Setbacks, clearances and accesses.

2. **Site Plan** – (by Civil Engineer) Architect shall coordinate as required for site plan, including;
    a. Final contours and existing grades.
    b. Paving, sidewalk, curb, fence and gates
    c. New water, sewer, fire protection, fuel systems, telephone/data, electric and other related utility structures. Structures, as appropriate to the Architectural Site Plan, shall be coordinated and located in Architectural Site plan
    d. Site lighting locations and fixture selections shall be provided by the Architect or Landscape Designer. Lighting photometric study and Infrastructure Design by the Electrical Designer.
    e. Retaining walls and “hardscape” features. Coordinate potential needs for walls and coordinate design with Structural Engineer.
    f. Landscape and irrigation plans designed by Landscape consultant.
    g. Architect shall design and prepare a plan for all sidewalks, egress points and entry points into and from each new facility coordinated with adjacent facilities and works of improvement. These sidewalks, egress points and

entry points shall be coordinated, by the Architect, with the project site civil plans, their respective sidewalks and vehicle paving. The Civil Engineer will provide the grading plan, site sidewalks and vehicle traffic paving designs.

h. Service and electrical yards. Architect to coordinate the design of these yards with the Civil Engineer and Electrical Designer for the electrical service infrastructure. Architect to coordinate their services with other Designers for code required service needs for the project, including trash enclosures and other site appurtenances.

3. **Site Survey** – (by Civil Engineer)
    a. Architect shall coordinate with all other design team members.

4. **Project Dimension Control** –. Coordinate dimension controls with baseline site conditions, reference points, established by the Civil surveys, with Design Team members. Dimension control shall include the following:
    a. Building grid/ Horizontal Control
        i. Location of Building Grid in each direction, coordinated with site boundary for complete horizontal tie of building grid to site boundary established by Civil Engineer.
    b. Building Extents in relation to adjacent buildings or structures.
    c. Overall Site Sections incorporating all works of improvements to indicate required setbacks, clearances and pathways. Site Sections tied to Building Grid and overall Civil Benchmark(s)
    d. Locations and dimensions from new works of improvement to existing facilities for design team to coordinate new construction that ties to or abuts existing facilities.
    e. Slab Elevations / Vertical Control (by Architect)
    f. Edge of Slab dimension (dimensional information to be indicated by SEOR) from Building Grid (on Grade and or Elevated). Coordinate edge of Slab with SEOR for conformed UL condition.
    g. Provide architectural clearances and ADA compliant exterior pathways.

5. **Project Specifications** – (by each discipline having design and/or design/build responsibility)
    a. Architect to compile, organize and coordinate all required specifications for this project. Coordinate specifications with the requirements of the Contract Drawings for a complete and coordinated set of Contract Documents.

6. **Project Construction Administration**
    b. Provide full time Construction Administration for the project including but not limited to the following
        i. Observation of ongoing work progress for conformance to the Contract Documents
        ii. Coordination with Authority Having Jurisdiction for proper documentation into the Construction Documents
        iii. Review of Subcontractor submittals as required by the project specifications.

iv. Coordination with Owner's representative to document Owner Initiated changes. Provide interpretations to Contractor for implementation when requested.
v. Coordinate Designers' consultants for review and approvals as required to maintain the overall conformance to the project Contract Documents and schedule.

7. **Civil / Site Submittal**
   a. Complete civil / site plans, including;
      i. Overall campus map
      ii. Location of all existing & proposed structures
      iii. All underground existing & proposed utilities
      iv. All underground existing & proposed tanks
      v. All grading and excavation
      vi. Contours, paving, sidewalk, curb and fence layout
      vii. Water, sewer, fire protection, fuel lines, electric and related structures
      viii. Lighting locations
      ix. Retaining wall locations

C. DESIGN DOCUMENTS:

1- DELIVERABLES:

Project design shall be developed to meet minimum industry standards, local, state, and federal codes; and criteria shown and indicated, but not limited to, in Exhibits 1 through 10 under section III of this RFP.

Process Plan check reviews with OSHPD, CDPH and the City of Oceanside. Secure permits to construct. Construction shall follow all applicable codes.

Complete schematic design drawings, design development drawings, construction drawings, and specifications to be provided and approved by Tri-City Medical Center, to include but not be limited to the following:

a. Civil engineering.
b. Landscape architecture.
c. Architecture.
d. Interior design and furniture.
e. Structural engineering.
f. Mechanical and Electrical engineering.
g. Fire Protection and Fire Alarm engineering.
h. Low Voltage, Nurse Call, Security, Paging, CCTV.
i. Design Build team to anchor and provide utilities for the medical equipment. Medical Equipment Planning and Procurement will be provided by Tri-City Medical Center.
j. Provide a program showing room-by-room areas, net-to-gross factors, and total square footage by department and building.

Entitlements:

- Entitlements will be provided by Tri-City Medical Center.
- Design Build team to coordinate with Tri-City Medical Center consultant, provide exhibits and drawings as needed and update design documents to reflect entitlements.

2- PROJECT PHASING

The project shall be constructed according to the construction phases, see Exhibit 2:

<u>Phase 1:</u>

- Loading docks and materials management.
- Service entrance driveway.

<u>Phase 2:</u>

- New hospital tower and connect to existing hospital.
- CEP expansion.

- Surface parking lots.
- New ambulance and walk-in driveways and entrances.
- Existing MOB – new hospital tower pedestrian bridge.

Phase 3:

- New hospital main entrance.
- Extend future main entrance boulevard to new main hospital entrance.
- Future parking structure (N.I.C.) – new hospital tower pedestrian bridge.

The design work shall be completed in three phases by developing incremental permit packages with OSHPD and the City of Oceanside. TCMC will establish a steering committee and user groups representative to review the different packages.
The following are the proposed permit packages:

- Loading docks, materials management and service driveway.
- New hospital tower building, south bridge, surface parking and driveways.
- New main entrance building, west bridge and boulevard extension.

The Design Build team shall meet with TCMC representative and OSHPD staff to clarify and secure consensus on the development of this project and secure agreement on the incremental reviews and approvals.

3- BUILDING PROGRAM

The building design shall meet at a minimum the building program under Exhibit 3. The intent of the program is to identify:

- List of rooms to be included, but not limited to, in the project.
- Minimum code required.
- TCMC desired additional requirements and/or increases in room sizes.

4- TYPICAL ROOM LAYOUTS

The intent of the typical room layouts is to identify:

- Room layout.
- Medical equipment.
- Room finishes.
- Special features and accessories.
- MEP and medical gases.

The Typical Rooms shown in Exhibit 4 shall be adhered to as a minimum requirement.

5- OUTLINE PERFORMANCE SPECIFICATIONS

The outline performance specifications included in Exhibit 5 are the minimum standards that the design build team must adhere to. The following is list of highlighted important requirements in addition to the outline performance specifications in Exhibit 5:

General:

- All design must meet all applicable agency having jurisdiction codes and zoning requirements.

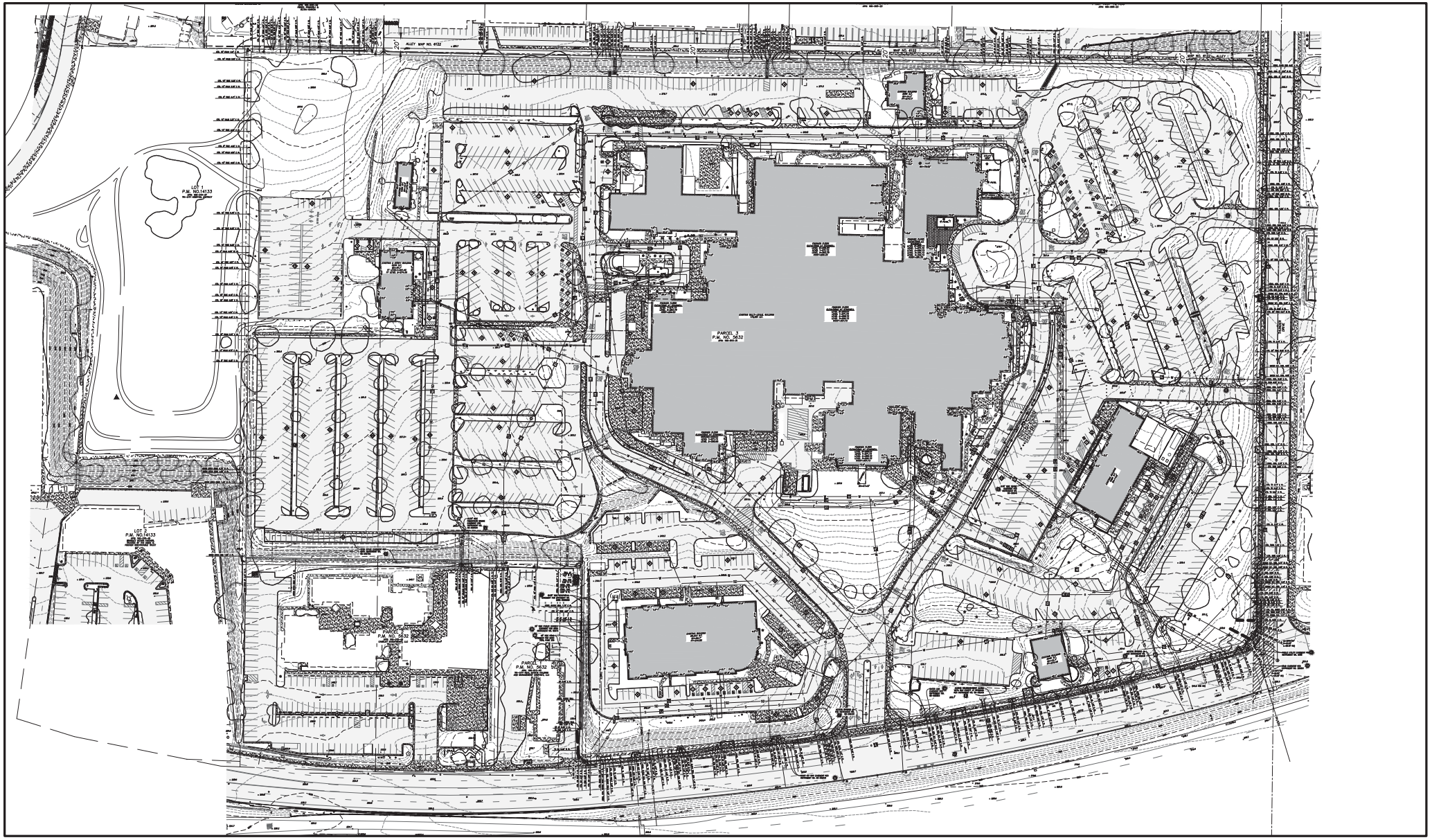
Site:

- Provide handicap accessible route from Vista road to new main hospital entrance.
- All roads within project boundary shall be landscaped as per TCMC Landscape Master Plan in Exhibit 6.
- Sidewalks shall be provided at all new driveways.
- Street Lighting shall be provided at all new driveways.
- Exterior site, entrance, and wayfinding signage.

Buildings:

- New emergency department and New Main Entrance shall have Porte-Cochere structure that extends over 1 car lane minimum.
- Extend existing hospital pneumatic system into the new Emergency Department.
- Provide an option as an add alternate to extend existing hospital pneumatic tube system to all floors of the new tower.
- Provide uninterrupted protection system (UPS) for all new imaging equipment.
- Vertical transportation including location, number, size and speed will have to be demonstrated with calculations and provided appropriately. At a minimum, separate visitor, patient, and service elevators and abide by all industry standards and code requirements, including but not limited to CBC & CDPH.
- Picture Archiving Communication System (PACS), staff tracking hardware and software, and Cerner systems to be provided and tied to the existing hospital systems.
- Interior wayfinding and room signage for all rooms to be located in new buildings.

1



TRI-CITY MEDICAL CENTER

Oceanside, California

EXISTING SITE CONDITION

SCALE: 1:60 PAGE 1 of 2

0 60 120 240

TCMC-DB-RFP

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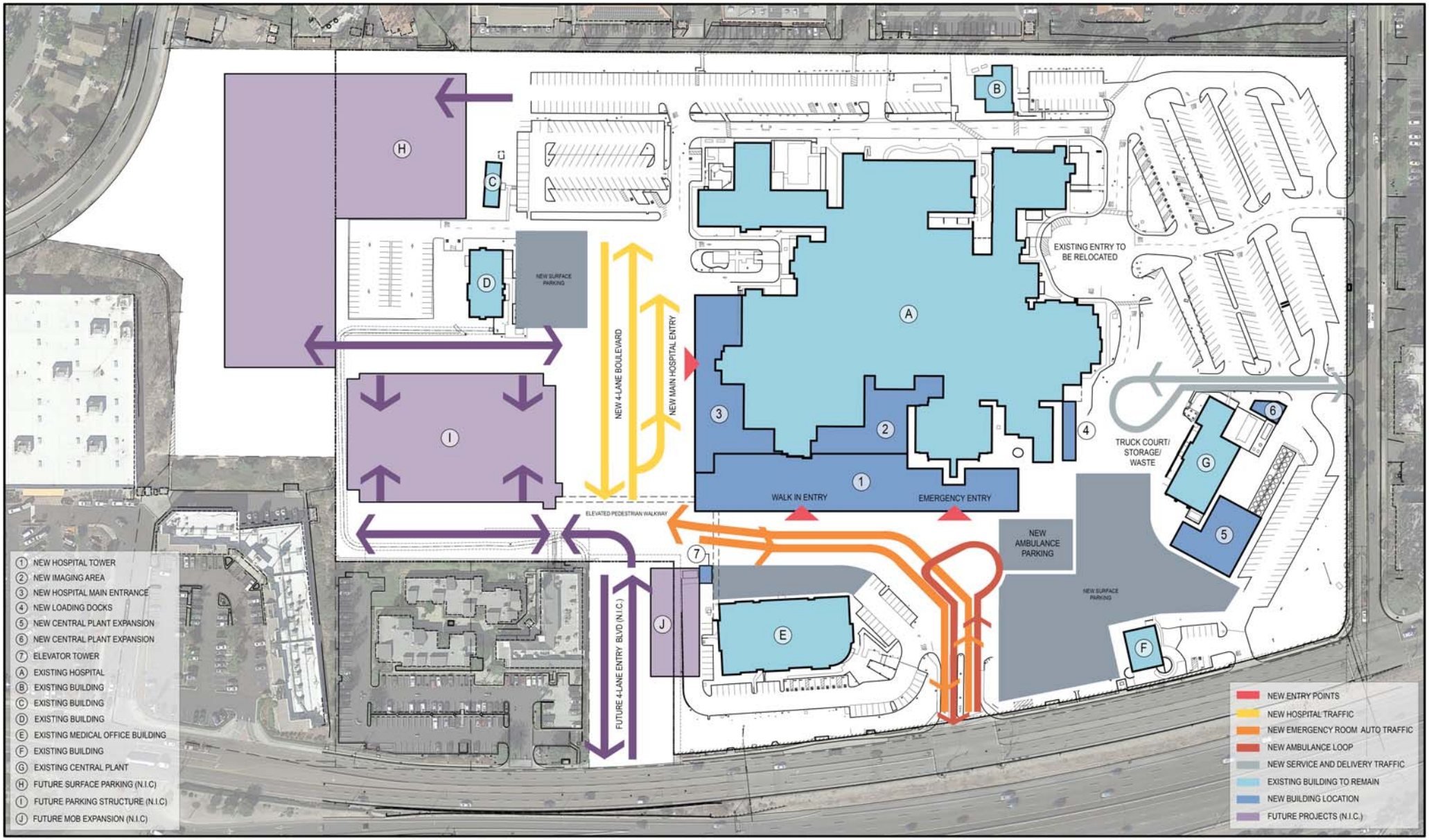
9/21/2017

SFEIR ARCHITECTS



TRI-CITY MEDICAL CENTER

Oceanside, California

SITE PLAN SCOPE

SCALE: NTS PAGE 2 of 2

0 60 120 240

TCMC-DB-RFP

9/21/2017

SFEIR ARCHITECTS

2

TRI-CITY MEDICAL CENTER

Oceanside, California

SITE PLAN SCOPE PHASE 1

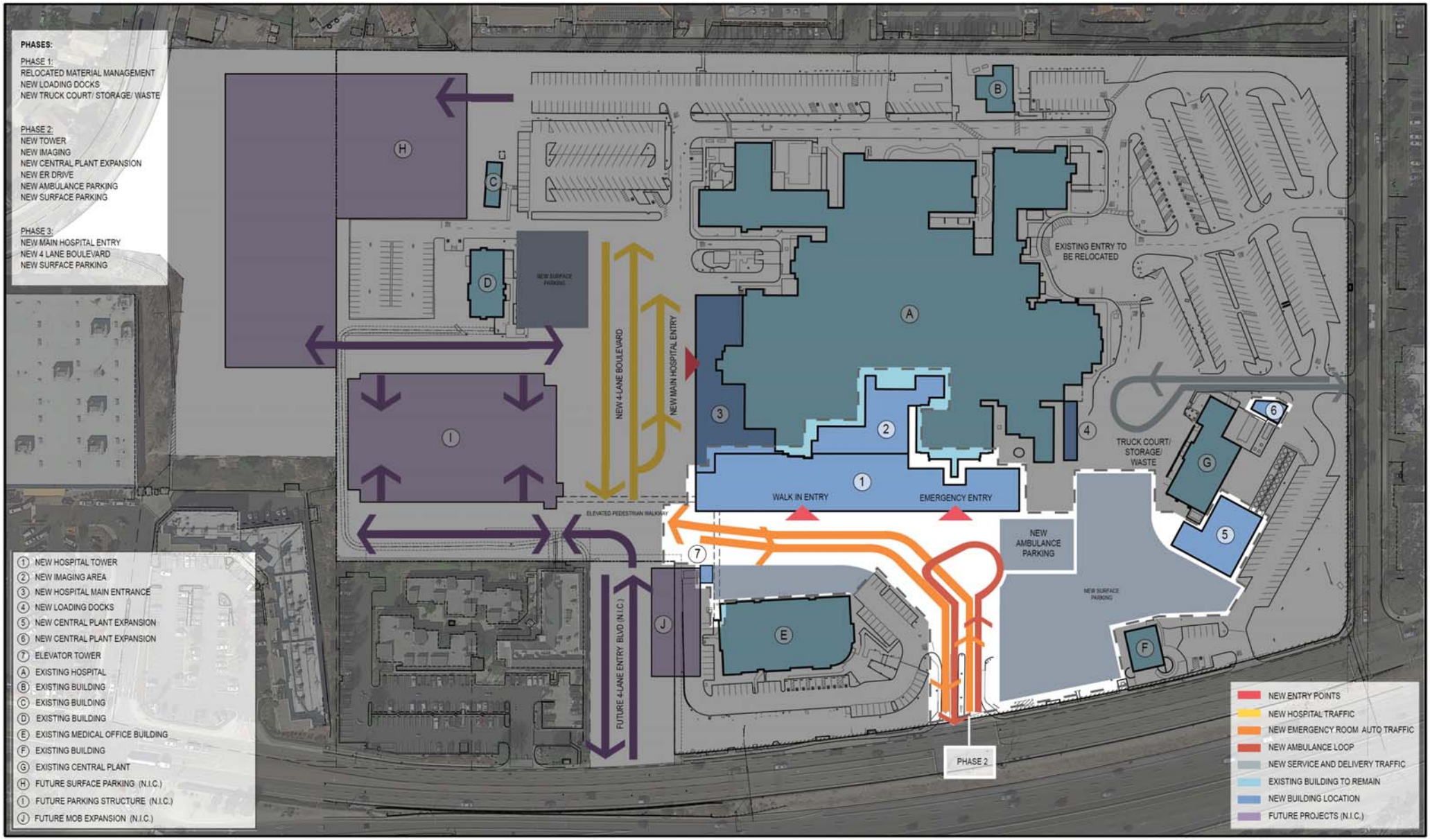
SCALE: NTS PAGE 1 of 3

0 60 120 240

TCMC-DB-RFP

9/21/2017

SFEIR ARCHITECTS



TRI-CITY MEDICAL CENTER

Oceanside, California

SITE PLAN SCOPE PHASE 2

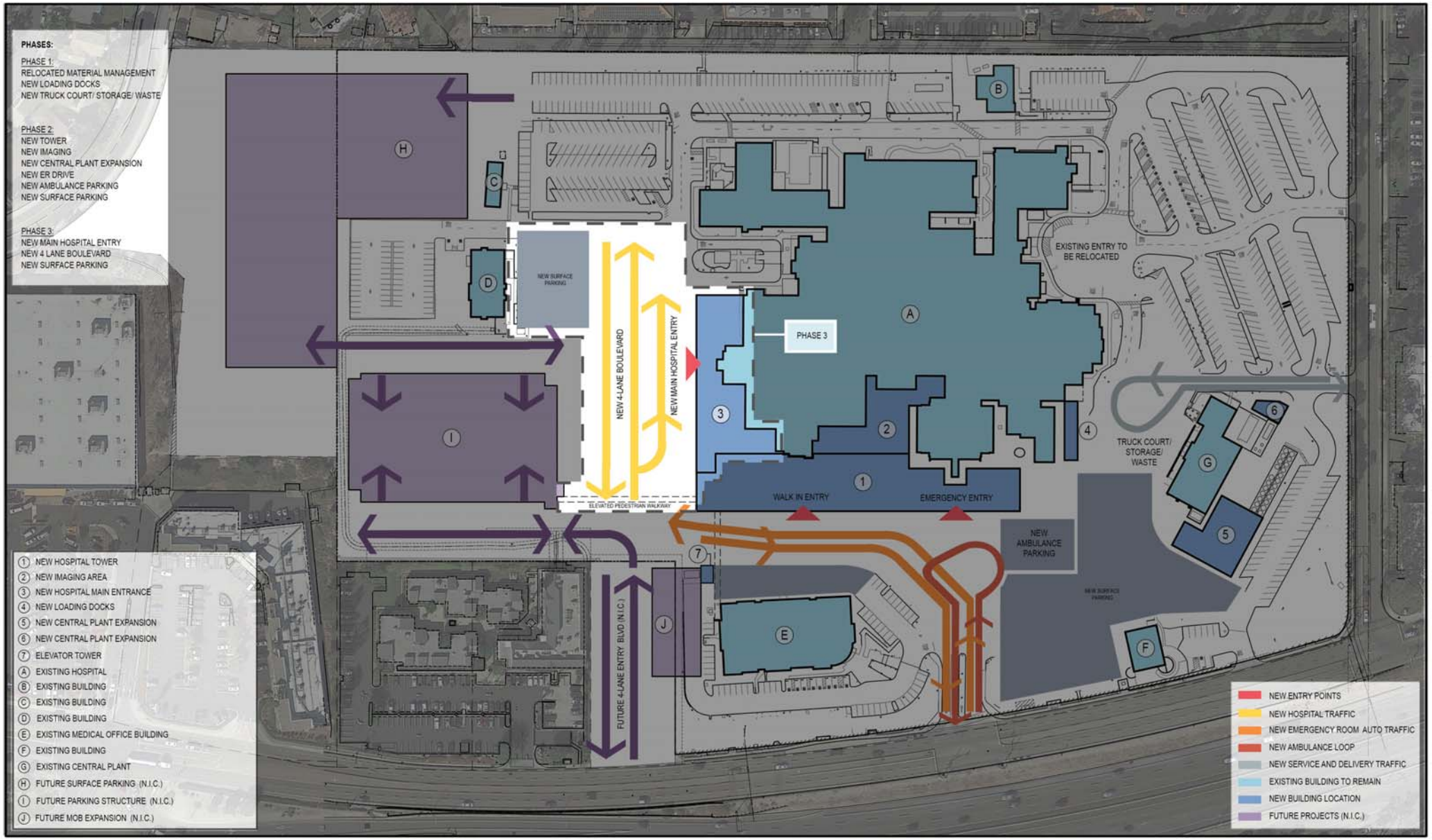
SCALE: NTS PAGE 2 of 3

0 60 120 240

TCMC-DB-RFP

9/21/2017

SFEIR ARCHITECTS



TRI-CITY MEDICAL CENTER

Oceanside, California

SITE PLAN SCOPE PHASE 3

SCALE: NTS PAGE 3 of 3

0 60 120 240

TCMC-DB-RFP

9/21/2017

SFEIR ARCHITECTS

3

Print Date : 9/21/2017

PROGRAM SUMMARY

Level	Program
	Tower
Ground	Emergency Department / Imaging
1	Ortho & Med / Surg Beds
2	Intensive Care Unit
3	Shell Space for Future Beds
R	Utilities Penthouse
R	Helipad on Penthouse Roof
	New Hospital Entry
1	New Main Hospital Entry Lobby
	Infrastructure
Ground	Covered Truck Dock
Ground	Waste, Storage, & Service Yard
Ground	Materials Management
Ground	Morgue
2	Pedestrian Bridges
Ground	Elevator Tower at Existing MOB Pad
Ground	Emergency Room Entry Drive
Ground	Main Hospital Entry Boulevard Extension
	CEP Renovation & Expansion
Ground	Existing CEP Renovation
Ground	CEP Expansion
Ground	Exterior Cooling Tower Yard

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San Diego, California 92122
v 619.299.3917 | f 619.299.5084

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HOSPITAL ENTRY / RECEPTION	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
Public Areas:				
Walk-In Entry Vestibule	1	350	350	
Lobby	1	450	450	
Reception / Admitting / Registration	1	1,100	1,100	Secure counter & workspace. 3-monitor stations, typ.
Waiting Area	1	4,500	4,500	15sf per Patient & Visitor, drinking fountain, public communications.
Public Toilets	2	270	540	Men 3 wc, 3 urinal. Women 6 wc. 4 lav each. ADA accessible.
Office	3	100	300	3-monitor stations, typ.
Records Room	1	150	150	
General Storage	1	150	150	
Staff TLT	1	56	56	Hand-wash. ADA accessible.
Housekeeping Room	1	45	45	15sf min. Service sink, supplies storage.
Gift & Flower Shop	1	400	400	
Meditation Room	2	400	800	

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EMERGENCY	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
Public Areas:				
Walk-In Entry Vestibule	1	650	650	Provide covered entrance.
Lobby	1	650	650	
Admitting / Registration	1	500	500	Secure counter & workspace. 3-monitor stations, typ.
Waiting Area	1	2,100	2,100	15sf per Patient & Visitor, drinking fountain, public communications.
Public Toilets	2	160	320	Men 2 wc, 2 urinal. Women 4 wc. 2 lav each. ADA accessible.
Treatment Areas:				
Critical Care:				
Trauma Room	1	250	250	250sf min, 5' clear around stretcher, cabinets, shelves, exam lights, PPE, 5' min door. Scrub sink outside. See typical room plans.
Treatment Room	3	250	750	250sf, 13' headwall min. 1' head, 5' foot, 5' transfer side, 4' non-transfer side. 5' door. NC, 3O 3V 1A. Scrub sink outside. 3-monitor stations, typ.
Exam Rooms:				
Examination Bay	43	130	5,590	120sf min. Exam light, hand-wash, counter, storage, 3' min. around bed, privacy. 5% to be bariatric-equipped. See typical room plans.
Specialty Areas:				
Airborne Infection Iso. Exam Room	2	130	260	Single bed, PPE storage, hand-wash, clean/soiled storage, self-closing doors, sealed room, ventilation. NC, 3O 3V 1A. 3-monitor stations, typ.
Ante-Room	2	60	120	Not required. PPE storage, self-closing doors, ventilation.
Orthopedic and Cast Room	1	300	300	180sf min. Storage of splints and supplies, traction hooks, image viewing, exam lights, plaster trap on sinks. See typical room plans.
Treatment Support Areas:				
Nurse Station	6	300	1,800	3-monitor stations, typ. NC.
Med Station	2	100	200	Room or self-contained dispensing unit. DS.
Vital Signs Station	2	150	300	3-monitor stations, typ.
Clean Utility Room & Supply	2	150	300	Counter, hand-wash, storage for clean & sterile supplies. DS.
Soiled Utility Room		100	0	Clinical sink, hand-wash, counter, cvd soiled & waste containers. DS.
Garbage Cart Storage	1	100	100	Dedicated exhaust with 100% fresh air. 25sf min.
Storage	1	300	300	Sized for equipment and supplies as required.
Gurney & Wheelchair Storage	1	15	15	Room or alcove, 15sf min.
Crash Cart Alcove	2	15	30	
X-Ray & Equipment Alcove	4	60	240	Spaced and sized as required.
Housekeeping Room	1	45	45	15sf min. Service sink, supplies storage.

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	Qty	Unit SF	Total SF	Remarks
Patient TLT	8	56	448	Hand-wash. ADA accessible. NC.
Staff TLT	4	56	224	Hand-wash. ADA accessible. DS.
Check-In Station	1	150	150	Check in counter to ER.
Check-Out Station	1	150	150	Check out counter from ER.
Triage, Administration, & EMS				
Triage Room	4	130	520	120sf min. Exam light, hand-wash, counter, storage, 3' min. around bed, privacy, NC, O V. 1 to be bariatric-equipped. 3-monitor stations, typ.
Nurse Station	2	250	500	3-monitor stations, typ. NC.
Office	1	100	100	3-monitor stations, typ.
File Room / Workroom	1	800	800	Storage space for files, counter space. Include communication center. 3-monitor stations, typ.
Ambulance Work Station	1			May be provided with Workroom or Nurse Station.
Ambulance Emergency Entrance	1	400	400	Provide covered entrance.
Human Decontamination Area	1	160	160	80sf min per shwr. Outside entry door 10' away from indoor lockable door to ED corridor, 2 shower heads.
Wheelchair & Gurney Storage	1	15	15	Room or alcove, 15sf min.
Patient TLT	1	56	56	Hand-wash. ADA accessible. NC.
Staff TLT	1	56	56	Hand-wash. ADA accessible. DS.
Staff / EMS Lounge	1	180	180	DS.
Staff TLT	1	56	56	Hand-wash. ADA accessible.
Housekeeping Room	1	45	45	15sf min. Service sink, supplies storage.
Results Waiting				
Waiting Area	1	320	320	15sf per Patient & Visitor min, drinking fountain, public communications.
Nurse Station	1	400	400	3-monitor stations, typ. NC.
Med Station	1	70	70	Room or self-contained dispensing unit. DS.
Observation Area	4	120	480	Cubicle, 100sf min., under visual care of staff work area. Space for visitors, privacy, hand-wash. NC, OV. 3-monitor stations, typ.
Patient Toilets	2	56	112	Hand-wash. ADA accessible. NC.
Clean Utility Room & Supply	1	70	70	Counter, hand-wash, storage for clean & sterile supplies. DS.
Soiled Utility Room	1	70	70	Clinical sink, hand-wash, counter, cvd soiled & waste containers. DS.
Electrical Room(s)	1	100	100	Size as required.
Tele. Room(s)	1	100	100	Size as required.
Imaging Services:				

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EMERGENCY	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
X-Ray:				
Radiography Room	2	500	1,000	With adjoining, shielded control area. See typical room plans.
Control Area	2	60	120	Computer & controls, view window to patients. See typ. room plans.
CT Scanning:				
CT Scanner Room	1	450	450	3' on all sides of equip. Nearby TLT room. See typical room plans.
MRI Scanning:				
MRI Scanner Room	1	450	450	3' on all sides of equipment. Hand-wash, RF-shielded, lighted 'on' sign, magnetic field markings, special ventilation. See typical room plans.
Computer Room	1	100	100	Sized per equipment.
Approach Room or Area	1	100	100	Visible from control room, in front of entry to MRI room, outside the restricted areas of the MRI's magnetic fields.
Imaging Support Spaces:				
CT & MRI Common Control Room	1	350	350	Computer & controls, view window to MRI & CT patients, full view of approach and entrance to the MRI room. See typical room plans.
Patient TLT	2	56	112	Hand-wash. ADA accessible. NC.
Office	5	100	500	3-monitor stations, typ.
Storage	1	150	150	Storage for equipment, supplies, and copies of reports.
Patient Changing Area	2	56	112	
Patient Interview / Screening Room	1	100	100	3-monitor stations, typ.
Inpatient Holding Room	1	160	160	
Outpatient Waiting Room	1	120	120	If outpatient services are provided.
Staff Lounge	1	500	500	DS.
Staff Locker Room / Changing Area	2	100	200	M & W.
Staff TLT / Shower	2	160	320	Men 1 wc, 1 urinal. Women 2 wc. 2 lav each. Shwr, ADA accessible.
Locked Storage Area	1	100	100	Locked storage of medications and drugs.
Housekeeping Room	1	45	45	15sf min. Service sink, supplies storage.
Electrical Room(s)	1	100	100	Size as required.
Tele. Room(s)	1	100	100	Size as required.

NOTES NC: Nurse Call Device. DS: Duty Station. O-Oxygen, V-Vacuum, A-Medical Air. WC: Water Closet. Lav: Lavatory.

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PATIENT ROOMS	Proposed Square Feet			
	Qty	Unit SF	Total SF	Remarks
Public Areas:				
Visitors' Waiting Room	1	450	450	15sf per Patient & Visitor, drinking fountain, public communications.
Public TLT	2	56	112	M & W. Hand-wash. ADA accessible.
Ortho & Med/Surg Beds:				
Patient Room	34	220	7,480	Single bed, hand-wash, storage, visitor chair. 5% to be bariatric-equipped. See typical room plans.
TLT	30	40	1,200	Hand-wash, shower. NC.
HC TLT	4	56	224	Hand-wash, shower. ADA accessible. NC.
Airborne Infection Isolation Room	1	220	220	1 per 35 beds. Shall comply with patient room reqs., single bed, hand-wash, negative pressure, tight-sealed room. See typical room plans.
Ante-Room	1	60	60	Self-closing and latching doors, hand-wash, counter, storage, view window, tight-sealed room. See typical room plans.
HC TLT / Shower Room	1	56	56	Hand-wash, and bathtub or shower. ADA accessible. NC.
Protective Environment Room	1	220	220	Shall comply with patient room reqs., single bed, hand-wash, positive pressure, tight-sealed room. NC, 3O 3V 1A. 3-monitor stations, typ.
Ante-Room	1	60	60	Self-closing and latching doors, hand-wash, counter, storage, view window, tight-sealed room.
HC TLT / Shower Room	1	56	56	Hand-wash, and bathtub or shower. ADA accessible. NC.
Nursing & Support Spaces:				
Nurse Station	4	300	1,200	With emergency equipment alcove, NC. See typical room plans.
Med Station	3	110	330	Room or self-contained dispensing unit. DS.
Nourishment Area	1	100	100	With ice machine.
Clean Utility Room & Supply	2	250	500	Counter, hand-wash, storage for clean & sterile supplies, storage for clean linen. DS. See typical room plans.
Soiled Utility Room	2	100	200	Clinical sink, hand-wash, counter, covered soiled & waste containers, storage for soiled linen. DS. See typical room plans.
Supply Alcove	2	60	120	Spaced and sized as required.
Computer Docking Alcove / Subnurse	18	10	180	Docking alcoves for WOWs.
Garbage Cart Storage	1	100	100	Dedicated exhaust with 100% fresh air. 25sf min.
Nutrition Cart Storage	1	100	100	Dedicated exhaust with 100% fresh air.
Equipment Storage Room		360	0	36 @ 10sf per patient bed.
General Storage	1	720	720	36 @ 20sf per bed. Within hospital, accessible to connecting corridor.
Gurney & Wheelchair Storage	1	95	95	Room or alcove, 15sf min.
Special Bathing Facility	1	100	100	ADA-accessible. Wheel-in shower for chairs & gurneys, TLT, hand-wash. 1 per 100 beds, may be shared between floors. NC.
Housekeeping Room	2	45	90	15sf min. Service sink, supplies storage.

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PATIENT ROOMS	Proposed Square Feet			
	Qty	Unit SF	Total SF	Remarks
Patient TLT	3	56	168	Hand-wash. ADA accessible. NC.
Staff TLT	2	56	112	Hand-wash. ADA accessible. DS.
Office	5	110	550	3-monitor stations, typ.
Multipurpose Room	1	310	310	
Consultation Room	1	100	100	3-monitor stations, typ.
Treatment Room	1	250	250	Single bed, exam light, storage, visitor chair, hand-wash, NC, 1O 1V.
Staff Lounge	1	300	300	DS.
Staff Locker Room	2	100	200	M & W.
Staff TLT	2	100	200	Hand-wash. ADA accessible.
Electrical Room(s)	2	100	200	Size as required.
Tele. Room(s)	2	100	200	Size as required.

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INTENSIVE CARE UNIT	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
Public Areas:				
Visitors' Waiting Room	1	1,080	1,080	15sf per Patient & Visitor, drinking fountain, public communications.
Public TLT	2	56	112	M & W. Hand-wash. ADA accessible.
Patient Rooms:				
ICU - Unit A:				
Patient Room	11	220	2,420	200sf min, 13' headwall min. 1' head, 5' foot, 5' transfer side, 4' non-transfer side. 4' door. Mod. TLT, hand-wash, visitor space. 5% to be bariatric-equipped. See typical room plans.
Airborne Infection Isolation Room	1	220	220	1 per unit. Shall comply with patient room reqs., single bed, hand-wash, negative pressure, tight-sealed room. See typical room plans.
Ante-Room	1	60	60	Self-closing and latching doors, hand-wash, counter, storage, view window, tight-sealed room. See typical room plans.
HC TLT / Shower Room	1	56	56	Hand-wash, shower. ADA accessible. NC. Not required if modular toilet unit is provided in patient room.
ICU - Unit B:				
Patient Room	11	220	2,420	200sf min, 13' headwall min. 1' head, 5' foot, 5' transfer side, 4' non-transfer side. 4' door. Mod. TLT, hand-wash, visitor space. 5% to be bariatric-equipped. See typical room plans.
Airborne Infection Isolation Room	1	220	220	1 per unit. Shall comply with patient room reqs., single bed, hand-wash, negative pressure, tight-sealed room. See typical room plans.
Ante-Room	1	60	60	Self-closing and latching doors, hand-wash, counter, storage, view window, tight-sealed room. See typical room plans.
HC TLT / Shower Room	1	56	56	Hand-wash, shower. ADA accessible. NC. Not required if modular toilet unit is provided in patient room.
Telemetry / Step-Down:				
Patient Room	11	220	2,420	200sf min, 13' headwall min. 1' head, 5' foot, 5' transfer side, 4' non-transfer side. 4' door. Hand-wash, visitor space. 5% to be bariatric-equipped. See typical room plans.
TLT	10	40	400	Hand-wash, shower. NC.
HC TLT	1	56	56	Hand-wash, shower. ADA accessible. NC.
Airborne Infection Isolation Room	1	220	220	1 per unit. Shall comply with patient room reqs., single bed, hand-wash, negative pressure, tight-sealed room. See typical room plans.
Ante-Room	1	60	60	Self-closing and latching doors, hand-wash, counter, storage, view window, tight-sealed room. See typical room plans.
HC TLT / Shower Room	1	56	56	Hand-wash, shower. ADA accessible. NC. Not required if modular toilet unit is provided in patient room.

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INTENSIVE CARE UNIT	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
Nursing & Support Spaces:				
Nurse Station	6	300	1,800	With continuous monitoring. NC. See typical room plans.
Med Station	6	110	660	Room or self-contained dispensing unit. DS.
Doctor's Dictation Area	3	60	180	2 dictation bays minimum. Located near NS. See typical room plans.
Nourishment Area	3	100	300	With ice machine.
Clean Utility Room & Supply	2	250	500	Counter, hand-wash, storage for clean & sterile supplies, storage for clean linen. DS. See typical room plans.
Soiled Utility Room	2	100	200	Clinical sink, hand-wash, counter, covered soiled & waste containers, storage for soiled linen. DS. See typical room plans.
Crash Cart Alcove	3	15	45	
Equipment Alcove	3	60	180	Spaced and sized as required.
Supply Alcove	6	60	360	Spaced and sized as required.
Computer Docking Alcove / Subnurse	18	10	180	Docking alcoves for WOWs.
Garbage Cart Storage	1	100	100	Dedicated exhaust with 100% fresh air. 25sf min.
Nutrition Cart Storage	1	100	100	Dedicated exhaust with 100% fresh air.
Equipment Storage Room	3	240	720	20sf per patient bed.
Gurney & Wheelchair Storage	3	15	45	Room or alcove, 15sf min.
Housekeeping Room	3	45	135	15sf min. Service sink, supplies storage.
Patient TLT & Shower	3	86	258	Hand-wash, shower. ADA accessible. NC.
Staff TLT	3	56	168	Hand-wash. ADA accessible. DS.
Office	3	110	330	3-monitor stations, typ.
Multipurpose Room	2	310	620	
Consultation Room	3	100	300	3-monitor stations, typ.
Staff Lounge	2	300	600	DS.
Staff Locker Room	4	100	400	M & W.
Staff TLT	4	100	400	Hand-wash. ADA accessible.
Electrical Room(s)	2	100	200	Size as required.
Tele. Room(s)	2	100	200	Size as required.

NOTES NC: Nurse Call Device. DS: Duty Station. O-Oxygen, V-Vacuum, A-Medical Air. WC: Water Closet. Lav: Lavatory.

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SHELL SPACE	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
Future Patient Rooms:				
Future Patient Room Area	36	220	7,920	Infrastructure includes but is not limited to sanitary, hot & cold water, power, medical gases, and data. Systems to be provided & capped off in shell space.
Future Nursing & Support Area	-	-	8,643	Infrastructure includes but is not limited to sanitary, hot & cold water, power, medical gases, and data. Systems to be provided & capped off in shell space.

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TOWER ROOF	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
Helipad				
Landing Pad	1	7,100	7,100	
Utilities				
Utility Penthouse	1	6,900	6,900	
Electrical Room(s)	2	100	200	Size as required.
Tele. Room(s)	2	100	200	Size as required.

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MORGUE	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
Public Areas:				
Waiting Room / Viewing	1	100	100	
Morgue				
Autopsy Room	1	250	250	250sf min. Hand-wash, space for refrigerated compartments.
Lab	1	150	150	
Viewing / Holding Room	1	120	120	
Office	1	100	100	

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MATERIALS MANAGEMENT	Proposed Square Feet			
	Qty	Unit SF	Total SF	Remarks
Administration				
Office	2	120	240	
Open Office	1	600	600	
Conference Room	1	300	300	
Materials Distribution				
Materials Distribution Center	1	4,500	4,500	
Shipping and Receiving Area	1	450	450	
Secure Materials Room	1	450	450	
Exterior Loading Area				
Covered Loading Dock	1	1,800	1,800	
Secure Storage Area	1	1,000	1,000	General storage and storage of medical gas bottles.
Trash & Bio-Hazard Waste	1	2,000	2,000	

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CENTRAL UTILITIES PLANT	Proposed Square Feet

	Qty	Unit SF	Total SF	Remarks
Central Plant Expansion				
Emergency Generator Room	1	4,930	4,930	
Compressor Room	1	470	470	
Chiller Room	1	2,270	2,270	
Primary Pump Room	1	300	300	
Secondary Pump Room	1	300	300	
Condenser Water Pump Room	1	300	300	
Electrical 12 kV Service Room	1	1,010	1,010	
Paralleling Switchgear Room	1	880	880	
CEP Electrical Distribution Room	1	880	880	
Boiler Room	1	1,200	1,200	
Cogeneration Room	1	2,960	2,960	520SF for 325kW, 2,430SF for 1.2MW, 2,960SF for 2.4MW.
Cooling Tower Area	1	6,730	6,730	Exterior yard.

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TYPICAL ROOMS

Room Data Sheets & Floor Plans

ELECTRICAL OUTLETS

FLOOR OUTLET	ELECTRICAL OUTLET ON EMERG. POWER	GFI ELECTRICAL OUTLET W/ GROUND FAULT PROTECTION	GFI GROUND FAULT INTERRUPT OUTLET ABOVE COUNTER
ELECTRICAL OUTLET	D ELECTRICAL OUTLET DEDICATED		
ELECTRICAL OUTLET ABOVE COUNTER			
ELECTRICAL QUADRAPLEX OUTLET	ELECTRICAL OUTLET ON EMERG. POWER ABOVE COUNTER	GFI ELECTRICAL OUTLET ON EMERG. POWER W/ GROUND FAULT PROTECTION	GFI ELEC. OUTLET ON EMERG. POWER W/ GROUND FAULT PROTECTION ABOVE COUNTER
ELECTRICAL QUADRAPLEX OUTLET ON EMERGENCY POWER			
220 VOLT ELECTRICAL OUTLET			

ELECTRICAL SWITCHES

$ SWITCH	$-3 THREE WAY SWITCH	C WALL MOUNTED CLOCK
$-SL SURGICAL LIGHT SWITCH	$-UC UNDER COUNTER SWITCH	H HUMIDSTAT
$-D DIMMER SWITCH	T THERMOSTAT	

NURSE CALL

CB CODE BLUE	PR PATIENT STATION	MA MASTER STATION
DU DUTY STATION	SS STAFF STATION	NC NURSE CALL (GENERIC)
EP EMERGENCY PULL STATION	PS PRESENCE STATION	NURSE CALL DOME LIGHT

COMMUNICATIONS/DATA

TV TELEVISION/CABLE	D DICTATION	P PAY PHONE
C COMPUTER/DATA	PHONE	FLOOR MOUNTED PHONE
I INTERCOM	W WALL MOUNT PHONE	MOD. TAP DEDICATED DATA 3-5-5-5-5

WALL PROTECTION

S	SURFACE MOUNTED CORNER GUARD
WP	WALL PROTECTION
CR	CRASHRAILS
HR/GR	HANDRAILS

SYMBOLS LEGEND

Tri-City Medical Center

SFEIR ARCHITECTS

DEPT. NAME: _____
ROOM NAME: _____
ROOM NO: _____
DATE: 09/21/17

SCALE:

Department: **EMERGENCY DEPARTMENT** Room: **TYP. TRAUMA ROOM** No.: **01**

Architectural

FINISH:

Floors:	Carpet	Concrete	Vinyl Composition Tile	Terrazo
NA	Tile C P Q	Sealed	[Seamless Sheet Vinyl w/ Integral Base]	
Walls:	[Painted Epoxy]	Tile C P Q Wainscot	Vinyl Wall Covering Wainscot	FRP Panel Wainscot
NA				
Ceilings:	[Gypsum Board Soffit Only]	Lay-In Tile 2x4 2x2 MR CR (Moist Resist. & Clean Room)	Special	Height: 8'-0" [10'-0"] 9'-0" - See RCP
NA				

FURNISHINGS: Equipment: [Yes] No Furniture: Yes [No] Cabinetry: [Yes] No [See Plan]

TOILET ACCESSORIES: [NA]

TA1 Recessed Towel Disp & Waste Receptacle	TA4 Toilet Paper Dispenser Surface Mount Recessed Partition-Mounted	TA6 Soap Dispenser	TA12 Robe / IV / Coat Hook
TA2 Towel Dispenser Surface Mounted Recessed Towel Recessed w/ Mirror	TA5 Mirror Unframed (Size on Plan) Framed	TA7 Grab Bars TA8 Shelf TA9 Shower Curtain Rod TA10 Towel Bar TA11 Sanit. Napkin Disposal	TA13 Elect. Hand Dryer TA14 Shower Seat TA15 Soap Dish TA16 Baby Change Station TA17 Toilet Seat Cover Disp.
TA3 Waste Receptacle			

ADDITIONAL ITEMS:

[Borrowed Light]	[Sound Attenuation]	Chair Rail	Acrovyn Type Wainscot
Lockers	Shelving	[Corner Rail]	IV Track or Hook
NA Lead Lining	Fixed	Handrail	Add'l Structural Support
Projection Screen	Moveable	Bumper Rail	[Cubicle Curtain & Track]

DOORS:

4º 4⁶ 3º 3⁶ 6º [2º/4º]	Passage Set	Push / Pull	[Closer]
NA View Wndw A B C D	Lockset	Hold Open	Kick Plate
Lead Lined	[Special Hardware]	Magnetic	Armor Plate
			Auto-Open

Mechanical

NA	Exhaust	Special Temperature Req.	[Humidistat]	Negative Pressure
	[Thermostat]	Sp. Fire Suppression Req.	Special Filtration	[Positive Pressure]

Electrical

LIGHTS:

	[LED]	Down Lights	Under Counter	Dimmers
NA	[2x4] [1x4] 2x2	[Emergency]	Special Control(s)	[Under Cabinet] [Exam Light]

POWER:

	[Duplex]	GFI	Dedicated Circuit	480v
NA	4-Plex	[Emergency]	Plug / Wire Mold	

COMMUNICATIONS:

	[Telephone]	[Nurse Call]	[Computer]	[Clock]
	FAX	[Dictation]	Printer	TV / Cable
NA	Music Paging	Intercom	Code Pink	[Code Blue]
			[Physio Monitoring]	Master System

Plumbing

FIXTURES: [NA]

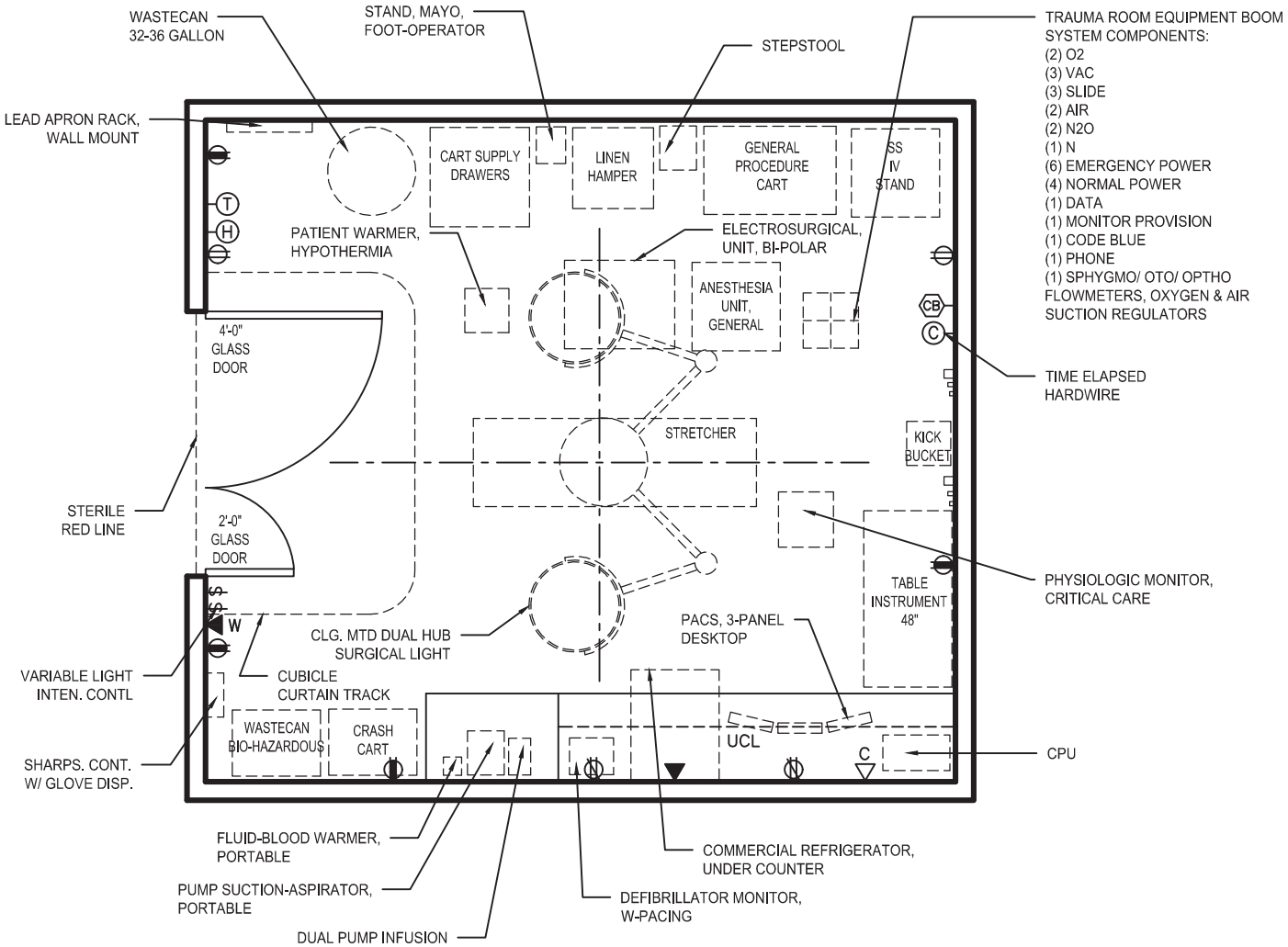
P1 Single Sink Extra Depth	P4 Lav. - Integral w/ Counter	P6 Clinical Service Sink	P11 Garbage Disposal
P2 Double Sink Extra Depth	P5 Water Closet Wall Mounted Floor Mounted Bed Pan Washer	P7 Scrub Sink P8 Janitor's Sink P9 HC Shower w/ Bench P10 Shower (See Plan)	P12 Floor Drain Chemical Resistant P13 Swivet Type Unit P14 Urinals P15 Plaster Trap
P3 Lavatory Wall Mounted			

FITTINGS: [NA]

Standard	Gooseneck	Wrist Blades	Hose Adapter
Hand-Held Wand	Foot Control	Infrared Eye	

GAS:

NA	Oxygen 1 2 3 4	Vacuum 1 2 3 4	Nitrous Oxide 1 2 3 4	Pre. Manuf. Unit
	Medical Air 1 2 3 4	Slide (1 per Vacuum)	Nitrogen 1 2 3 4	Carbon Dioxide
	[See Plan]			



TYPICAL TRAUMA ROOM

Tri-City Medical Center	SFEIR ARCHITECTS	DEPT. NAME: EMERGENCY ROOM NAME: TYP. TRAUMA RM ROOM NO: 01 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 5 OF 43

Department: **EMERGENCY DEPARTMENT** Room: **TYP. EXAM AREA** No.: **02**

Architectural

FINISH:

Floors: NA | Carpet | Tile C P Q | Concrete | Sealed | Vinyl Composition Tile | [Seamless Sheet Vinyl w/ Integral Base] | Terrazo

Walls: NA | [Painted] | Epoxy | Tile C P Q | Wainscot | Vinyl Wall Covering | Wainscot | FRP Panel | Wainscot

Ceilings: NA | Gypsum Board | Soffit Only | [Lay-In Tile] 2x4 [2x2] MR CR (Moist Resist. & Clean Room) | Special | Height: 8'-0" 10'-0" [9'-0"] - See RCP

FURNISHINGS: Equipment: [Yes] No | Furniture: [Yes] No | Cabinetry: Yes [No] | [See Plan]

TOILET ACCESSORIES: NA

- TA1 Recessed Towel; Disp & Waste Receptacle
- TA2 [Towel Dispenser]; [Surface Mounted]; Recessed Towel; Recessed w/ Mirror
- TA3 Waste Receptacle
- TA4 Toilet Paper Dispenser; Surface Mount; Recessed; Partition-Mounted
- TA5 Mirror; Unframed (Size on Plan); Framed
- TA6 [Soap Dispenser]
- TA7 Grab Bars
- TA8 Shelf
- TA9 Shower Curtain Rod
- TA10 Towel Bar
- TA11 Sanit. Napkin Disposal
- TA12 Robe / IV / Coat Hook
- TA13 Elect. Hand Dryer
- TA14 Shower Seat
- TA15 Soap Dish
- TA16 Baby Change Station
- TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

Borrowed Light	[Sound Attenuation]	Chair Rail	[Acrovyn Type Wainscot]
Lockers	Shelving	Corner Rail	IV Track or Hook
Lead Lining	Fixed	Handrail	Add'l Structural Support
Projection Screen	Moveable	Bumper Rail	[Cubicle Curtain & Track]

DOORS: NA

[4⁰] 4⁶ 3⁰ 3⁶ 6⁰ 2⁰/4⁰	[Passage Set]	Push / Pull	Closer
View Wndw A B C D	Lockset	Hold Open	Kick Plate
Lead Lined	Special Hardware	Magnetic	Armor Plate
			Auto-Open

Mechanical

NA	Exhaust	Special Temperature Req.	Humidstat	Negative Pressure
	[Thermostat]	Sp. Fire Suppression Req.	Special Filtration	Positive Pressure

Electrical

LIGHTS: NA

[LED]	Down Lights	[Under Counter]	Dimmers
[2x4] 1x4	Emergency	Special Control(s)	Under Cabinet
2x2			[Exam Light]

POWER: NA

[Duplex]	[GFI]	Dedicated Circuit	480v
4-Plex	[Emergency]	Plug / Wire Mold	

COMMUNI-CATIONS: NA

[Telephone]	[Nurse Call]	[Computer]	Clock
FAX	Dictation	Printer	[TV / Cable]
Music Paging	Intercom	Code Pink	Code Blue
		Physio Monitoring	Master System

Plumbing

FIXTURES: NA

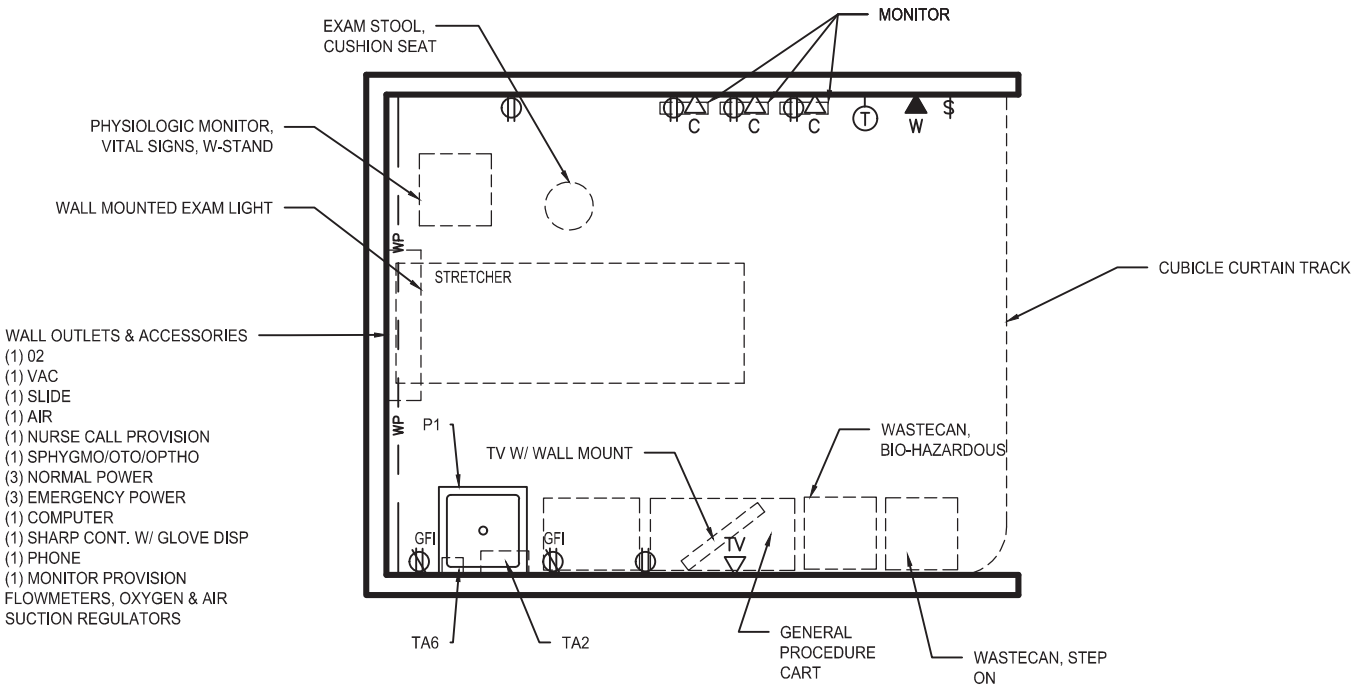
- P1 [Single Sink]; Extra Depth
- P2 Double Sink; Extra Depth
- P3 Lavatory; Wall Mounted
- P4 Lav. - Integral w/ Counter
- P5 Water Closet; Wall Mounted; Floor Mounted; Bed Pan Washer
- P6 Clinical Service Sink
- P7 Scrub Sink
- P8 Janitor's Sink
- P9 HC Shower w/ Bench
- P10 Shower (See Plan)
- P11 Garbage Disposal
- P12 Floor Drain; Chemical Resistant
- P13 Swivet Type Unit
- P14 Urinals
- P15 Plaster Trap

FITTINGS: NA

Standard	[Gooseneck]	[Wrist Blades]	Hose Adapter
Hand-Held Wand	Foot Control	Infrared Eye	

GAS: NA

Oxygen 1 2 3 4	Vacuum 1 2 3 4	Nitrous Oxide 1 2 3 4	Pre. Manuf. Unit
Medical Air 1 2 3 4	Slide (1 per Vacuum)	Nitrogen 1 2 3 4	Carbon Dioxide
[See Plan]			



TYPICAL EXAM AREA

Tri-City Medical Center	SFEIR ARCHITECTS	DEPT. NAME: ED ROOM NAME: TYP. EXAM AREA ROOM NO: 02 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 7 OF 43

Department: **EMERGENCY DEPARTMENT** Room: **TYP. ORTHO CAST ROOM** No.: **03**

Architectural

FINISH:

Floors: NA
Carpet
Tile C P Q
Concrete
Sealed
[Vinyl Composition Tile]
Seamless Sheet Vinyl w/ Integral Base
Terrazo

Walls: NA
[Painted]
Epoxy
Tile C P Q
Wainscot
Vinyl Wall Covering
Wainscot
FRP Panel
Wainscot

Ceilings: NA
Gypsum Board
Soffit Only
[Lay-In Tile]
[2x4] 2x2
MR CR (Moist Resist. & Clean Room)
Special
Height: 8'-0" 10'-0" [9'-0"] - 8'-6" / 12'-0"

FURNISHINGS:
Equipment: [Yes] No
Furniture: [Yes] No
Cabinetry: [Yes] No
[See Plan]

TOILET ACCESSORIES: NA

TA1 Recessed Towel
Disp & Waste Receptacle
TA2 [Towel Dispenser]
[Surface Mounted]
Recessed Towel
Recessed w/ Mirror
TA3 Waste Receptacle

TA4 Toilet Paper Dispenser
Surface Mount
Recessed
Partition-Mounted
TA5 Mirror
Unframed (Size on Plan)
Framed

TA6 [Soap Dispenser]
TA7 Grab Bars
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal

TA12 Robe / IV / Coat Hook
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA
Borrowed Light
Lockers
Lead Lining
Projection Screen
[Sound Attenuation]
Shelving
Fixed
Moveable
Chair Rail
[Corner Rail]
Handrail
Bumper Rail
[Acrovyn Type Wainscot]
IV Track or Hook
Add'l Structural Support
Cubicle Curtain & Track

DOORS: NA
4º 4⁶ 3º 3⁶ 6º [4º/2º]
View Wndw A B C D
Lead Lined
[Passage Set]
Lockset
Special Hardware
Push / Pull
Hold Open
Magnetic
Closer
Kick Plate
[Armor Plate]
Auto-Open

Mechanical

NA
Exhaust
[Thermostat]
Special Temperature Req.
Sp. Fire Suppression Req.
Humidistat
Special Filtration
Negative Pressure
Positive Pressure

Electrical

LIGHTS: NA
[LED]
2x4 [1x4]
2x2
Down Lights
Emergency
[Under Counter]
Special Control(s)
Dimmers
Under Cabinet
[Exam Light]

POWER: NA
[Duplex]
4-Plex
[GFI]
[Emergency]
Dedicated Circuit
Plug / Wire Mold
480v

COMMUNI-CATIONS: NA
[Telephone]
FAX
Music Paging
[Nurse Call]
Dictation
Intercom
[Computer]
Printer
Code Pink
Physio Monitoring
Clock
TV / Cable
Code Blue
Master System

Plumbing

FIXTURES: NA

P1 [Single Sink]
Extra Depth
P2 Double Sink
Extra Depth
P3 Lavatory
Wall Mounted

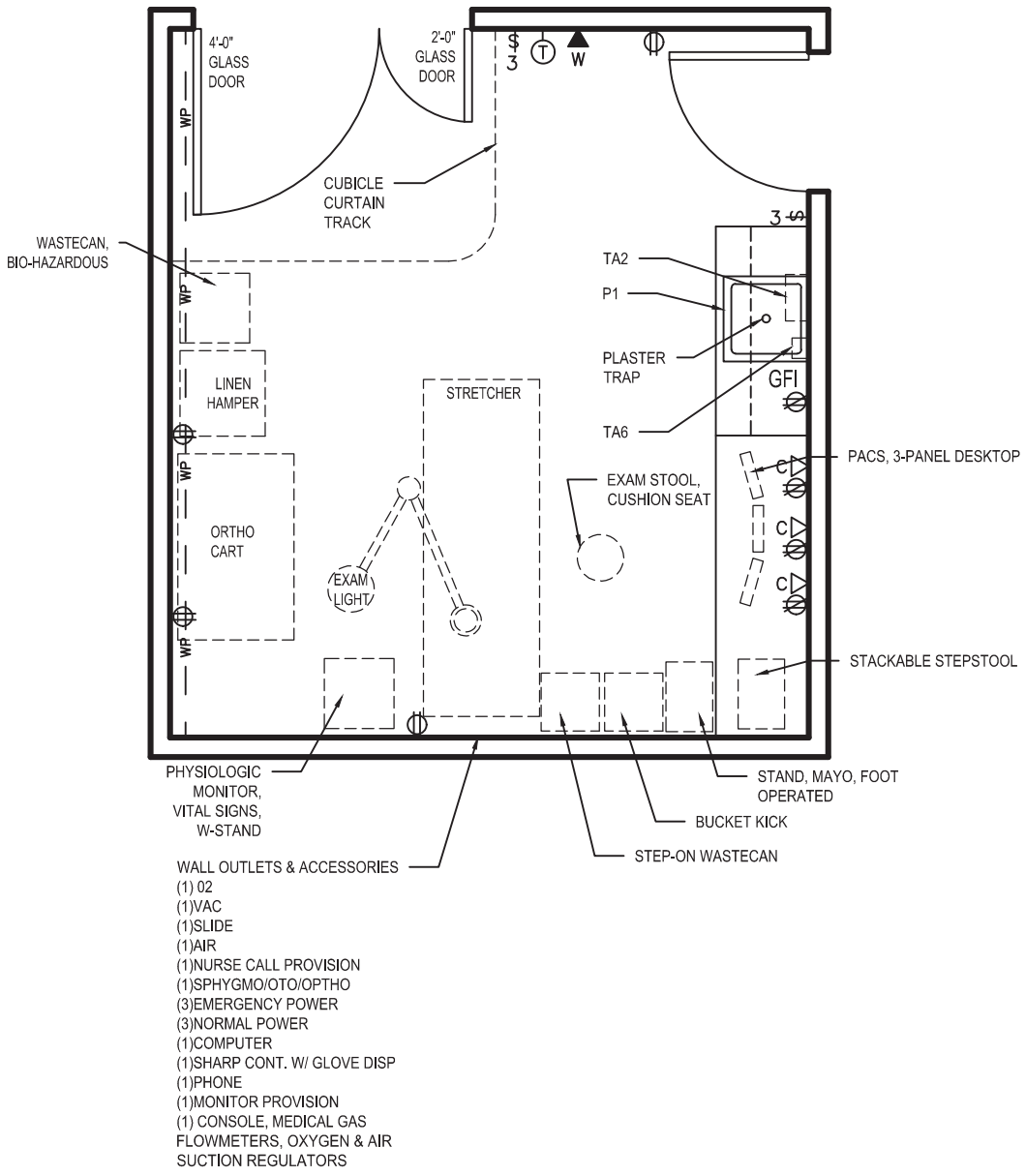
P4 Lav. - Integral w/ Counter
P5 Water Closet
Wall Mounted
Floor Mounted
Bed Pan Washer

P6 Clinical Service Sink
P7 Scrub Sink
P8 Janitor's Sink
P9 HC Shower w/ Bench
P10 Shower (See Plan)

P11 Garbage Disposal
P12 Floor Drain
Chemical Resistant
P13 Swivet Type Unit
P14 Urinals
P15 [Plaster Trap]

FITTINGS: NA
Standard
Hand-Held Wand
[Gooseneck]
Foot Control
[Wrist Blades]
Infrared Eye
Hose Adapter

GAS: NA
Oxygen 1 2 3 4
Medical Air 1 2 3 4
[See Plan]
Vacuum 1 2 3 4
Slide (1 per Vacuum)
Nitrous Oxide 1 2 3 4
Nitrogen 1 2 3 4
Pre. Manuf. Unit
Carbon Dioxide



TYPICAL ORTHO CAST ROOM

Tri-City Medical Center	SFEIR ARCHITECTS	DEPT. NAME: ED ROOM NAME: TYP. ORTHO CAST RM ROOM NO: 03 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 9 OF 43

Department: **IMAGING SERVICES** Room: **TYP. RADIOGRAPHY** No.: **04**

Architectural

FINISH:

Floors:	Carpet	Concrete	[Vinyl Composition Tile]	Terrazo
NA	Tile C P Q	Sealed	Seamless Sheet Vinyl w/ Integral Base	
Walls:	[Painted]	Tile C P Q	Vinyl Wall Covering	FRP Panel
NA	Epoxy	Wainscot	Wainscot	Wainscot
Ceilings:	Gypsum Board	[Lay-In Tile]	Special	Height: 8'-0" [10'-0"]
NA	Soffit Only	[2x4] 2x2 MR CR (Moist Resist. & Clean Room)		9'-0" 9'-6" See RCP

FURNISHINGS: Equipment: [Yes] No Furniture: Yes [No] Cabinetry: [Yes] No [See Plan]

TOILET ACCESSORIES:

NA

TA1 Recessed Towel Disp & Waste Receptacle	TA4 Toilet Paper Dispenser	TA6 [Soap Dispenser]	TA12 Robe / IV / Coat Hook
TA2 [Towel Dispenser] [Surface Mounted] Recessed Towel Recessed w/ Mirror	Surface Mount Recessed Partition-Mounted	TA7 Grab Bars	TA13 Elect. Hand Dryer
TA3 Waste Receptacle	TA5 Mirror Unframed (Size on Plan) Framed	TA8 Shelf	TA14 Shower Seat
		TA9 Shower Curtain Rod	TA15 Soap Dish
		TA10 Towel Bar	TA16 Baby Change Station
		TA11 Sanit. Napkin Disposal	TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS:

NA	Borrowed Light	Sound Attenuation	Chair Rail	Acrovyn Type Wainscot
	Lockers	Shelving	[Corner Rail]	IV Track or Hook
	[Lead Lining]	Fixed	Handrail	Add'l Structural Support
	Projection Screen	Moveable	Bumper Rail	Cubicle Curtain & Track

DOORS:

NA	[4º] 4⁶ 3º 3⁶ 6º 2º/4º	[Passage Set]	Push / Pull	Closer
	View Wndw A B C D	Lockset	[Hold Open]	Kick Plate
	[Lead Lined]	Special Hardware	Magnetic	[Armor Plate]
				Auto-Open

Mechanical

NA	Exhaust	Special Temperature Req.	Humidistat	Negative Pressure
	[Thermostat]	Sp. Fire Suppression Req.	Special Filtration	Positive Pressure

Electrical

LIGHTS:

NA	[LED]	Down Lights	[Under Counter]	Dimmers
	[2x4] 1x4 2x2	[Emergency]	Special Control(s)	Under Cabinet Exam Light

POWER:

NA	[Duplex]	[GFI]	Dedicated Circuit	[480v]
	4-Plex	[Emergency]	Plug / Wire Mold	

COMMUNI-CATIONS:

NA	[Telephone]	[Nurse Call]	[Computer]	[Clock]
	FAX	Dictation	[Printer]	TV / Cable
	Music Paging	Intercom	Code Pink	Code Blue
			Physio Monitoring	Master System

Plumbing

FIXTURES:

NA

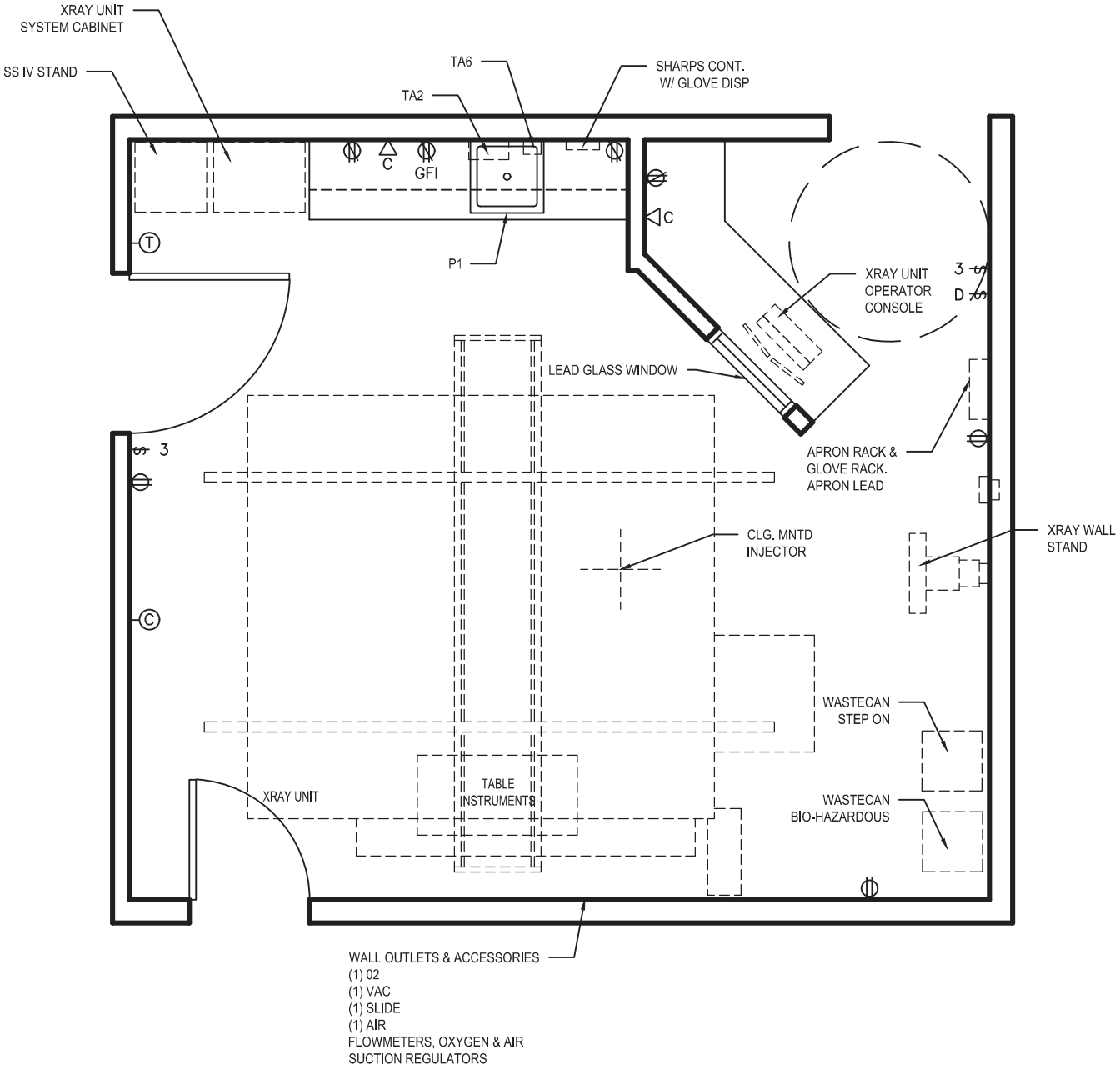
P1 [Single Sink] Extra Depth	P4 Lav. - Integral w/ Counter	P6 Clinical Service Sink	P11 Garbage Disposal
P2 Double Sink Extra Depth	P5 Water Closet Wall Mounted Floor Mounted	P7 Scrub Sink	P12 Floor Drain Chemical Resistant
P3 Lavatory Wall Mounted	Bed Pan Washer	P8 Janitor's Sink	P13 Swivet Type Unit
		P9 HC Shower w/ Bench	P14 Urinals
		P10 [Shower (See Plan)]	P15 Plaster Trap

FITTINGS:

NA	Standard	[Gooseneck]	[Wrist Blades]	Hose Adapter
	Hand-Held Wand	Foot Control	Infrared Eye	

GAS:

NA	Oxygen 1 2 3 4	Vacuum 1 2 3 4	Nitrous Oxide 1 2 3 4	Pre. Manuf. Unit
	Medical Air 1 2 3 4	Slide (1 per Vacuum)	Nitrogen 1 2 3 4	Carbon Dioxide
	[See Plan]			



TYPICAL RADIOGRAPHY ROOM

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: IMAGING ROOM NAME: TYP.RADIOGRAPHY RM ROOM NO: 04 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 11 OF 43

Department: **IMAGING SERVICES** Room: **TYP. RADIOGRAPHY CONT. ROOM** No.: **05**

Architectural

FINISH:

Floors:	Carpet	Concrete	[Vinyl Composition Tile]	Terrazo
NA	Tile C P Q	Sealed	Seamless Sheet Vinyl w/ Integral Base	
Walls:	[Painted]	Tile C P Q	Vinyl Wall Covering	FRP Panel
NA	Epoxy	Wainscot	Wainscot	Wainscot
Ceilings:	Gypsum Board	[Lay-In Tile]	Special	Height: 8'-0" 10'-0"
NA	Soffit Only	[2x4] 2x2 MR CR (Moist Resist. & Clean Room)		[9'-0"] - See RCP

FURNISHINGS: Equipment: [Yes] No Furniture: [Yes] No Cabinetry: [Yes] No [See Plan]

TOILET ACCESSORIES: [NA]

TA1 Recessed Towel Disp & Waste Receptacle	TA4 Toilet Paper Dispenser Surface Mount Recessed Partition-Mounted	TA6 Soap Dispenser	TA12 Robe / IV / Coat Hook
TA2 Towel Dispenser Surface Mounted Recessed Towel Recessed w/ Mirror	TA5 Mirror Unframed (Size on Plan) Framed	TA7 Grab Bars	TA13 Elect. Hand Dryer
TA3 Waste Receptacle		TA8 Shelf	TA14 Shower Seat
		TA9 Shower Curtain Rod	TA15 Soap Dish
		TA10 Towel Bar	TA16 Baby Change Station
		TA11 Sanit. Napkin Disposal	TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS:

Borrowed Light	Sound Attenuation	Chair Rail	Acrovyn Type Wainscot
Lockers	Shelving	[Corner Rail]	IV Track or Hook
NA Lead Lining	Fixed	Handrail	Add'l Structural Support
Projection Screen	Moveable	Bumper Rail	Cubicle Curtain & Track

DOORS:

4⁰ 4⁶ [3⁰] 3⁶ 6⁰ 2⁰/4⁰	Passage Set	Push / Pull	Closer
NA View Wndw A B C D	[Lockset]	Hold Open	Kick Plate
Lead Lined	Special Hardware	Magnetic	Armor Plate
			Auto-Open

Mechanical

[NA]	Exhaust	Special Temperature Req.	Humidistat	Negative Pressure
	Thermostat	Sp. Fire Suppression Req.	Special Filtration	Positive Pressure

Electrical

LIGHTS:

[LED]	Down Lights	Under Counter	[Dimmers]
NA [2x4] 1x4 2x2	Emergency	Special Control(s)	Under Cabinet
			Exam Light

POWER:

[Duplex]	GFI	Dedicated Circuit	480v
NA 4-Plex	Emergency	Plug / Wire Mold	

COMMUNI-CATIONS:

[Telephone]	[Nurse Call]	[Computer]	Clock
FAX	Dictation	Printer	TV / Cable
NA Music Paging	[Intercom]	Code Pink	Code Blue
		Physio Monitoring	Master System

Plumbing

FIXTURES: [NA]

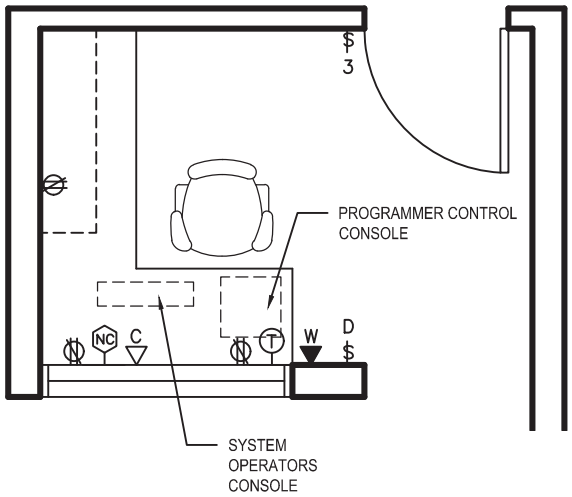
P1 Single Sink Extra Depth	P4 Lav. - Integral w/ Counter	P6 Clinical Service Sink	P11 Garbage Disposal
P2 Double Sink Extra Depth	P5 Water Closet Wall Mounted Floor Mounted	P7 Scrub Sink	P12 Floor Drain Chemical Resistant
P3 Lavatory Wall Mounted	Bed Pan Washer	P8 Janitor's Sink	P13 Swivet Type Unit
		P9 HC Shower w/ Bench	P14 Urinals
		P10 Shower (See Plan)	P15 Plaster Trap

FITTINGS:

Standard	Gooseneck	Wrist Blades	Hose Adapter
[NA] Hand-Held Wand	Foot Control	Infrared Eye	

GAS:

[NA] Oxygen 1 2 3 4	Vacuum 1 2 3 4	Nitrous Oxide 1 2 3 4	Pre. Manuf. Unit
Medical Air 1 2 3 4	Slide (1 per Vacuum)	Nitrogen 1 2 3 4	Carbon Dioxide



TYPICAL RADIOGRAPHY CONTROL

Tri-City Medical Center	SFEIR ARCHITECTS	DEPT. NAME: IMAGING ROOM NAME: TYP.RAD. CONTROL ROOM NO: 05 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 13 OF 43

Department: **IMAGING SERVICES** Room: **TYP. CT SCANNER ROOM** No.: **06**

Architectural

FINISH:

Floors: Carpet; Concrete; [Vinyl Composition Tile]; Terrazo
NA; Tile C P Q; Sealed; Seamless Sheet Vinyl w/ Integral Base

Walls: [Painted]; Tile C P Q; Vinyl Wall Covering; FRP Panel
NA; Epoxy; Wainscot; Wainscot; Wainscot

Ceilings: Gypsum Board; [Lay-In Tile]; Special; Height: 8'-0" [10'-0"] 9'-0" 9'-6"
NA; Soffit Only; [2x4] 2x2 MR CR (Moist Resist. & Clean Room); See RCP

FURNISHINGS: Equipment: [Yes] No; Furniture: Yes [No]; Cabinetry: [Yes] No; [See Plan]

TOILET ACCESSORIES:
NA

- TA1 Recessed Towel Disp & Waste Receptacle
- TA2 [Towel Dispenser] [Surface Mounted] Recessed Towel Recessed w/ Mirror
- TA3 Waste Receptacle
- TA4 Toilet Paper Dispenser: Surface Mount, Recessed, Partition-Mounted
- TA5 Mirror: Unframed (Size on Plan), Framed
- TA6 [Soap Dispenser]
- TA7 Grab Bars
- TA8 Shelf
- TA9 Shower Curtain Rod
- TA10 Towel Bar
- TA11 Sanit. Napkin Disposal
- TA12 Robe / IV / Coat Hook
- TA13 Elect. Hand Dryer
- TA14 Shower Seat
- TA15 Soap Dish
- TA16 Baby Change Station
- TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS:
NA

[Borrowed Light]	[Sound Attenuation]	Chair Rail	Acrovyn Type Wainscot
Lockers	Shelving	Corner Rail	IV Track or Hook
Lead Lining	Fixed	Handrail	Add'l Structural Support
Projection Screen	Moveable	Bumper Rail	Cubicle Curtain & Track

DOORS:
NA

4º 4⁶ 3º 3⁶ 6º [2º/4º]	[Passage Set]	Push / Pull	Closer
View Wndw A B C D	Lockset	[Hold Open]	Kick Plate
[Lead Lined]	Special Hardware	Magnetic	[Armor Plate]
			Auto-Open

Mechanical

NA

Exhaust	Special Temperature Req.	Humidistat	Negative Pressure
[Thermostat]	Sp. Fire Suppression Req.	Special Filtration	Positive Pressure

Electrical

LIGHTS:
NA

[LED]	Down Lights	[Under Counter]	[Dimmers]
[2x4] 1x4 2x2	Emergency	Special Control(s)	Under Cabinet
			Exam Light

POWER:
NA

[Duplex]	[GFI]	[Dedicated Circuit]	[480v]
4-Plex	[Emergency]	Plug / Wire Mold	

COMMUNICATIONS:
NA

[Telephone]	[Nurse Call]	Computer	Clock
FAX	Dictation	Printer	TV / Cable
[Music Paging]	Intercom	Code Pink	Code Blue
		Physio Monitoring	Master System

Plumbing

FIXTURES:
NA

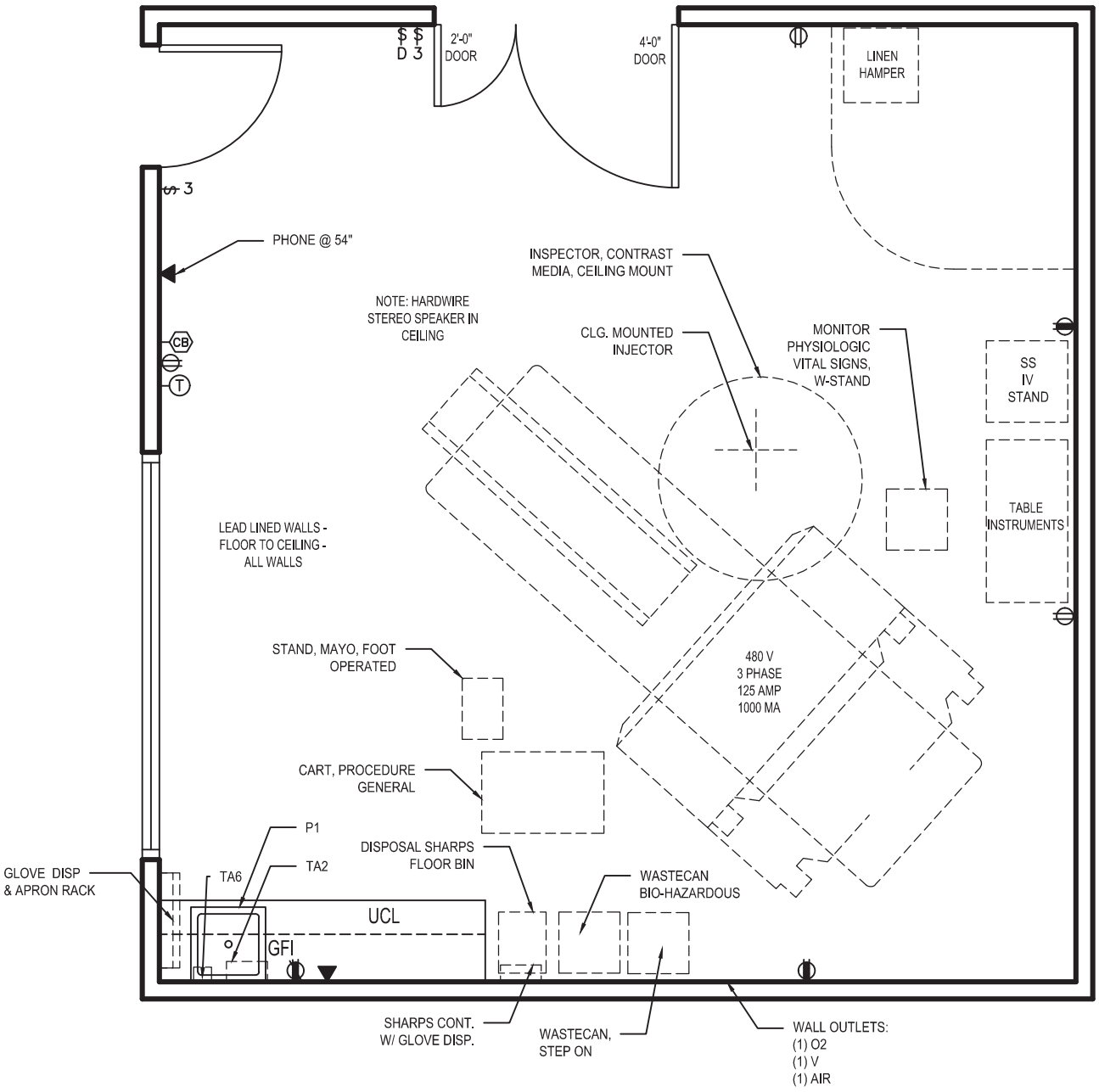
- P1 [Single Sink] Extra Depth
- P2 Double Sink Extra Depth
- P3 Lavatory Wall Mounted
- P4 Lav. - Integral w/ Counter
- P5 Water Closet: Wall Mounted, Floor Mounted, Bed Pan Washer
- P6 Clinical Service Sink
- P7 Scrub Sink
- P8 Janitor's Sink
- P9 HC Shower w/ Bench
- P10 Shower (See Plan)
- P11 Garbage Disposal
- P12 Floor Drain Chemical Resistant
- P13 Swivet Type Unit
- P14 Urinals
- P15 Plaster Trap

FITTINGS:
NA

Standard	[Gooseneck]	[Wrist Blades]	Hose Adapter
Hand-Held Wand	Foot Control	Infrared Eye	

GAS:
NA

Oxygen 1 2 3 4	Vacuum 1 2 3 4	Nitrous Oxide 1 2 3 4	Pre. Manuf. Unit
Medical Air 1 2 3 4	Slide (1 per Vacuum)	Nitrogen 1 2 3 4	Carbon Dioxide
[See Plan]			



TYPICAL CT SCANNER

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: IMAGING ROOM NAME: CT SCANNER ROOM NO: 06 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 15 OF 43

Department: **IMAGING SERVICES** Room: **TYP. MRI SCANNER ROOM** No.: **07**

Architectural

FINISH:

Floors: NA
Carpet
Tile C P Q
Concrete
Sealed
[Vinyl Composition Tile]
Seamless Sheet Vinyl w/ Integral Base
Terrazo

Walls: NA
[Painted]
Epoxy
Tile C P Q
Wainscot
Vinyl Wall Covering
Wainscot
FRP Panel
Wainscot

Ceilings: NA
Gypsum Board
Soffit Only
[Lay-In Tile]
[2x4] 2x2
MR CR (Moist Resist. & Clean Room)
Special
Height: 8'-0" [10'-0"] 9'-0" 9'-6" See RCP

FURNISHINGS:
Equipment: [Yes] No
Furniture: Yes [No]
Cabinetry: [Yes] No
[See Plan]

TOILET ACCESSORIES: NA

TA1 Recessed Towel
Disp & Waste Receptacle
TA2 [Towel Dispenser]
[Surface Mounted]
Recessed Towel
Recessed w/ Mirror
TA3 Waste Receptacle
TA4 Toilet Paper Dispenser
Surface Mount
Recessed
Partition-Mounted
TA5 Mirror
Unframed (Size on Plan)
Framed
TA6 [Soap Dispenser]
TA7 Grab Bars
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal
TA12 Robe / IV / Coat Hook
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

Borrowed Light
Lockers
Lead Lining
Projection Screen
[Sound Attenuation]
Shelving
Fixed
Moveable
Chair Rail
[Corner Rail]
Handrail
Bumper Rail
Acrovyn Type Wainscot
IV Track or Hook
Add'l Structural Support
Cubicle Curtain & Track

DOORS: NA

4º 4⁶ 3º 3⁶ 6º [2º/4º]
View Wndw A B C D
[Lead Lined]
[Passage Set]
Lockset
Special Hardware
Push / Pull
[Hold Open]
Magnetic
Closer
Kick Plate
[Armor Plate]
Auto-Open

Mechanical

NA

Exhaust
[Thermostat]
Special Temperature Req.
Sp. Fire Suppression Req.
Humidistat
Special Filtration
Negative Pressure
Positive Pressure

Electrical

LIGHTS: NA

[LED]
[2x4] 1x4
2x2
[Down Lights]
[Emergency]
[Under Counter]
Special Control(s)
[Dimmers]
Under Cabinet
Exam Light

POWER: NA

[Duplex]
4-Plex
GFI
[Emergency]
[Dedicated Circuit]
Plug / Wire Mold
[480v]

COMMUNI-CATIONS: NA

[Telephone]
FAX
Music Paging
[Nurse Call]
[Dictation]
Intercom
Computer
Printer
Code Pink
Physio Monitoring
Clock
TV / Cable
[Code Blue]
Master System

Plumbing

FIXTURES: NA

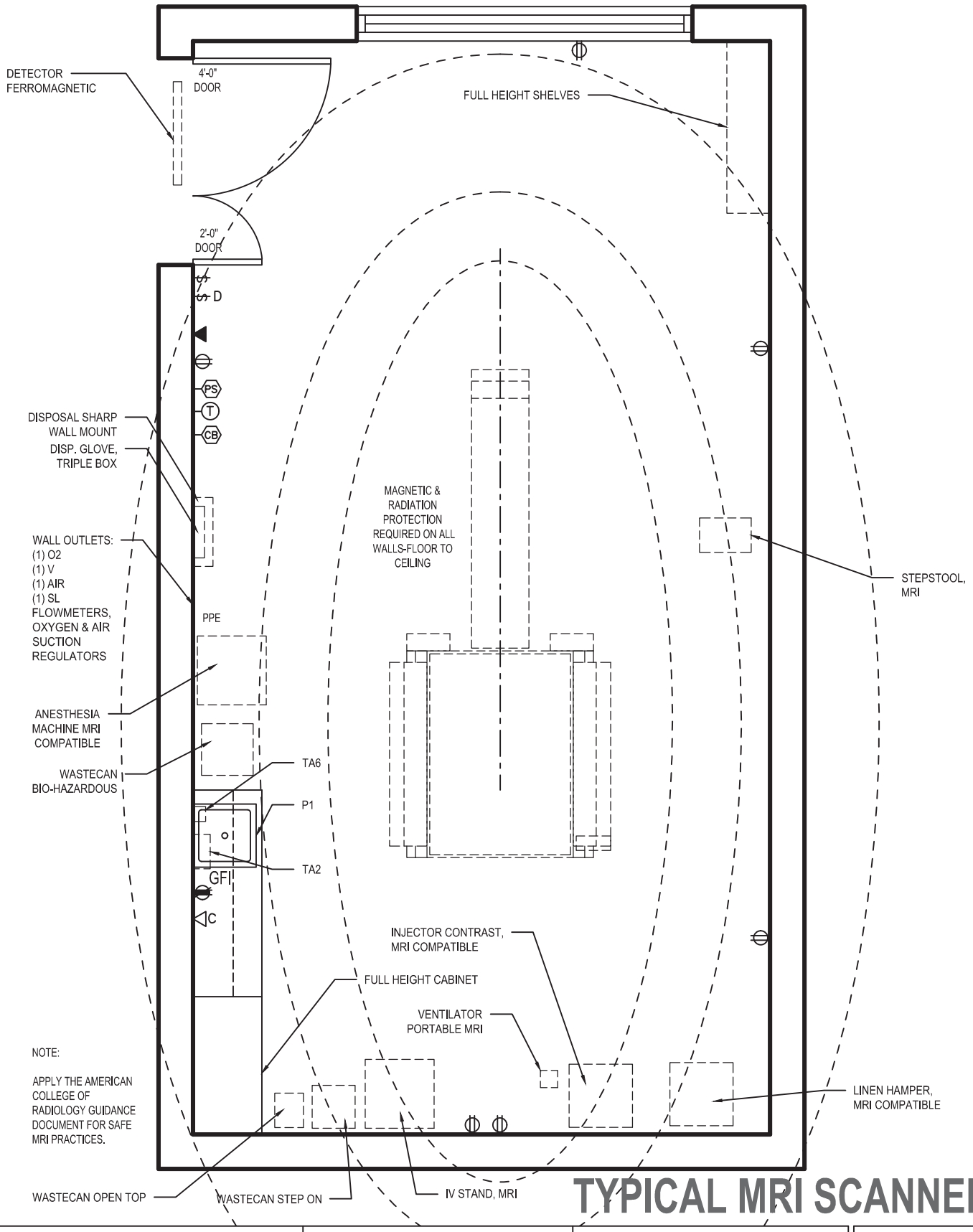
P1 [Single Sink]
Extra Depth
P2 Double Sink
Extra Depth
P3 Lavatory
Wall Mounted
P4 Lav. - Integral w/ Counter
P5 Water Closet
Wall Mounted
Floor Mounted
Bed Pan Washer
P6 Clinical Service Sink
P7 Scrub Sink
P8 Janitor's Sink
P9 HC Shower w/ Bench
P10 Shower (See Plan)
P11 Garbage Disposal
P12 Floor Drain
Chemical Resistant
P13 Swivet Type Unit
P14 Urinals
P15 Plaster Trap

FITTINGS: NA

Standard
Hand-Held Wand
[Gooseneck]
Foot Control
[Wrist Blades]
Infrared Eye
Hose Adapter

GAS: NA

Oxygen 1 2 3 4
Medical Air 1 2 3 4
[See Plan]
Vacuum 1 2 3 4
Slide (1 per Vacuum)
Nitrous Oxide 1 2 3 4
Nitrogen 1 2 3 4
Pre. Manuf. Unit
Carbon Dioxide



TYPICAL MRI SCANNER

Tri-City Medical Center

SFEIR ARCHITECTS

DEPT. NAME: IMAGING
ROOM NAME: TYP. MRI SCANNER
ROOM NO: 07
DATE: 09/21/17

SCALE: 1/4"=1'-0"

Department: **IMAGING SERVICES** Room: **TYP. CT & MRI CONTROL ROOM** No.: **08**

Architectural

FINISH:

Floors:	Carpet	Concrete	[Vinyl Composition Tile]	Terrazo
NA	Tile C P Q	Sealed	Seamless Sheet Vinyl w/ Integral Base	
Walls:	[Painted]	Tile C P Q	Vinyl Wall Covering	FRP Panel
NA	Epoxy	Wainscot	Wainscot	Wainscot
Ceilings:	Gypsum Board	[Lay-In Tile]	Special	Height: 8'-0" 10'-0"
NA	Soffit Only	[2x4] 2x2 MR CR (Moist Resist. & Clean Room)		[9'-0"] - See RCP

FURNISHINGS: Equipment: [Yes] No Furniture: [Yes] No Cabinetry: [Yes] No [See Plan]

TOILET ACCESSORIES: [NA]

TA1 Recessed Towel Disp & Waste Receptacle	TA4 Toilet Paper Dispenser	TA6 Soap Dispenser	TA12 Robe / IV / Coat Hook
TA2 Towel Dispenser	Surface Mount	TA7 Grab Bars	TA13 Elect. Hand Dryer
Surface Mounted	Recessed	TA8 Shelf	TA14 Shower Seat
Recessed Towel	Partition-Mounted	TA9 Shower Curtain Rod	TA15 Soap Dish
Recessed w/ Mirror	TA5 Mirror	TA10 Towel Bar	TA16 Baby Change Station
TA3 Waste Receptacle	Unframed (Size on Plan)	TA11 Sanit. Napkin Disposal	TA17 Toilet Seat Cover Disp.
	Framed		

ADDITIONAL ITEMS:

Borrowed Light	Sound Attenuation	Chair Rail	Acrovyn Type Wainscot
Lockers	Shelving	[Corner Rail]	IV Track or Hook
NA Lead Lining	Fixed	Handrail	Add'l Structural Support
Projection Screen	Moveable	Bumper Rail	Cubicle Curtain & Track

DOORS:

4⁰ 4⁶ [3⁰] 3⁶ 6⁰	Passage Set	Push / Pull	Closer
NA View Wndw A B C D	[Lockset]	Hold Open	Kick Plate
Lead Lined	Special Hardware	Magnetic	Armor Plate
			Auto-Open

Mechanical

[NA]	Exhaust	Special Temperature Req.	Humidistat	Negative Pressure
	Thermostat	Sp. Fire Suppression Req.	Special Filtration	Positive Pressure

Electrical

LIGHTS:

[LED]	Down Lights	Under Counter	[Dimmers]
NA [2x4] 1x4	Emergency	Special Control(s)	Under Cabinet
2x2			Exam Light

POWER:

[Duplex]	GFI	Dedicated Circuit	480v
NA 4-Plex	Emergency	Plug / Wire Mold	

COMMUNI-CATIONS:

[Telephone]	[Nurse Call]	[Computer]	Clock
FAX	Dictation	Printer	TV / Cable
NA Music Paging	[Intercom]	Code Pink	Code Blue
		Physio Monitoring	Master System

Plumbing

FIXTURES: [NA]

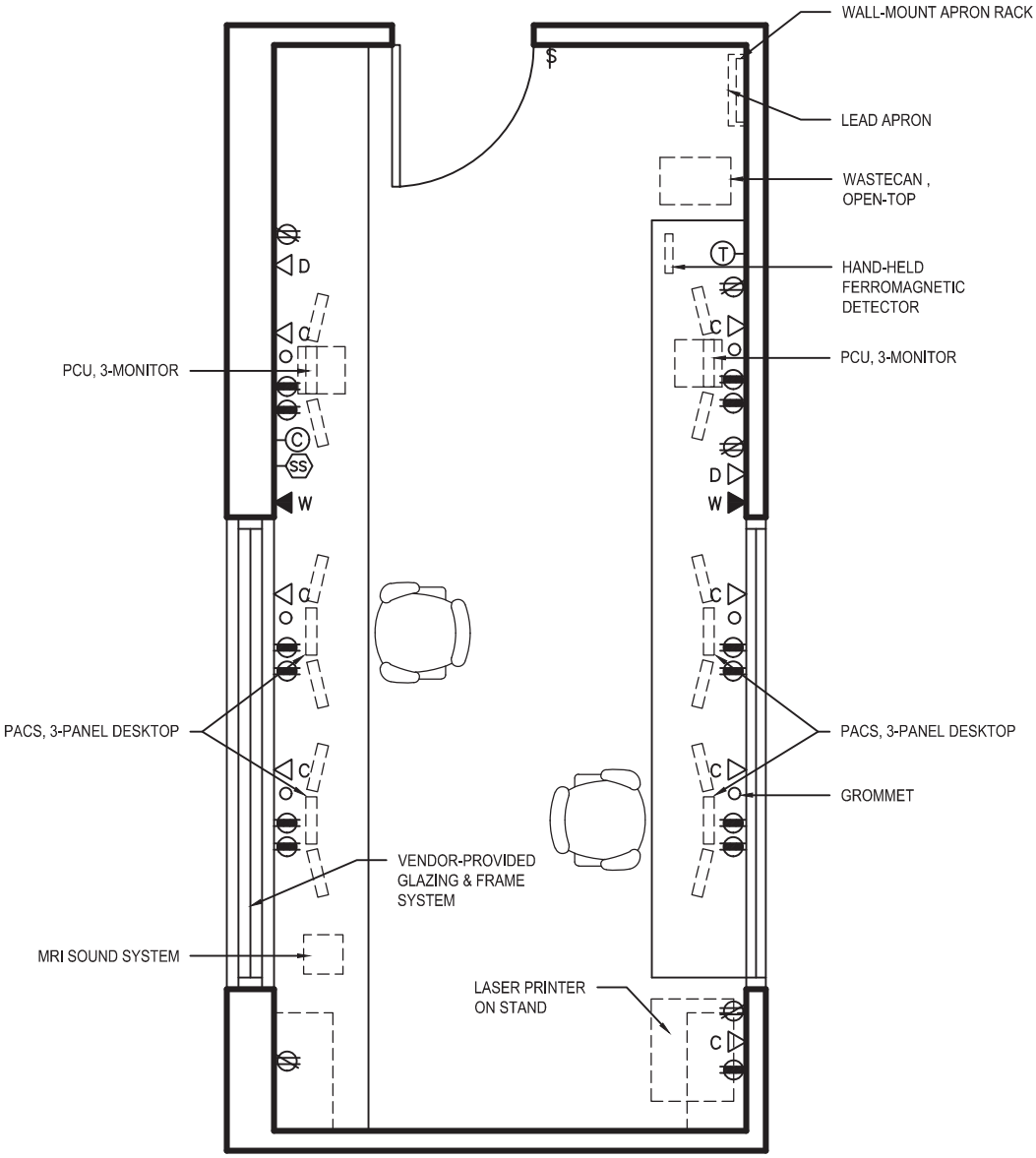
P1 Single Sink Extra Depth	P4 Lav. - Integral w/ Counter	P6 Clinical Service Sink	P11 Garbage Disposal
P2 Double Sink Extra Depth	P5 Water Closet	P7 Scrub Sink	P12 Floor Drain
P3 Lavatory	Wall Mounted	P8 Janitor's Sink	Chemical Resistant
Wall Mounted	Floor Mounted	P9 HC Shower w/ Bench	P13 Swivet Type Unit
	Bed Pan Washer	P10 Shower (See Plan)	P14 Urinals
			P15 Plaster Trap

FITTINGS:

Standard	Gooseneck	Wrist Blades	Hose Adapter
[NA] Hand-Held Wand	Foot Control	Infrared Eye	

GAS:

[NA]	Oxygen 1 2 3 4	Vacuum 1 2 3 4	Nitrous Oxide 1 2 3 4	Pre. Manuf. Unit
	Medical Air 1 2 3 4	Slide (1 per Vacuum)	Nitrogen 1 2 3 4	Carbon Dioxide



TYPICAL CT & MRI CONTROL

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: IMAGING ROOM NAME: TYP. CT & MRI CNTL ROOM NO: 08 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 19 OF 43

Department: **ORTHO** Room: **TYP. AIRBORNE ISO. PATIENT RM** No.: **09**

Architectural

FINISH:

Floors: NA | Carpet | Tile C P Q | Concrete | Sealed | Vinyl Composition Tile | [Seamless Sheet Vinyl w/ Integral Base] | Terrazo

Walls: NA | [Painted] | Epoxy | Tile C P Q | Wainscot | Vinyl Wall Covering | Wainscot | FRP Panel | Wainscot

Ceilings: NA | [Gypsum Board] | Soffit Only | Lay-In Tile | 2x4 2x2 | MR CR (Moist Resist. & Clean Room) | Special | Height: 8'-0" 10'-0" [9'-0"] - See RCP

FURNISHINGS: Equipment: Yes [No] Furniture: Yes [No] Cabinetry: Yes [No] [See Plan]

TOILET ACCESSORIES: NA

- TA1 [Recessed Towel] [Disp & Waste Receptacle]
- TA2 Towel Dispenser: Surface Mounted; Recessed Towel; Recessed w/ Mirror
- TA3 Waste Receptacle
- TA4 Toilet Paper Dispenser: Surface Mount; [Recessed]; Partition-Mounted
- TA5 [Mirror] [Unframed (Size on Plan)]; Framed
- TA6 Soap Dispenser
- TA7 [Grab Bars]
- TA8 Shelf
- TA9 Shower Curtain Rod
- TA10 Towel Bar
- TA11 Sanit. Napkin Disposal
- TA12 [Robe / IV / Coat Hook]
- TA13 Elect. Hand Dryer
- TA14 [Shower Seat]
- TA15 Soap Dish
- TA16 Baby Change Station
- TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

[Borrowed Light]; Lockers; Lead Lining; Projection Screen; Sound Attenuation; Shelving: Fixed, Moveable; Chair Rail; Corner Rail; Handrail; Bumper Rail; [Acrovyn Type Wainscot]; IV Track or Hook; Add'l Structural Support; Cubicle Curtain & Track

DOORS: NA

[4⁰] 4⁶ 3⁰ 3⁶ 6⁰; [View Wndw] A B [C] D; Lead Lined; [Passage Set]; Lockset; Special Hardware; Push / Pull; Hold Open: Magnetic; [Closer]; Kick Plate; [Armor Plate]; Auto-Open

Mechanical

NA | Exhaust | [Thermostat] | Special Temperature Req. | Sp. Fire Suppression Req. | Humidistat | Special Filtration | [Negative Pressure] | Positive Pressure

Electrical

LIGHTS: NA

[LED]; 2x4 [1x4]; 2x2; Down Lights; Emergency; Under Counter; Special Control(s); Dimmers; Under Cabinet; [Exam Light]

POWER: NA

[Duplex]; 4-Plex; GFI; [Emergency]; Dedicated Circuit; Plug / Wire Mold; 480v

COMMUNICATIONS: NA

Telephone; FAX; Music Paging; [Nurse Call]; Dictation; Intercom; Computer; Printer; Code Pink; Physio Monitoring; Clock; TV / Cable; [Code Blue]; Master System

Plumbing

FIXTURES: NA

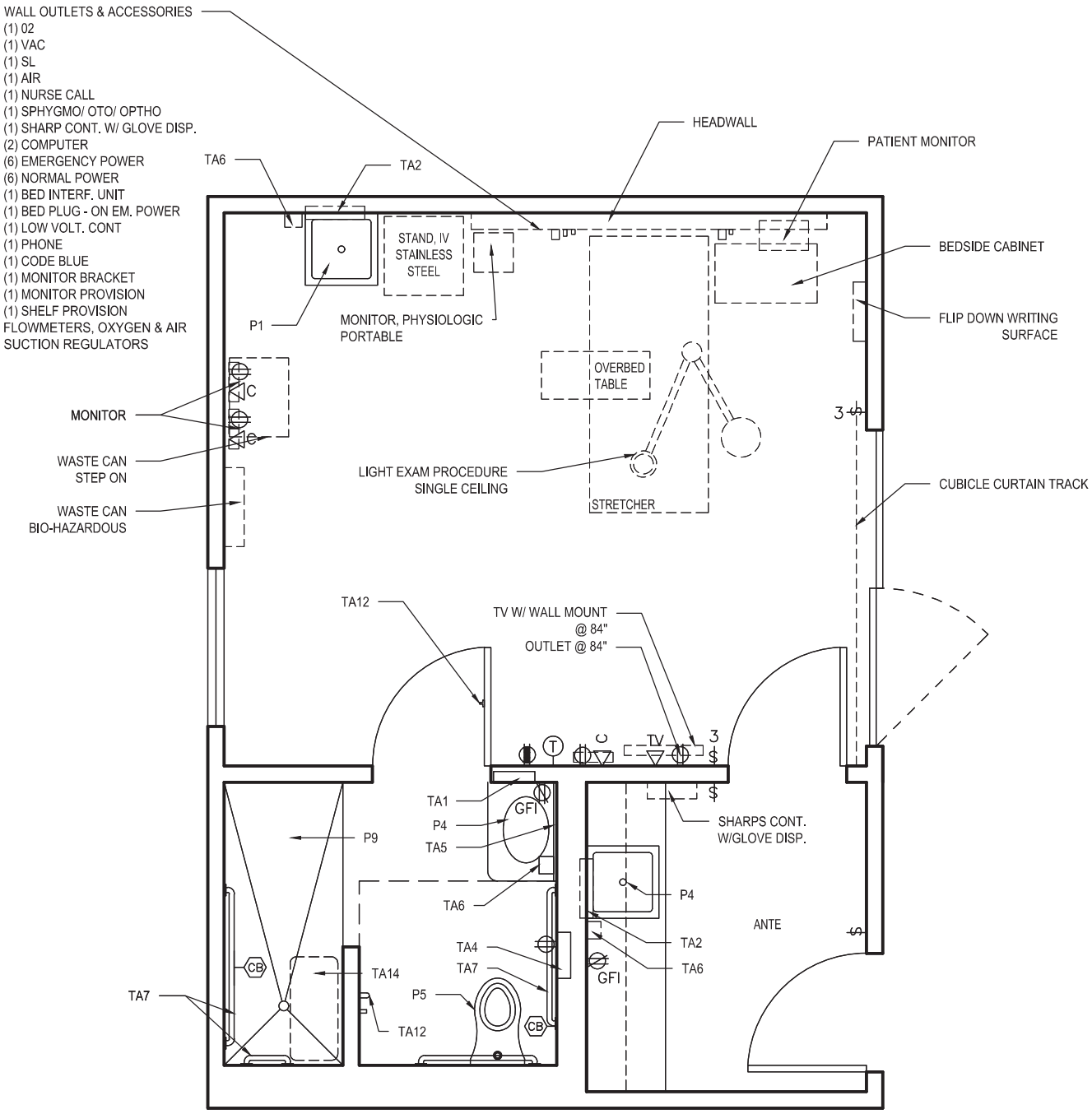
- P1 [Single Sink]: Extra Depth
- P2 Double Sink: Extra Depth
- P3 Lavatory: Wall Mounted
- P4 [Lav. - Integral w/ Counter]
- P5 [Water Closet]: [Wall Mounted]; Floor Mounted; Bed Pan Washer
- P6 Clinical Service Sink
- P7 Scrub Sink
- P8 Janitor's Sink
- P9 [HC Shower w/ Bench]
- P10 Shower (See Plan)
- P11 Garbage Disposal
- P12 Floor Drain: Chemical Resistant
- P13 Swivet Type Unit
- P14 Urinals
- P15 Plaster Trap

FITTINGS: [NA]

Standard; Hand-Held Wand; Gooseneck; Foot Control; Wrist Blades; Infrared Eye; Hose Adapter

GAS: NA

Oxygen 1 2 3 4; Medical Air 1 2 3 4; [See Plan]; Vacuum 1 2 3 4; Slide (1 per Vacuum); Nitrous Oxide 1 2 3 4; Nitrogen 1 2 3 4; Pre. Manuf. Unit; Carbon Dioxide



TYPICAL AIRBORNE INFECTION ISOLATION ROOM

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: ORTHO ROOM NAME: TYP. A.I.I. ROOM ROOM NO: 09 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 21 OF 43

Department: **ORTHO** Room: **TYP. ORTHO PATIENT ROOM** No.: **10**

Architectural

FINISH:

Floors: NA
Carpet; Tile C P Q; Concrete; Sealed; [Vinyl Composition Tile]; Seamless Sheet Vinyl w/ Integral Base; Terrazo

Walls: NA
[Painted]; Epoxy; Tile C P Q; Wainscot; Vinyl Wall Covering; Wainscot; FRP Panel; Wainscot

Ceilings: NA
[Gypsum Board]; Soffit Only; [Lay-In Tile]; [2x4] 2x2; MR CR (Moist Resist. & Clean Room); Special; Height: 8'-0" 10'-0" [9'-0"] - 8'-6" / 12'-0"

FURNISHINGS: Equipment: [Yes] No; Furniture: [Yes] No; Cabinetry: [Yes] No; [See Plan]

TOILET ACCESSORIES: NA

TA1 Recessed Towel; Disp & Waste Receptacle
TA2 [Towel Dispenser]; [Surface Mounted]; Recessed Towel; Recessed w/ Mirror
TA3 [Waste Receptacle]
TA4 [Toilet Paper Dispenser]; Surface Mount; [Recessed]; Partition-Mounted
TA5 [Mirror]; [Unframed (Size on Plan)]; Framed
TA6 [Soap Dispenser]
TA7 [Grab Bars]
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal
TA12 [Robe / IV / Coat Hook]
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA
[Borrowed Light]; Lockers; Lead Lining; Projection Screen; [Sound Attenuation]; Shelving; Fixed; Moveable; Chair Rail; Corner Rail; Handrail; Bumper Rail; Acrovyn Type Wainscot; IV Track or Hook; Add'l Structural Support; [Cubicle Curtain & Track]

DOORS: NA
[4º] 4⁶ 3º 3⁶ 6º; [View Wndw] A B [C] D; Lead Lined; [Passage Set]; Lockset; Special Hardware; Push / Pull; Hold Open; Magnetic; [Closer]; [Kick Plate]; Armor Plate; Auto-Open

Mechanical

NA
Exhaust; [Thermostat]; Special Temperature Req.; Sp. Fire Suppression Req.; Humidistat; Special Filtration; Negative Pressure; Positive Pressure

Electrical

LIGHTS: NA
[LED]; 2x4 [1x4]; 2x2; Down Lights; Emergency; Under Counter; Special Control(s); Dimmers; Under Cabinet; Exam Light

POWER: NA
[Duplex]; 4-Plex; [GFI]; [Emergency]; Dedicated Circuit; Plug / Wire Mold; 480v

COMMUNICATIONS: NA
[Telephone]; FAX; Music Paging; [Nurse Call]; Dictation; Intercom; Computer; Printer; Code Pink; Physio Monitoring; [Clock]; [TV / Cable]; [Code Blue]; Master System

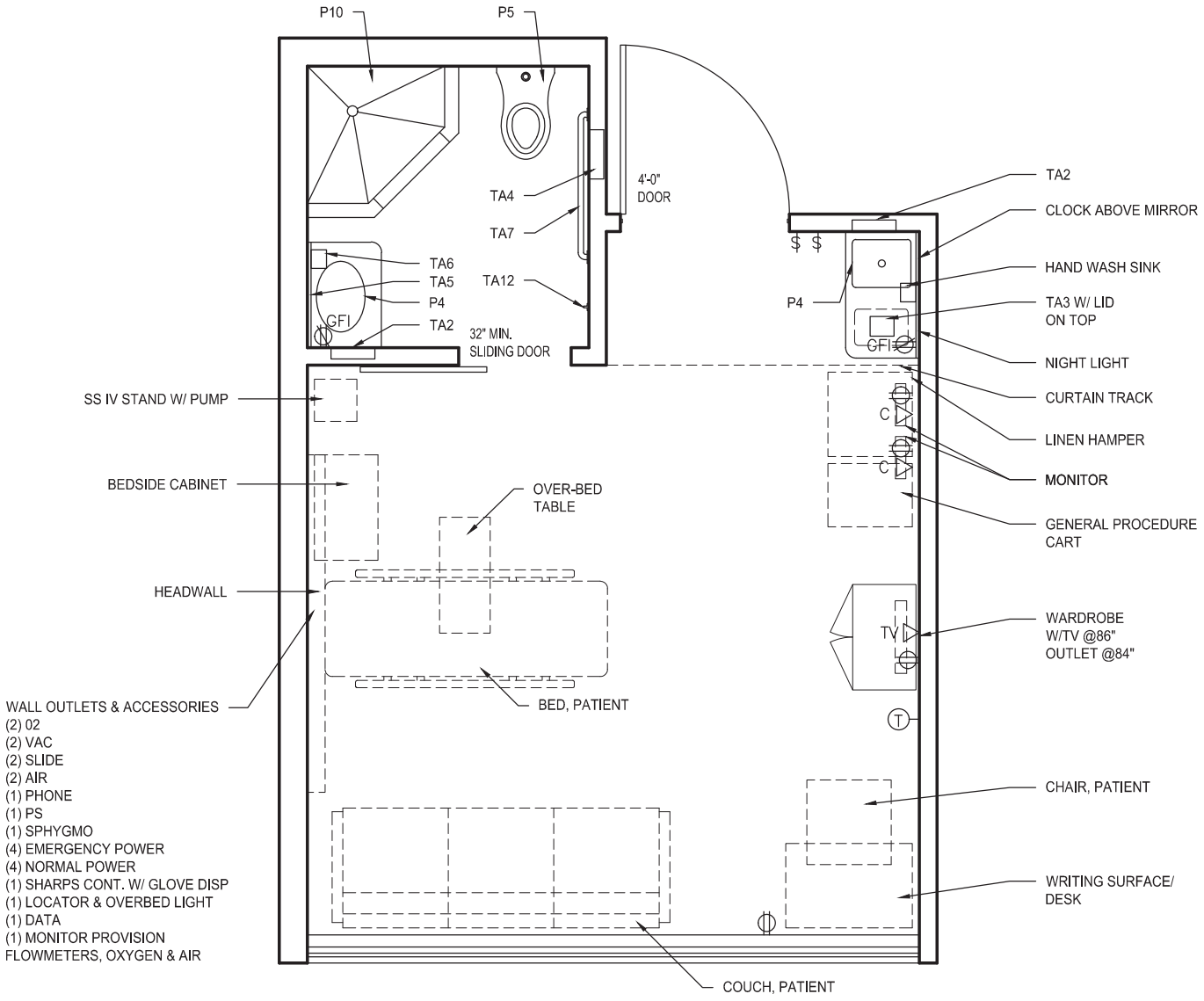
Plumbing

FIXTURES: NA

P1 Single Sink; Extra Depth
P2 Double Sink; Extra Depth
P3 Lavatory; Wall Mounted
P4 [Lav. - Integral w/ Counter]
P5 [Water Closet]; Wall Mounted; Floor Mounted; Bed Pan Washer
P6 Clinical Service Sink
P7 Scrub Sink
P8 Janitor's Sink
P9 HC Shower w/ Bench
P10 [Shower (See Plan)]
P11 Garbage Disposal
P12 Floor Drain; Chemical Resistant
P13 Swivet Type Unit
P14 Urinals
P15 Plaster Trap

FITTINGS: NA
Standard; Hand-Held Wand; [Gooseneck]; Foot Control; [Wrist Blades]; Infrared Eye; Hose Adapter

GAS: NA
Oxygen 1 2 3 4; Medical Air 1 2 3 4; [See Plan]; Vacuum 1 2 3 4; Slide (1 per Vacuum); Nitrous Oxide 1 2 3 4; Nitrogen 1 2 3 4; Pre. Manuf. Unit; Carbon Dioxide



TYPICAL ORTHO PATIENT ROOM

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: ORTHO ROOM NAME: TYP. PATIENT ROOM ROOM NO: 10 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 23 OF 43

Department: **ORTHO** Room: **TYP. ORTHO PATIENT ROOM HCTLT** No.: **11**

Architectural

FINISH:

Floors: NA | Carpet | Tile C P Q | Concrete | Sealed | [Vinyl Composition Tile] | Seamless Sheet Vinyl w/ Integral Base | Terrazo

Walls: NA | [Painted] | Epoxy | Tile C P Q | Wainscot | Vinyl Wall Covering | Wainscot | FRP Panel | Wainscot

Ceilings: NA | [Gypsum Board] | Soffit Only | [Lay-In Tile] | [2x4] 2x2 | MR CR (Moist Resist. & Clean Room) | Special | Height: 8'-0" 10'-0" [9'-0"] - 8'-6" / 12'-0"

FURNISHINGS: Equipment: [Yes] No | Furniture: [Yes] No | Cabinetry: [Yes] No | [See Plan]

TOILET ACCESSORIES: NA

- TA1 Recessed Towel / Disp & Waste Receptacle
- TA2 [Towel Dispenser] / Surface Mounted / [Recessed Towel] / Recessed w/ Mirror
- TA3 [Waste Receptacle]
- TA4 [Toilet Paper Dispenser] / [Surface Mount] / Recessed / Partition-Mounted
- TA5 [Mirror] / [Unframed (Size on Plan)] / Framed
- TA6 [Soap Dispenser]
- TA7 [Grab Bars]
- TA8 Shelf
- TA9 Shower Curtain Rod
- TA10 Towel Bar
- TA11 Sanit. Napkin Disposal
- TA12 [Robe / IV / Coat Hook]
- TA13 Elect. Hand Dryer
- TA14 Shower Seat
- TA15 Soap Dish
- TA16 Baby Change Station
- TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA | [Borrowed Light] | Lockers | Lead Lining | Projection Screen | [Sound Attenuation] | Shelving | Fixed | Moveable | Chair Rail | Corner Rail | Handrail | Bumper Rail | Acrovyn Type Wainscot | IV Track or Hook | Add'l Structural Support | [Cubicle Curtain & Track]

DOORS: NA | [4º] 4⁶ 3º 3⁶ 6º | [View Wndw] A B [C] D | Lead Lined | [Passage Set] | Lockset | Special Hardware | Push / Pull | Hold Open | Magnetic | [Closer] | [Kick Plate] | Armor Plate | Auto-Open

Mechanical

NA | Exhaust | [Thermostat] | Special Temperature Req. | Sp. Fire Suppression Req. | Humidistat | Special Filtration | Negative Pressure | Positive Pressure

Electrical

LIGHTS: NA | [LED] | 2x4 [1x4] | 2x2 | Down Lights | Emergency | Under Counter | Special Control(s) | Dimmers | Under Cabinet | Exam Light

POWER: NA | [Duplex] | 4-Plex | [GFI] | [Emergency] | Dedicated Circuit | Plug / Wire Mold | 480v

COMMUNICATIONS: NA | [Telephone] | FAX | Music Paging | [Nurse Call] | Dictation | Intercom | Computer | Printer | Code Pink | Physio Monitoring | [Clock] | [TV / Cable] | [Code Blue] | Master System

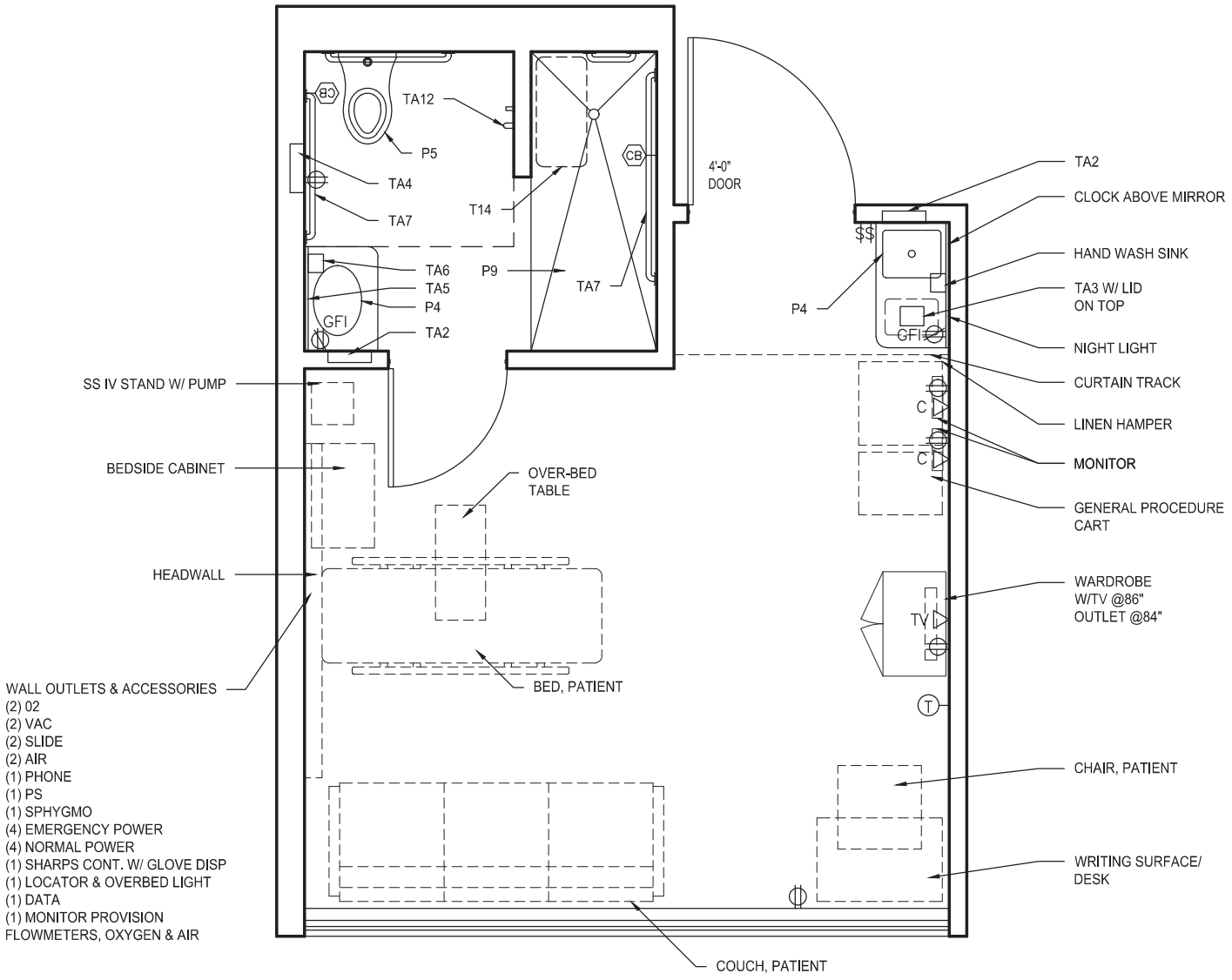
Plumbing

FIXTURES: NA

- P1 Single Sink / Extra Depth
- P2 Double Sink / Extra Depth
- P3 Lavatory / Wall Mounted
- P4 [Lav. - Integral w/ Counter]
- P5 [Water Closet] / Wall Mounted / Floor Mounted / Bed Pan Washer
- P6 Clinical Service Sink
- P7 Scrub Sink
- P8 Janitor's Sink
- P9 [HC Shower w/ Bench]
- P10 Shower (See Plan)
- P11 Garbage Disposal
- P12 Floor Drain / Chemical Resistant
- P13 Swivet Type Unit
- P14 Urinals
- P15 Plaster Trap

FITTINGS: NA | Standard | Hand-Held Wand | [Gooseneck] | Foot Control | [Wrist Blades] | Infrared Eye | Hose Adapter

GAS: NA | Oxygen 1 2 3 4 | Medical Air 1 2 3 4 | [See Plan] | Vacuum 1 2 3 4 | Slide (1 per Vacuum) | Nitrous Oxide 1 2 3 4 | Nitrogen 1 2 3 4 | Pre. Manuf. Unit | Carbon Dioxide



TYPICAL ORTHO PATIENT ROOM W/ HCTLT

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: ORTHO ROOM NAME: TYP. PATIENT ROOM ROOM NO: 11 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 25 OF 43

Department: **INTENSIVE CARE UNIT** Room: **ICU PATIENT ROOM** No.: **12**

Architectural

FINISH:

Floors: NA
Carpet
Tile C P Q
Concrete
Sealed
[Vinyl Composition Tile]
Seamless Sheet Vinyl w/ Integral Base
Terrazo

Walls: NA
[Painted]
Epoxy
Tile C P Q
Wainscot
Vinyl Wall Covering
Wainscot
FRP Panel
Wainscot

Ceilings: NA
Gypsum Board
Soffit Only
[Lay-In Tile]
[2x4] 2x2
MR CR (Moist Resist. & Clean Room)
Special
Height: 8'-0" 10'-0" [9'-0"] 8'-6" See RCP

FURNISHINGS:
Equipment: [Yes] No
Furniture: [Yes] No
Cabinetry: [Yes] No
[See Plan]

TOILET ACCESSORIES: NA

TA1 Recessed Towel Disp & Waste Receptacle
TA2 [Towel Dispenser] Surface Mounted
[Recessed Towel] Recessed w/ Mirror
TA3 Waste Receptacle
TA4 [Toilet Paper Dispenser] Surface Mount Recessed Partition-Mounted
TA5 [Mirror] Unframed Framed
TA6 [Soap Dispenser]
TA7 [Grab Bars]
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal
TA12 Robe / IV / Coat Hook
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

Borrowed Light
Lockers
Lead Lining
Projection Screen
Sound Attenuation
Shelving Fixed Moveable
Chair Rail
Corner Rail
Handrail
Bumper Rail
Acrovyn Type Wainscot
IV Track or Hook
Add'l Structural Support
[Cubicle Curtain & Track]

DOORS: NA

4º 4⁶ 3º 3⁶ 6º 2º/4º
View Wndw A B C D
Lead Lined
Passage Set
Lockset
Special Hardware
[Positive Latching]
Push / Pull
Hold Open Magnetic
Closer
Kick Plate
Armor Plate
Auto-Open

Mechanical

NA

Exhaust
[Thermostat]
Special Temperature Req.
Sp. Fire Suppression Req.
Humidistat
Special Filtration
[Negative Pressure]
Positive Pressure

Electrical

LIGHTS: NA

[LED]
2x4 [1x4] 2x2
Down Lights
Emergency
Under Counter
Special Control(s)
[Night Light]
Dimmers
Under Cabinet
Exam Light

POWER: NA

[Duplex] 4-Plex
[GFI] [Emergency]
Dedicated Circuit
Plug / Wire Mold
480v

COMMUNI-CATIONS: NA

[Telephone] FAX Music Paging
[Nurse Call] Dictation Intercom
[Computer] Printer Code Pink Physio Monitoring
Clock
[TV / Cable]
[Code Blue]
Master System

Plumbing

FIXTURES: NA

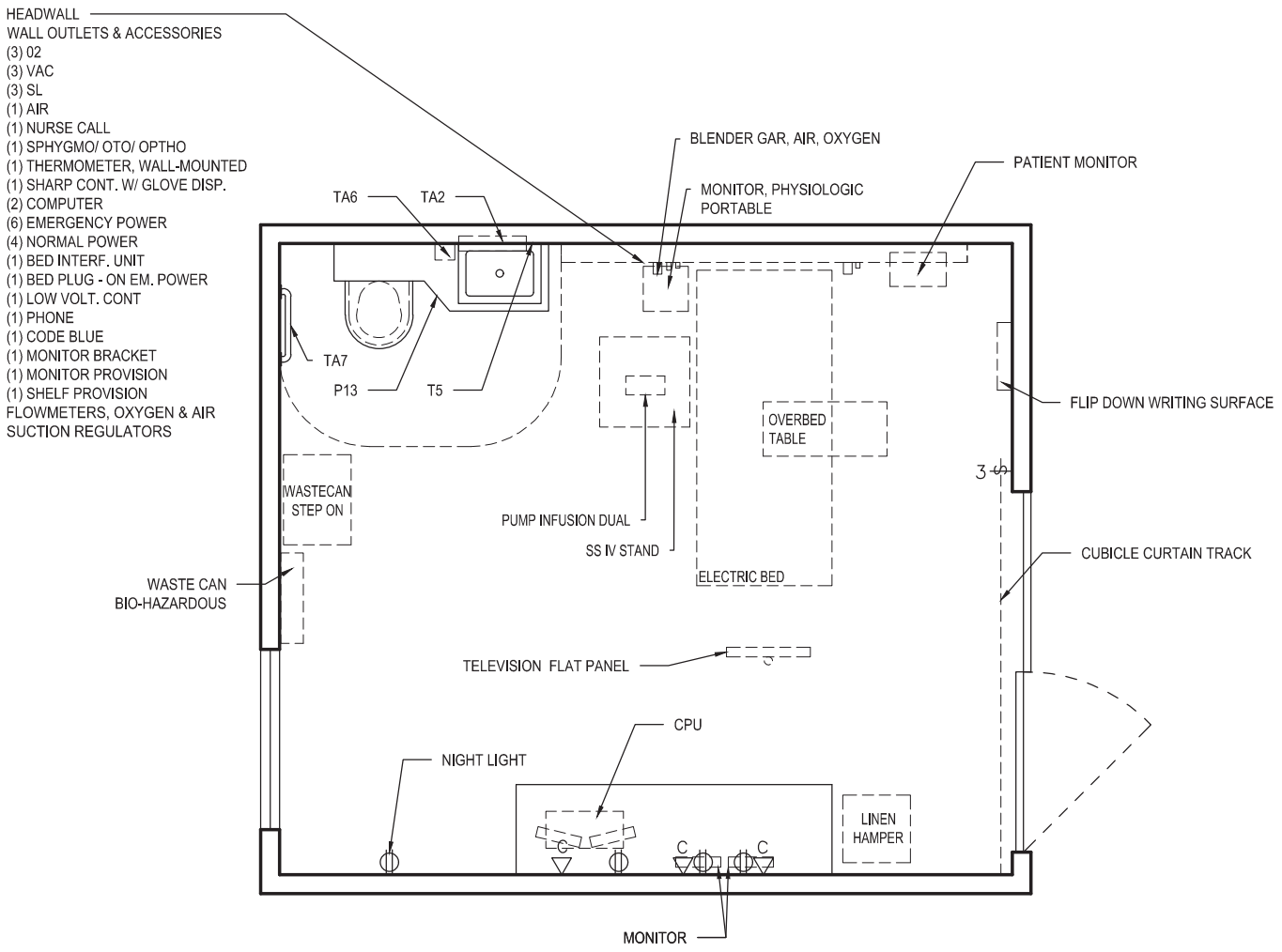
P1 Single Sink Extra Depth
P2 Double Sink Extra Depth
P3 Lavatory Wall Mounted
P4 Lav. - Integral w/ Counter
P5 Water Closet Wall Mounted Floor Mounted Bed Pan Washer
P6 Clinical Service Sink
P7 Scrub Sink
P8 Janitor's Sink
P9 HC Shower w/ Bench
P10 Shower (See Plan)
P11 Garbage Disposal
P12 Floor Drain Chemical Resistant
P13 [Swivet Type Unit]
P14 Urinals
P15 Plaster Trap

FITTINGS: NA

Standard
Hand-Held Wand
[Gooseneck]
Foot Control
[Wrist Blades]
Infrared Eye
Hose Adapter

GAS: NA

Oxygen 1 2 3 4
Medical Air 1 2 3 4
[See Plan]
Vacuum 1 2 3 4
Slide (1 per Vacuum)
Nitrous Oxide 1 2 3 4
Nitrogen 1 2 3 4
Pre. Manuf. Unit
Carbon Dioxide



TYPICAL ICU PATIENT ROOM

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: ICU ROOM NAME: TYP. ICU PATIENT RM ROOM NO: 12 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 27 OF 43

Department: **INTENSIVE CARE UNIT** Room: **TELEMETRY / STEP-DOWN** No.: **13**

Architectural

FINISH:

Floors: NA
Carpet | Tile C P Q | Concrete | Sealed | [Vinyl Composition Tile] | Seamless Sheet Vinyl w/ Integral Base | Terrazo

Walls: NA
[Painted] | Epoxy | Tile C P Q | Wainscot | Vinyl Wall Covering | Wainscot | FRP Panel | Wainscot

Ceilings: NA
Gypsum Board | Soffit Only | [Lay-In Tile] | [2x4] 2x2 | MR CR (Moist Resist. & Clean Room) | Special | Height: 8'-0" 10'-0" [9'-0"] 8'-6" See RCP

FURNISHINGS: Equipment: [Yes] No | Furniture: [Yes] No | Cabinetry: [Yes] No | [See Plan]

TOILET ACCESSORIES: NA

TA1 Recessed Towel
Disp & Waste Receptacle
TA2 [Towel Dispenser]
Surface Mounted
[Recessed Towel]
Recessed w/ Mirror
TA3 Waste Receptacle

TA4 [Toilet Paper Dispenser]
[Surface Mount]
Recessed
Partition-Mounted
TA5 [Mirror]
[Unframed]
Framed

TA6 [Soap Dispenser]
TA7 [Grab Bars]
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal

TA12 [Robe / IV / Coat Hook]
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

Borrowed Light | Lockers | Lead Lining | Projection Screen
Sound Attenuation | Shelving | Fixed | Moveable
Chair Rail | Corner Rail | Handrail | Bumper Rail
Acrovyn Type Wainscot | IV Track or Hook | Add'l Structural Support | [Cubicle Curtain & Track]

DOORS: NA

4º 4⁶ 3º 3⁶ 6º 2º/4º
View Wndw A B C D
Lead Lined
Passage Set | Lockset | Special Hardware | [Positive Latching]
Push / Pull | Hold Open | Magnetic
Closer | Kick Plate | Armor Plate | Auto-Open

Mechanical

NA

Exhaust | [Thermostat]
Special Temperature Req. | Sp. Fire Suppression Req.
Humidistat | Special Filtration
[Negative Pressure] | Positive Pressure

Electrical

LIGHTS: NA

[LED]
2x4 [1x4]
2x2
Down Lights | Emergency
Under Counter | Special Control(s) | [Night Light]
Dimmers | Under Cabinet | Exam Light

POWER: NA

[Duplex] | 4-Plex
[GFI] | [Emergency]
Dedicated Circuit | Plug / Wire Mold
480v

COMMUNICATIONS: NA

[Telephone] | FAX | Music Paging
[Nurse Call] | Dictation | Intercom
[Computer] | Printer | Code Pink | Physio Monitoring
Clock | [TV / Cable] | [Code Blue] | Master System

Plumbing

FIXTURES: NA

P1 Single Sink
Extra Depth
P2 Double Sink
Extra Depth
P3 Lavatory
Wall Mounted

P4 [Lav. - Integral w/ Counter]
P5 [Water Closet]
[Wall Mounted]
Floor Mounted
Bed Pan Washer

P6 Clinical Service Sink
P7 Scrub Sink
P8 Janitor's Sink
P9 HC Shower w/ Bench
P10 [Shower (See Plan)]

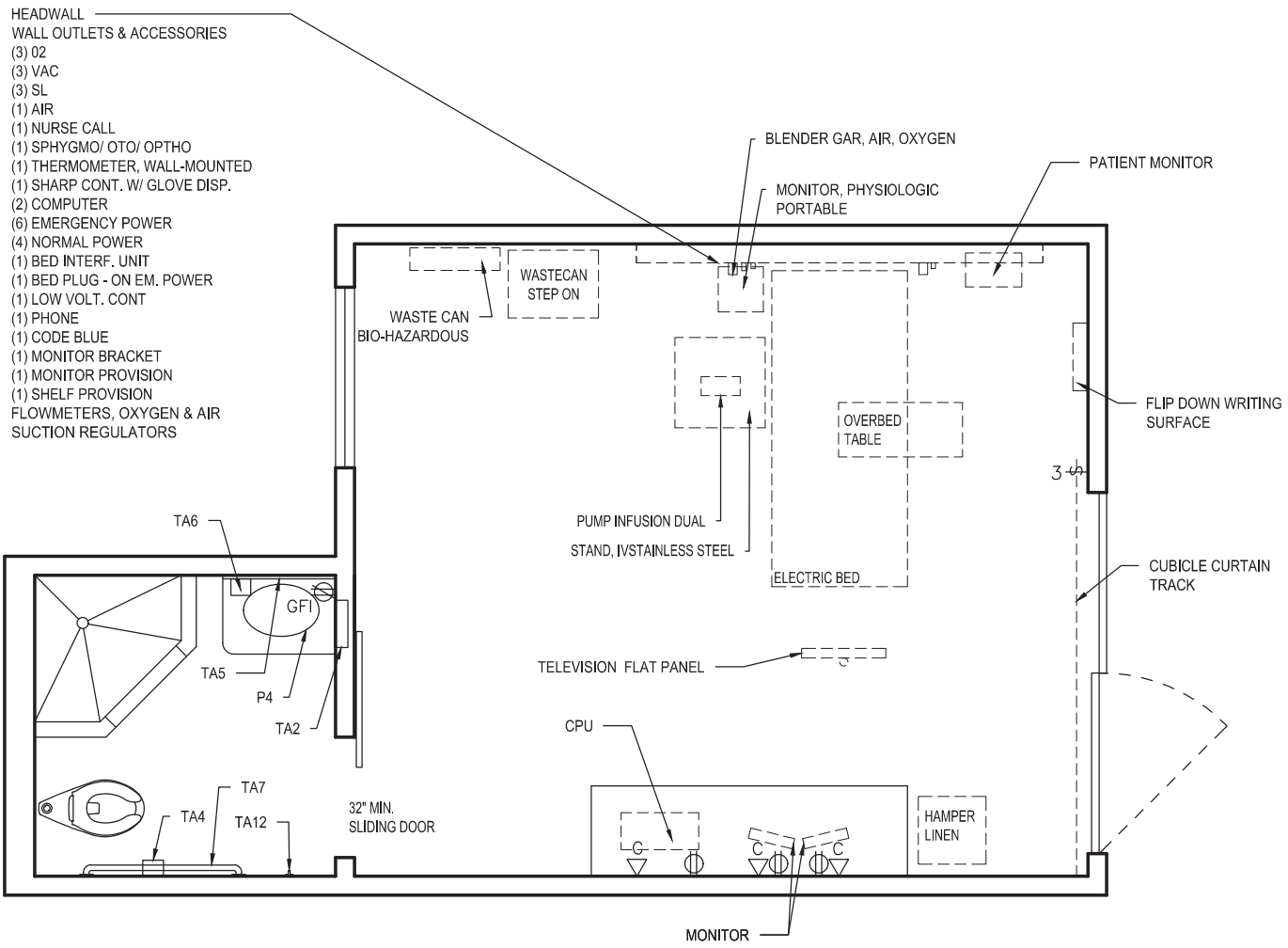
P11 Garbage Disposal
P12 Floor Drain
Chemical Resistant
P13 Swivet Type Unit
P14 Urinals
P15 Plaster Trap

FITTINGS: NA

Standard | Hand-Held Wand
[Gooseneck] | Foot Control
[Wrist Blades] | Infrared Eye
Hose Adapter

GAS: NA

Oxygen 1 2 3 4
Medical Air 1 2 3 4
[See Plan]
Vacuum 1 2 3 4
Slide (1 per Vacuum)
Nitrous Oxide 1 2 3 4
Nitrogen 1 2 3 4
Pre. Manuf. Unit
Carbon Dioxide



TYPICAL ICU PATIENT ROOM- STEP-DOWN

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: ICU ROOM NAME: TYP. ICU STEP-DOWN ROOM NO: 13 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 29 OF 43

Department: **INTENSIVE CARE UNIT** Room: **TELEMETRY / STEP-DOWN HCTLT** No.: **14**

Architectural

FINISH:

Floors: NA
Carpet; Tile C P Q; Concrete; Sealed; [Vinyl Composition Tile]; Seamless Sheet Vinyl w/ Integral Base; Terrazo

Walls: NA
[Painted]; Epoxy; Tile C P Q; Wainscot; Vinyl Wall Covering; Wainscot; FRP Panel; Wainscot

Ceilings: NA
Gypsum Board; Soffit Only; [Lay-In Tile]; [2x4] 2x2; MR CR (Moist Resist. & Clean Room); Special; Height: 8'-0" 10'-0" [9'-0"] 8'-6" See RCP

FURNISHINGS: Equipment: [Yes] No; Furniture: [Yes] No; Cabinetry: [Yes] No; [See Plan]

TOILET ACCESSORIES: NA

TA1 Recessed Towel Disp & Waste Receptacle
TA2 [Towel Dispenser] Surface Mounted
[Recessed Towel] Recessed w/ Mirror
TA3 Waste Receptacle
TA4 [Toilet Paper Dispenser] Surface Mount; Recessed; Partition-Mounted
TA5 [Mirror] Unframed; Framed
TA6 [Soap Dispenser]
TA7 [Grab Bars]
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal
TA12 [Robe / IV / Coat Hook]
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA
Borrowed Light; Lockers; Lead Lining; Projection Screen; Sound Attenuation; Shelving; Fixed; Moveable; Chair Rail; Corner Rail; Handrail; Bumper Rail; Acrovyn Type Wainscot; IV Track or Hook; Add'l Structural Support; [Cubicle Curtain & Track]

DOORS: NA
4º 4⁶ 3º 3⁶ 6º 2º/4º; View Wndw A B C D; Lead Lined; Passage Set; Lockset; Special Hardware; [Positive Latching]; Push / Pull; Hold Open; Magnetic; Closer; Kick Plate; Armor Plate; Auto-Open

Mechanical

NA
Exhaust; [Thermostat]; Special Temperature Req.; Sp. Fire Suppression Req.; Humidistat; Special Filtration; [Negative Pressure]; Positive Pressure

Electrical

LIGHTS: NA
[LED]; 2x4 [1x4]; 2x2; Down Lights; Emergency; Under Counter; Special Control(s); [Night Light]; Dimmers; Under Cabinet; Exam Light

POWER: NA
[Duplex]; 4-Plex; GFI; [Emergency]; Dedicated Circuit; Plug / Wire Mold; 480v

COMMUNICATIONS: NA
[Telephone]; FAX; Music Paging; [Nurse Call]; Dictation; Intercom; [Computer]; Printer; Code Pink; Physio Monitoring; Clock; [TV / Cable]; [Code Blue]; Master System

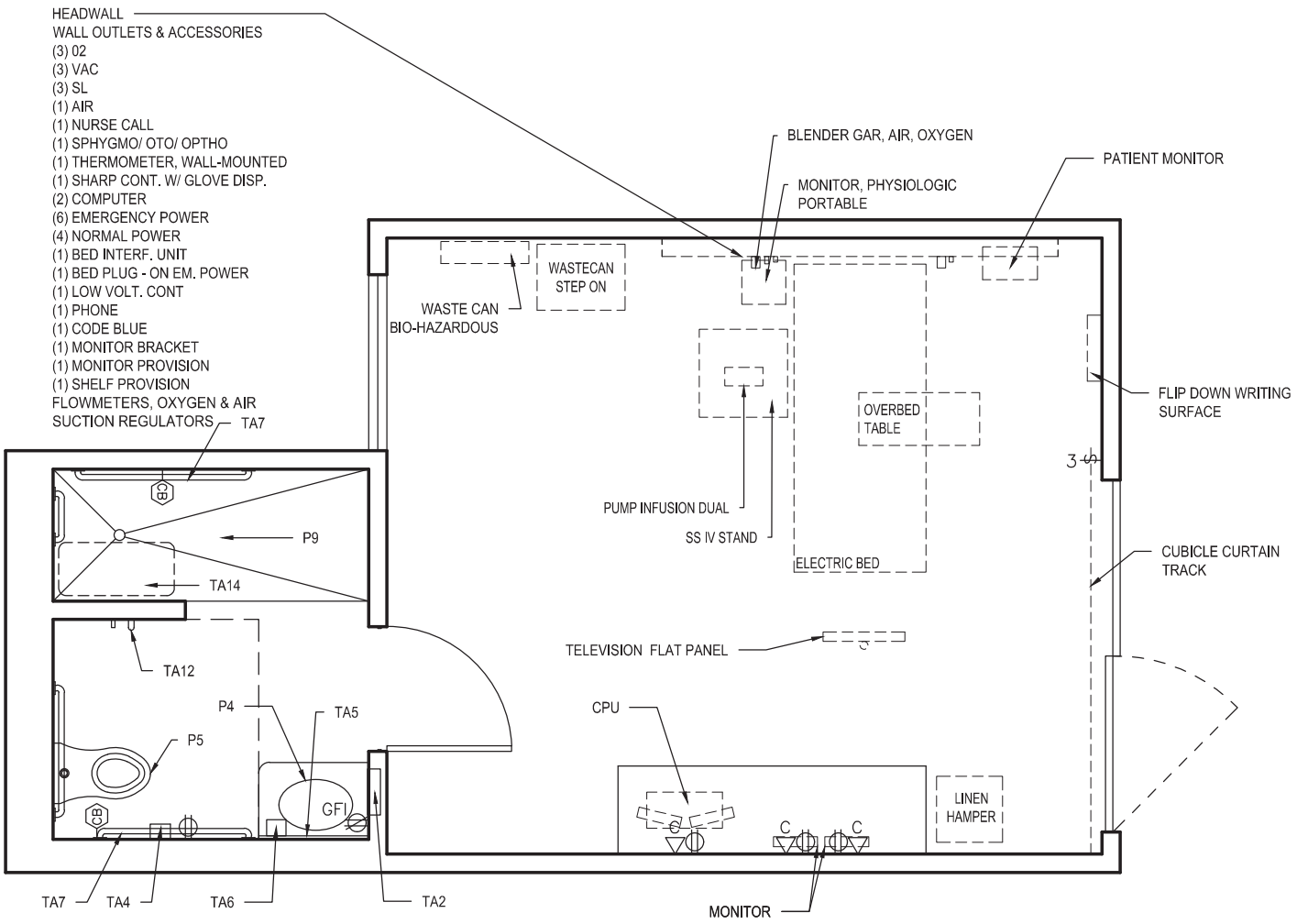
Plumbing

FIXTURES: NA

P1 Single Sink Extra Depth
P2 Double Sink Extra Depth
P3 Lavatory Wall Mounted
P4 [Lav. - Integral w/ Counter]
P5 [Water Closet] Wall Mounted; Floor Mounted
P6 Clinical Service Sink
P7 Scrub Sink
P8 Janitor's Sink
P9 [HC Shower w/ Bench]
P10 Bed Pan Washer; Shower (See Plan)
P11 Garbage Disposal
P12 Floor Drain Chemical Resistant
P13 Swivet Type Unit
P14 Urinals
P15 Plaster Trap

FITTINGS: NA
Standard; Hand-Held Wand; [Gooseneck]; Foot Control; [Wrist Blades]; Infrared Eye; Hose Adapter

GAS: NA
Oxygen 1 2 3 4; Medical Air 1 2 3 4; [See Plan]; Vacuum 1 2 3 4; Slide (1 per Vacuum); Nitrous Oxide 1 2 3 4; Nitrogen 1 2 3 4; Pre. Manuf. Unit; Carbon Dioxide



TYPICAL STEP-DOWN PATIENT ROOM W/ HC TLT

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: ICU ROOM NAME: TYP. ICU W/ HC TLT ROOM NO: 14 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 31 OF 43

Department: **INTENSIVE CARE UNIT** Room: **TYP. ICU AIRBORNE ISO. ROOM** No.: **15**

Architectural

FINISH:

Floors: NA | Carpet | Tile C P Q | Concrete | Sealed | Vinyl Composition Tile | [Seamless Sheet Vinyl w/ Integral Base] | Terrazo

Walls: NA | [Painted] | Epoxy | Tile C P Q | Wainscot | Vinyl Wall Covering | Wainscot | FRP Panel | Wainscot

Ceilings: NA | [Gypsum Board] | Soffit Only | Lay-In Tile | 2x4 2x2 | MR CR (Moist Resist. & Clean Room) | Special | Height: 8'-0" 10'-0" [9'-0"] - See RCP

FURNISHINGS: Equipment: [Yes] No | Furniture: Yes [No] | Cabinetry: Yes [No] | [See Plan]

TOILET ACCESSORIES: NA

- TA1 Recessed Towel Disp & Waste Receptacle
- TA2 [Towel Dispenser Surface Mounted] Recessed Towel Recessed w/ Mirror
- TA3 Waste Receptacle
- TA4 [Toilet Paper Dispenser Surface Mount] Recessed Partition-Mounted
- TA5 [Mirror Unframed (Size on Plan)] Framed
- TA6 [Soap Dispenser]
- TA7 [Grab Bars]
- TA8 Shelf
- TA9 Shower Curtain Rod
- TA10 Towel Bar
- TA11 Sanit. Napkin Disposal
- TA12 [Robe / IV / Coat Hook]
- TA13 Elect. Hand Dryer
- TA14 Shower Seat
- TA15 Soap Dish
- TA16 Baby Change Station
- TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

[Borrowed Light] | Lockers | Lead Lining | Projection Screen | Sound Attenuation | Shelving: Fixed Moveable | Chair Rail | Corner Rail | Handrail | Bumper Rail | [Acrovyn Type Wainscot] | IV Track or Hook | Add'l Structural Support | Cubicle Curtain & Track

DOORS: NA

[4⁰] 4⁶ 3⁰ 3⁶ 6⁰ | [View Wndw] A B [C] D | Lead Lined | [Passage Set] | Lockset | Special Hardware | Push / Pull | Hold Open: Magnetic | [Closer] | Kick Plate | [Armor Plate] | Auto-Open

Mechanical

NA | Exhaust | [Thermostat] | Special Temperature Req. | Sp. Fire Suppression Req. | Humidistat | Special Filtration | [Negative Pressure] | Positive Pressure

Electrical

LIGHTS: NA | [LED] | 2x4 [1x4] 2x2 | Down Lights | Emergency | Under Counter | Special Control(s) | Dimmers | Under Cabinet | [Exam Light]

POWER: NA | [Duplex] | 4-Plex | GFI | [Emergency] | Dedicated Circuit | Plug / Wire Mold | 480v

COMMUNICATIONS: NA | Telephone | FAX | Music Paging | [Nurse Call] | Dictation | Intercom | Computer | Printer | Code Pink | Physio Monitoring | Clock | TV / Cable | [Code Blue] | Master System

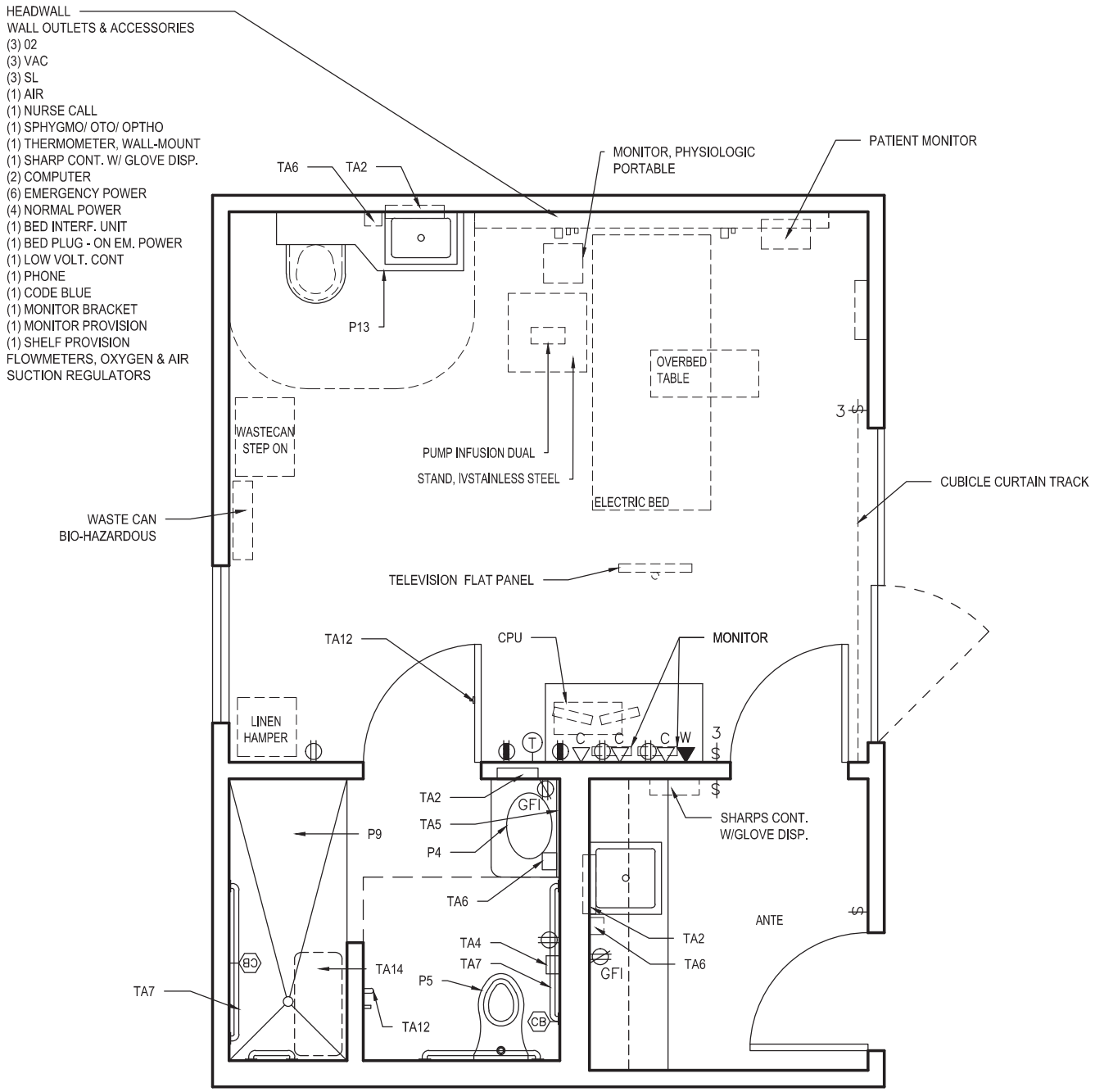
Plumbing

FIXTURES: NA

- P1 Single Sink Extra Depth
- P2 Double Sink Extra Depth
- P3 Lavatory Wall Mounted
- P4 [Lav. - Integral w/ Counter]
- P5 [Water Closet Wall Mounted] Floor Mounted
- P6 Clinical Service Sink
- P7 Scrub Sink
- P8 Janitor's Sink
- P9 [HC Shower w/ Bench]
- P10 Shower (See Plan) Bed Pan Washer
- P11 Garbage Disposal
- P12 Floor Drain Chemical Resistant
- P13 [Swivet Type Unit]
- P14 Urinals
- P15 Plaster Trap

FITTINGS: [NA] | Standard | Hand-Held Wand | Gooseneck | Foot Control | Wrist Blades | Infrared Eye | Hose Adapter

GAS: NA | Oxygen 1 2 3 4 | Medical Air 1 2 3 4 | [See Plan] | Vacuum 1 2 3 4 | Slide (1 per Vacuum) | Nitrous Oxide 1 2 3 4 | Nitrogen 1 2 3 4 | Pre. Manuf. Unit | Carbon Dioxide



TYPICAL ICU AIRBORNE INFECTION ISOLATION ROOM

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: ICU ROOM NAME: TYP. A.I.I. ROOM ROOM NO: 15 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 33 OF 43

Department: **INTENSIVE CARE UNIT** Room: **TYP. ICU NURSE STATION** No.: **16**

Architectural

FINISH:

Floors: NA
Carpet
Tile C P Q
Concrete
Sealed
[Vinyl Composition Tile]
Seamless Sheet Vinyl w/ Integral Base
Terrazo

Walls: NA
[Painted]
Epoxy
Tile C P Q
Wainscot
Vinyl Wall Covering
Wainscot
FRP Panel
Wainscot

Ceilings: NA
[Gypsum Board]
Soffit Only
[Lay-In Tile]
[2x4] 2x2
MR CR (Moist Resist. & Clean Room)
Special
Height: 8'-0" 10'-0" [9'-0"] - See RCP

FURNISHINGS: Equipment: [Yes] No Furniture: [Yes] No Cabinetry: [Yes] No [See Plan]

TOILET ACCESSORIES: NA

TA1 Recessed Towel
Disp & Waste Receptacle
TA2 [Towel Dispenser]
[Surface Mounted]
Recessed Towel
Recessed w/ Mirror
TA3 Waste Receptacle
TA4 Toilet Paper Dispenser
Surface Mount
Recessed
Partition-Mounted
TA5 Mirror
Unframed (Size on Plan)
Framed
TA6 [Soap Dispenser]
TA7 Grab Bars
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal
TA12 Robe / IV / Coat Hook
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

[Borrowed Light]
Lockers
Lead Lining
Projection Screen
Sound Attenuation
Shelving
Fixed
Moveable
Chair Rail
[Corner Rail]
Handrail
Bumper Rail
[Acrovyn Type Wainscot]
IV Track or Hook
[Marker Board]
Cubicle Curtain & Track

DOORS: [NA]

4⁰ 4⁶ 3⁰ 3⁶ 6⁰
View Wndw A B C D
Lead Lined
Passage Set
Lockset
Special Hardware
Push / Pull
Hold Open
Magnetic
Closer
Kick Plate
Armor Plate
Auto-Open

Mechanical

[NA]
Exhaust
Thermostat
Special Temperature Req.
Sp. Fire Suppression Req.
Humidistat
Special Filtration
Negative Pressure
Positive Pressure

Electrical

LIGHTS: NA

[LED]
[2x4] 1x4
2x2
Down Lights
Emergency
Under Counter
Special Control(s)
Dimmers
Under Cabinet
Exam Light

POWER: NA

[Duplex]
4-Plex
[GFI]
[Emergency]
Dedicated Circuit
Plug / Wire Mold
480v

COMMUNICATIONS: NA

[Telephone]
[FAX]
Music Paging
[Nurse Call]
Dictation
[Intercom]
[Computer]
[Printer]
Code Pink
Physio Monitoring
[Clock]
TV / Cable
Code Blue
Master System

Plumbing

FIXTURES: NA

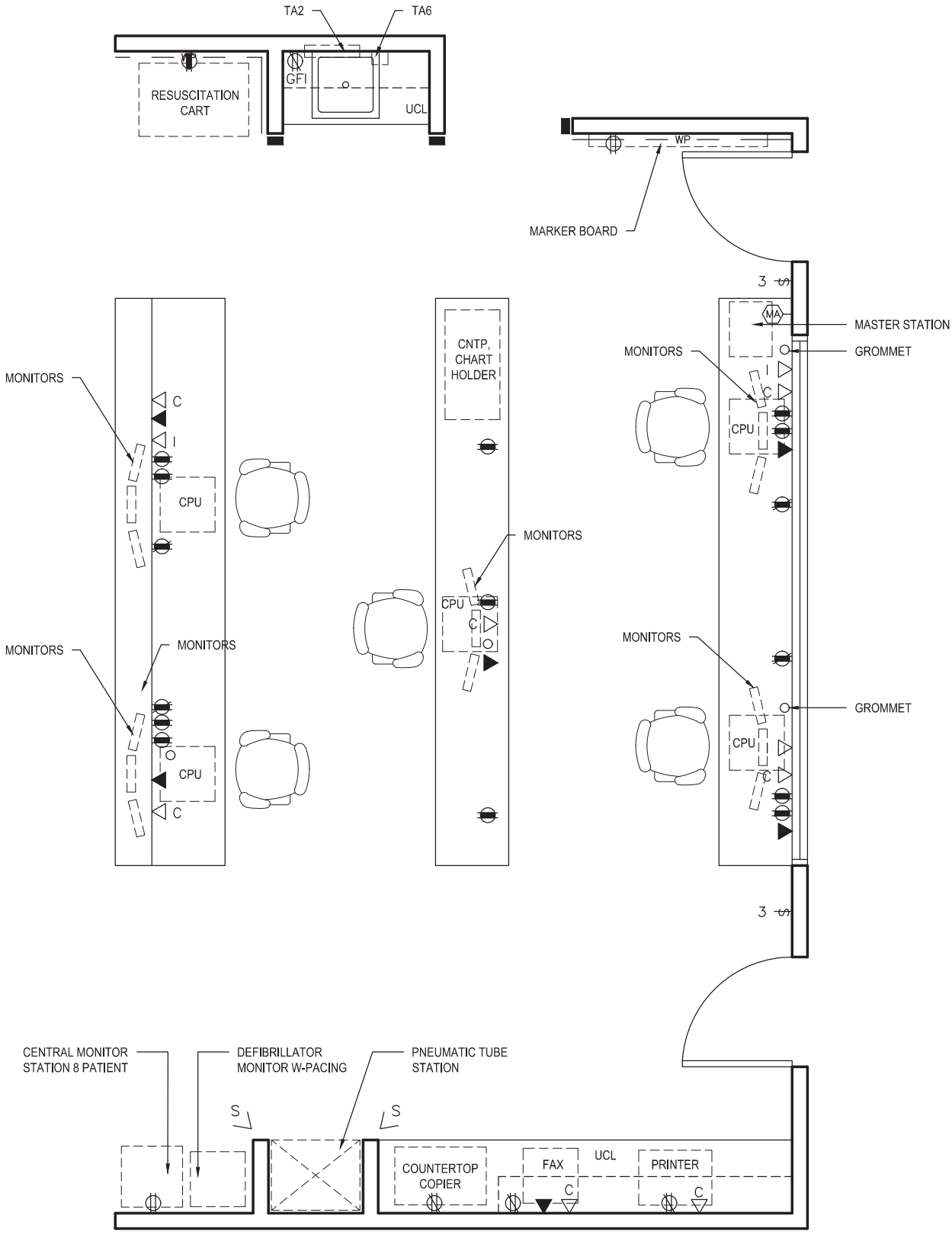
P1 [Single Sink]
Extra Depth
P2 Double Sink
Extra Depth
P3 Lavatory
Wall Mounted
P4 Lav. - Integral w/ Counter
P5 Water Closet
Wall Mounted
Floor Mounted
Bed Pan Washer
P6 Clinical Service Sink
P7 Scrub Sink
P8 Janitor's Sink
P9 HC Shower w/ Bench
P10 Shower (See Plan)
P11 Garbage Disposal
P12 Floor Drain
Chemical Resistant
P13 Swivet Type Unit
P14 Urinals
P15 Plaster Trap

FITTINGS: NA

Standard
Hand-Held Wand
[Gooseneck]
Foot Control
[Wrist Blades]
Infrared Eye
Hose Adapter

GAS: [NA]

Oxygen 1 2 3 4
Medical Air 1 2 3 4
Vacuum 1 2 3 4
Slide (1 per Vacuum)
Nitrous Oxide 1 2 3 4
Nitrogen 1 2 3 4
Pre. Manuf. Unit
Carbon Dioxide



TYPICAL ICU NURSE STATION

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: ICU ROOM NAME: TYP. NURSE STATION ROOM NO: 16 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 35 OF 43

Department: **INTENSIVE CARE UNIT** Room: **PHYSICIAN VIEWING** No.: **17**

Architectural

FINISH:

Floors: NA
Carpet
Tile C P Q
Concrete
Sealed
[Vinyl Composition Tile]
Seamless Sheet Vinyl w/ Integral Base
Terrazo

Walls: NA
[Painted]
Epoxy
Tile C P Q
Wainscot
Vinyl Wall Covering
Wainscot
FRP Panel
Wainscot

Ceilings: NA
Gypsum Board
Soffit Only
[Lay-In Tile]
[2x4] 2x2
MR CR (Moist Resist. & Clean Room)
Special
Height: 8'-0" 10'-0" [9'-0"] 8'-6" See RCP

FURNISHINGS: Equipment: [Yes] No Furniture: [Yes] No Cabinetry: [Yes] No [See Plan]

TOILET ACCESSORIES: [NA]

TA1 Recessed Towel Disp & Waste Receptacle
TA2 Towel Dispenser
Surface Mounted
Recessed Towel
Recessed w/ Mirror
TA3 Waste Receptacle
TA4 Toilet Paper Dispenser
Surface Mount
Recessed
Partition-Mounted
TA5 Mirror
Unframed
Framed
TA6 Soap Dispenser
TA7 Grab Bars
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal
TA12 Robe / IV / Coat Hook
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA
Borrowed Light
Lockers
Lead Lining
Projection Screen
Sound Attenuation
Shelving
Fixed
Moveable
Chair Rail
[Corner Rail]
Handrail
Bumper Rail
Acrovyn Type Wainscot
IV Track or Hook
Add'l Structural Support
Cubicle Curtain & Track

DOORS: NA
4⁰ 4⁶ [3⁰] 3⁶ 6⁰ 2⁰/4⁰
View Wndw A B C D
Lead Lined
[Passage Set]
Lockset
Special Hardware
Positive Latching
Push / Pull
Hold Open
Magnetic
Closer
Kick Plate
Armor Plate
Auto-Open

Mechanical

[NA]
Exhaust
Thermostat
Special Temperature Req.
Sp. Fire Suppression Req.
Humidistat
Special Filtration
Negative Pressure
Positive Pressure

Electrical

LIGHTS: NA
[LED]
[2x4] 1x4
2x2
Down Lights
Emergency
[Under Counter]
Special Control(s)
Night Light
Dimmers
Under Cabinet
Exam Light

POWER: NA
[Duplex]
4-Plex
GFI
Emergency
Dedicated Circuit
Plug / Wire Mold
480v

COMMUNICATIONS: NA
[Telephone]
FAX
Music Paging
Nurse Call
[Dictation]
Intercom
[Computer]
Printer
Code Pink
Physio Monitoring
[Clock]
TV / Cable
Code Blue
Master System

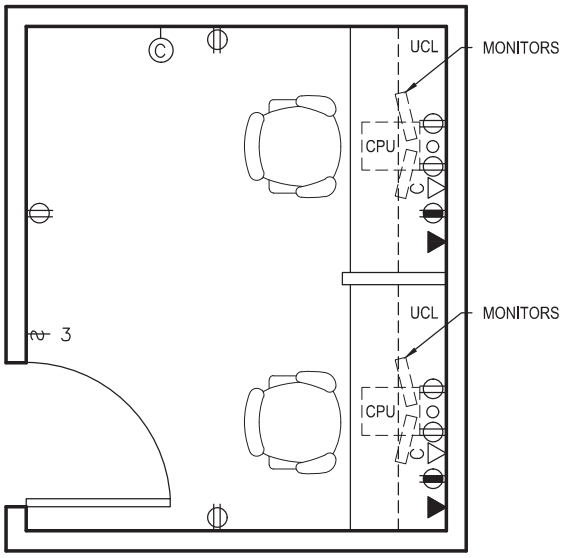
Plumbing

FIXTURES: [NA]

P1 Single Sink
Extra Depth
P2 Double Sink
Extra Depth
P3 Lavatory
Wall Mounted
P4 Lav. - Integral w/ Counter
P5 Water Closet
Wall Mounted
Floor Mounted
Bed Pan Washer
P6 Clinical Service Sink
P7 Scrub Sink
P8 Janitor's Sink
P9 HC Shower w/ Bench
P10 Shower (See Plan)
P11 Garbage Disposal
P12 Floor Drain
Chemical Resistant
P13 Swivet Type Unit
P14 Urinals
P15 Plaster Trap

FITTINGS: [NA]
Standard
Hand-Held Wand
Gooseneck
Foot Control
Wrist Blades
Infrared Eye
Hose Adapter

GAS: [NA]
Oxygen 1 2 3 4
Medical Air 1 2 3 4
Vacuum 1 2 3 4
Slide (1 per Vacuum)
Nitrous Oxide 1 2 3 4
Nitrogen 1 2 3 4
Pre. Manuf. Unit
Carbon Dioxide



TYPICAL PHYSICIAN VIEWING

Tri-City Medical Center	SFEIR ARCHITECTS	DEPT. NAME: ICU ROOM NAME: TYP. PHYS. VIEWING ROOM NO: 17 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 37 OF 43

Department: **GENERAL** Room: **TYP. NURSE STATION** No.: **18**

Architectural

FINISH:

Floors: NA
Carpet
Tile C P Q
Concrete
Sealed
[Vinyl Composition Tile]
Seamless Sheet Vinyl w/ Integral Base
Terrazo

Walls: NA
[Painted]
Epoxy
Tile C P Q
Wainscot
Vinyl Wall Covering
Wainscot
FRP Panel
Wainscot

Ceilings: NA
[Gypsum Board]
Soffit Only
[Lay-In Tile]
[2x4] 2x2
MR CR (Moist Resist. & Clean Room)
Special
Height: 8'-0" 10'-0" [9'-0"] - See RCP

FURNISHINGS: Equipment: [Yes] No Furniture: [Yes] No Cabinetry: [Yes] No See Plan

TOILET ACCESSORIES: [NA]

- TA1 Recessed Towel Disp & Waste Receptacle
- TA2 Towel Dispenser: Surface Mounted / Recessed Towel / Recessed w/ Mirror
- TA3 Waste Receptacle
- TA4 Toilet Paper Dispenser: Surface Mount / Recessed / Partition-Mounted
- TA5 Mirror: Unframed (Size on Plan) / Framed
- TA6 Soap Dispenser
- TA7 Grab Bars
- TA8 Shelf
- TA9 Shower Curtain Rod
- TA10 Towel Bar
- TA11 Sanit. Napkin Disposal
- TA12 Robe / IV / Coat Hook
- TA13 Elect. Hand Dryer
- TA14 Shower Seat
- TA15 Soap Dish
- TA16 Baby Change Station
- TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA
[Borrowed Light]
Lockers
Lead Lining
Projection Screen
Sound Attenuation
Shelving: Fixed / Moveable
Chair Rail
[Corner Rail]
Handrail
Bumper Rail
Acrovyn Type Wainscot
IV Track or Hook
Add'l Structural Support
Cubicle Curtain & Track

DOORS: [NA]
4º 4⁶ 3º 3⁶ 6º
View Wndw A B C D
Lead Lined
Passage Set
Lockset
Special Hardware
Push / Pull
Hold Open
Magnetic
Closer
Kick Plate
Armor Plate
Auto-Open

Mechanical

[NA]
Exhaust
Thermostat
Special Temperature Req.
Sp. Fire Suppression Req.
Humidistat
Special Filtration
Negative Pressure
Positive Pressure

Electrical

LIGHTS: NA
[LED]
[2x4] 1x4
2x2
[Down Lights]
[Emergency]
[Under Counter]
Special Control(s)
Dimmers
Under Cabinet
Exam Light

POWER: NA
[Duplex]
4-Plex
GFI
[Emergency]
Dedicated Circuit
Plug / Wire Mold
480v

COMMUNICATIONS: NA
[Telephone]
[FAX]
Music Paging
[Nurse Call]
Dictation
Intercom
[Computer]
[Printer]
Code Pink
Physio Monitoring
[Clock]
TV / Cable
Code Blue
Master System

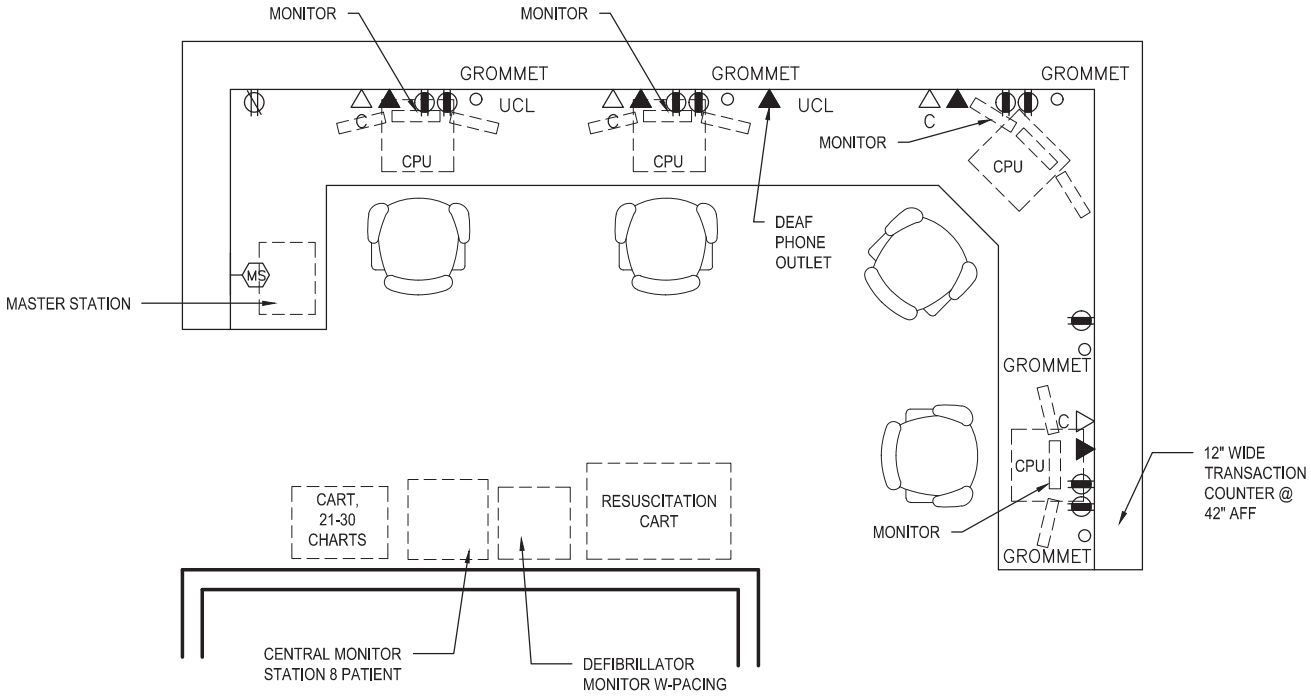
Plumbing

FIXTURES: [NA]

- P1 Single Sink: Extra Depth
- P2 Double Sink: Extra Depth
- P3 Lavatory: Wall Mounted
- P4 Lav. - Integral w/ Counter
- P5 Water Closet: Wall Mounted / Floor Mounted / Bed Pan Washer
- P6 Clinical Service Sink
- P7 Scrub Sink
- P8 Janitor's Sink
- P9 HC Shower w/ Bench
- P10 Shower (See Plan)
- P11 Garbage Disposal
- P12 Floor Drain: Chemical Resistant
- P13 Swivet Type Unit
- P14 Urinals
- P15 Plaster Trap

FITTINGS: [NA]
Standard
Hand-Held Wand
Gooseneck
Foot Control
Wrist Blades
Infrared Eye
Hose Adapter

GAS: [NA]
Oxygen 1 2 3 4
Medical Air 1 2 3 4
Vacuum 1 2 3 4
Slide (1 per Vacuum)
Nitrous Oxide 1 2 3 4
Nitrogen 1 2 3 4
Pre. Manuf. Unit
Carbon Dioxide



TYPICAL NURSE STATION

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: GENERAL ROOM NAME: TYP. NURSE STATION ROOM NO: 18 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 39 OF 43

Department: **GENERAL** Room: **TYP. SOILED WORKROOM** No.: **19**

Architectural

FINISH:

Floors: NA
Carpet
Tile C P Q
Concrete
Sealed
Vinyl Composition Tile
[Seamless Sheet Vinyl w/ Integral Base]
Terrazo

Walls: NA
[Painted]
Epoxy
Tile C P Q
Wainscot
Vinyl Wall Covering
Wainscot
FRP Panel
Wainscot

Ceilings: NA
[Gypsum Board]
Soffit Only
Lay-In Tile
2x4 2x2
MR CR (Moist Resist. & Clean Room)
Special
Height: 8'-0" 10'-0" [9'-0"] - See RCP

FURNISHINGS: Equipment: [Yes] No Furniture: Yes [No] Cabinetry: [Yes] No [See Plan]

TOILET ACCESSORIES: NA

TA1 Recessed Towel
Disp & Waste Receptacle
TA2 [Towel Dispenser]
[Surface Mounted]
Recessed Towel
Recessed w/ Mirror
TA3 Waste Receptacle
TA4 Toilet Paper Dispenser
Surface Mount
Recessed
Partition-Mounted
TA5 Mirror
Unframed (Size on Plan)
Framed
TA6 [Soap Dispenser]
TA7 Grab Bars
TA8 Shelf
TA9 Shower Curtain Rod
TA10 Towel Bar
TA11 Sanit. Napkin Disposal
TA12 Robe / IV / Coat Hook
TA13 Elect. Hand Dryer
TA14 Shower Seat
TA15 Soap Dish
TA16 Baby Change Station
TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

Borrowed Light
Lockers
Lead Lining
Projection Screen
Sound Attenuation
Shelving
Fixed
Moveable
Chair Rail
[Corner Rail]
Handrail
Bumper Rail
[Acrovyn Type Wainscot]
IV Track or Hook
Add'l Structural Support
Cubicle Curtain & Track

DOORS: NA

[4⁰] 4⁶ 3⁰ 3⁶ 6⁰
View Wndw A B C D
Lead Lined
[Passage Set]
Lockset
Special Hardware
Push / Pull
Hold Open
Magnetic
Closer
Kick Plate
[Armor Plate]
Auto-Open

Mechanical

[NA]

Exhaust
Thermostat
Special Temperature Req.
Sp. Fire Suppression Req.
Humidistat
Special Filtration
Negative Pressure
Positive Pressure

Electrical

LIGHTS: NA

[LED]
[2x4] 1x4
2x2
Down Lights
Emergency
[Under Counter]
Special Control(s)
Dimmers
Under Cabinet
Exam Light

POWER: NA

[Duplex]
4-Plex
[GFI]
Emergency
Dedicated Circuit
Plug / Wire Mold
480v

COMMUNI-CATIONS: [NA]

Telephone
FAX
Music Paging
Nurse Call
Dictation
Intercom
Computer
Printer
Code Pink
Physio Monitoring
Clock
TV / Cable
Code Blue
Master System

Plumbing

FIXTURES: NA

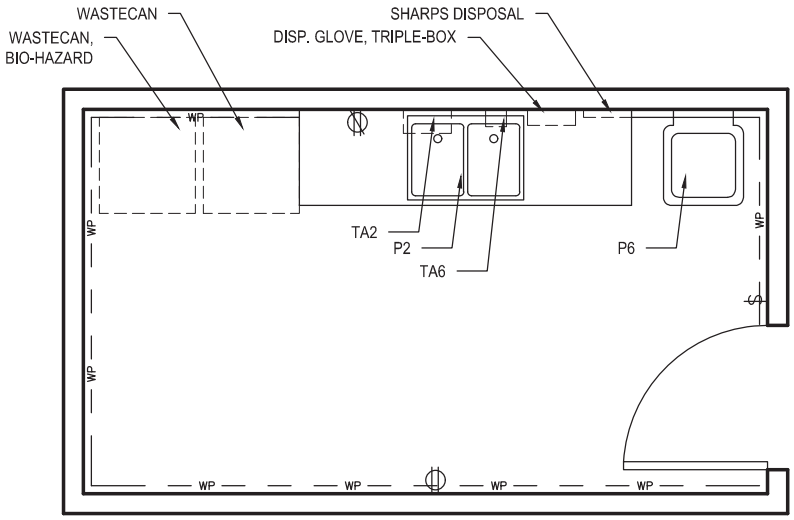
P1 Single Sink
Extra Depth
P2 [Double Sink]
Extra Depth
P3 Lavatory
Wall Mounted
P4 Lav. - Integral w/ Counter
P5 Water Closet
Wall Mounted
Floor Mounted
Bed Pan Washer
P6 [Clinical Service Sink]
P7 Scrub Sink
P8 Janitor's Sink
P9 HC Shower w/ Bench
P10 Shower (See Plan)
P11 Garbage Disposal
P12 Floor Drain
Chemical Resistant
P13 Swivet Type Unit
P14 Urinals
P15 Plaster Trap

FITTINGS: NA

Standard
[Hand-Held Wand]
[Gooseneck]
Foot Control
[Wrist Blades]
Infrared Eye
Hose Adapter

GAS: [NA]

Oxygen 1 2 3 4
Medical Air 1 2 3 4
Vacuum 1 2 3 4
Slide (1 per Vacuum)
Nitrous Oxide 1 2 3 4
Nitrogen 1 2 3 4
Pre. Manuf. Unit
Carbon Dioxide



TYPICAL SOILED WORKROOM

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: GENERAL ROOM NAME: TYP. SOILED WORKRM ROOM NO: 19 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 41 OF 43

Department: **GENERAL** Room: **TYP. CLEAN WORKROOM** No.: **20**

Architectural

FINISH:

Floors: NA | Carpet | Tile C P Q | Concrete | Sealed | [Vinyl Composition Tile] | Seamless Sheet Vinyl w/ Integral Base | Terrazo

Walls: NA | [Painted] | Epoxy | Tile C P Q | Wainscot | Vinyl Wall Covering | Wainscot | FRP Panel | Wainscot

Ceilings: NA | Gypsum Board | Soffit Only | [Lay-In Tile] | [2x4] 2x2 | MR CR (Moist Resist. & Clean Room) | Special | Height: 8'-0" 10'-0" [9'-0"] - See RCP

FURNISHINGS: Equipment: [Yes] No | Furniture: Yes [No] | Cabinetry: [Yes] No | [See Plan]

TOILET ACCESSORIES: NA

- TA1 Recessed Towel; Disp & Waste Receptacle
- TA2 [Towel Dispenser]; [Surface Mounted]; Recessed Towel; Recessed w/ Mirror
- TA3 Waste Receptacle
- TA4 Toilet Paper Dispenser; Surface Mount; Recessed; Partition-Mounted
- TA5 Mirror; Unframed (Size on Plan); Framed
- TA6 [Soap Dispenser]
- TA7 Grab Bars
- TA8 Shelf
- TA9 Shower Curtain Rod
- TA10 Towel Bar
- TA11 Sanit. Napkin Disposal
- TA12 Robe / IV / Coat Hook
- TA13 Elect. Hand Dryer
- TA14 Shower Seat
- TA15 Soap Dish
- TA16 Baby Change Station
- TA17 Toilet Seat Cover Disp.

ADDITIONAL ITEMS: NA

Borrowed Light; Lockers; Lead Lining; Projection Screen | Sound Attenuation; Shelving: Fixed, Moveable | Chair Rail; [Corner Rail]; Handrail; Bumper Rail | [Acrovyn Type Wainscot]; IV Track or Hook; Add'l Structural Support; Cubicle Curtain & Track

DOORS: NA

[4º] 4⁶ 3º 3⁶ 6º; View Wndw A B C D; Lead Lined | [Passage Set]; Lockset; Special Hardware | Push / Pull; Hold Open; Magnetic | Closer; Kick Plate; [Armor Plate]; Auto-Open

Mechanical

[NA] | Exhaust; Thermostat | Special Temperature Req.; Sp. Fire Suppression Req. | Humidistat; Special Filtration | Negative Pressure; Positive Pressure

Electrical

LIGHTS: NA | [LED]; [2x4] 1x4; 2x2 | Down Lights; Emergency | [Under Counter]; Special Control(s) | Dimmers; Under Cabinet; Exam Light

POWER: NA | [Duplex]; 4-Plex | [GFI]; Emergency | Dedicated Circuit; Plug / Wire Mold | 480v

COMMUNICATIONS: NA | Telephone; FAX; Music Paging | [Nurse Call]; Dictation; Intercom | Computer; Printer; Code Pink; Physio Monitoring | Clock; TV / Cable; Code Blue; Master System

Plumbing

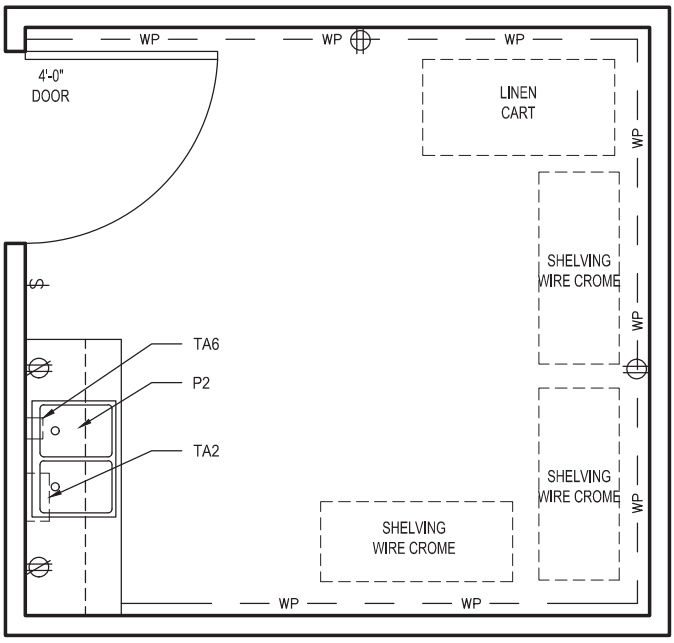
FIXTURES: NA

- P1 Single Sink; Extra Depth
- [P2 Double Sink]; Extra Depth
- P3 Lavatory; Wall Mounted
- P4 Lav. - Integral w/ Counter
- P5 Water Closet; Wall Mounted; Floor Mounted; Bed Pan Washer
- P6 Clinical Service Sink
- P7 Scrub Sink
- P8 Janitor's Sink
- P9 HC Shower w/ Bench
- P10 Shower (See Plan)
- P11 Garbage Disposal
- P12 Floor Drain; Chemical Resistant
- P13 Swivet Type Unit
- P14 Urinals
- P15 Plaster Trap

FITTINGS: NA | Standard; Hand-Held Wand | [Gooseneck]; Foot Control | [Wrist Blades]; Infrared Eye | Hose Adapter

GAS: [NA]

Oxygen 1 2 3 4; Medical Air 1 2 3 4 | Vacuum 1 2 3 4; Slide (1 per Vacuum) | Nitrous Oxide 1 2 3 4; Nitrogen 1 2 3 4 | Pre. Manuf. Unit; Carbon Dioxide



TYPICAL CLEAN WORKROOM

Tri-City Medical Center	S F E I R ARCHITECTS	DEPT. NAME: GENERAL ROOM NAME: TYP. CLEAN WORKRM ROOM NO: 20 DATE: 09/21/17	SCALE: 1/4"=1'-0" PAGE: PAGE 43 OF 43

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Tri-City Medical Center

4002 Vista Way
Oceanside, California 92056

OUTLINE PERFORMANCE SPECIFICATIONS

SA PROJECT NO. 01634.00
09/21/2017

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Contact:
Paul DeArment - pdearment@specscons.com

END OF PROJECT DIRECTORY

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OUTLINE AND PERFORMANCE SPECIFICATIONS
09/21/2017

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SITE AND INFRASTRUCTURE SUBGROUP:

PROCESS EQUIPMENT SUBGROUP:

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DIVISION 01 – GENERAL REQUIREMENTS

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 PERMITS AND FEES

A. Office of Statewide Health Planning and Development (OSHPD) Requirements: OSHPD is the primary agency having jurisdiction over project design and construction within healthcare facilities.
   1. Licensed Contractors Declaration: Prepare and submit through Architect license documents required for OSHPD approval.
   2. Office of Statewide Health Planning and Development (OSHPD) Building Permit will be obtained and paid for by Owner.

B. Permits, Licenses, and Certificates: See General Conditions. For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with environmental regulations bearing on performance of the Work.

1.02 CODES AND ORDINANCES

A. Compliance: All construction shall comply with all applicable codes, ordinances and regulations of federal, state, county, city, and special district agencies and jurisdictions having authority over the Project and in effect on the issue date of the Construction Documents: Applicable codes and regulations include, but are not necessarily limited to, the following:

California Code of Regulations (CCR), Title 8, Chapter 4, Subchapter 6, Elevator Safety Orders
California Code of Regulations (CCR), Title 19, Public Safety
California Code of Regulations (CCR), Title 22, Social Security
California Code of Regulations (CCR), Title 24, Building Standards, Including, but not limited to:

Part 1 - 2016 California Building Standards Administrative Code (CAC)
Part 2 - 2016 California Building Code (CBC)
Part 3 - 2016 California Electrical Code (CEC)
Part 4 - 2016 California Mechanical Code (CMC
Part 5 - 2016 California Plumbing Code (CPC)
Part 6 - 2016 California Energy Code
Part 9 - 2016 California Fire Code (CFC)
Part 10 - 2016 California Existing Building Code
Part 11 - 2016 California Green Building Standards Code
Part 12 - 2016 California Referenced Standards Code

1.03 OSHPD ADMINISTRATIVE REQUIREMENTS

A. Allow access to the Project site at any time to OSHPD designated Inspector of Record (IOR) for the Project.

B. File OSHPD Verified Report forms every three months during construction.

C. OSHPD Approvals: In accordance with Part 1, Title 24, California Code of Regulations, all addenda and modifications to the Work requiring OSHPD approval shall be approved by the

Office of Statewide Health Planning and Development (OSHPD) prior to proceeding with the work.

1. Substitutions proposed for equipment and critical items require specific prior approval by OSHPD, including, but not limited to, the following:
   a. Structural elements and connectors.
   b. Mechanical equipment.
   c. Bio-safety cabinets.
   d. Fume hoods.
2. Architect shall refer substitution requests requiring OSHPD approval to OSHPD for review.

D. Include the OSHPD project number on all written test and inspection reports prepared during execution of the Work.

1.04 OTHER ADMINISTRATIVE APPROVALS

A. Compliance: General Contractor and all subcontractors shall comply with requirements of local public utility companies and state and local governmental departments, including but not necessarily limited to following:

Governing fire department requirements
Utility company requirements

1.05 OTHER REGULATORY REQUIREMENTS

A. Compliance: All contractors shall comply with all other applicable laws and regulations in effect on the issue date of the Construction Documents, including but not necessarily limited to, the following:

All local, state, and federal (EPA) construction stormwater pollution control regulations, and monitoring requirements
State and Federal Safety and Health Laws
United States Department of Justice – 2010 ADA Standards for Accessible Design, September 15, 2010; available at www.ada.gov/ADAStandards_index.htm.

1.06 DISCREPANCIES

A. If discrepancies occur between Contract Documents, local codes, local utility requirements, etc., most stringent requirements shall apply.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 42 00

REFERENCES

PART 1 GENERAL

1.01 DEFINITIONS

A. General: Basic Contract definitions are included in the General Conditions.

B. Indicated: The term " indicated " refers to graphic representations, notes, or schedule on the Drawings, other paragraphs or schedule in the Specifications, and similar requirements in the Contract Documents. Where terms such as " shown ", " noted", "scheduled," and "specified" are used it is to help the reader locate the reference; no limitations on location is intended.

C. Directed: Terms such as "directed," "requested," authorized," "selected", "approved," "required," and "permitted" mean "directed by the Architect," requested by the Architect, and similar phrases.

D. Approve: The term "approved," where used in conjunction with the Architect's action on the Contractor's submittals, applications, and requirements, is limited to the Architect's duties and responsibilities as stated in General and Supplementary Conditions.

E. Regulation: The term "Regulations" included laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term "furnish" is used to mean " supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."

G. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."

H. Provide: The term "provide " means "to furnish and install, complete and ready for the intended use."

I. Installer: An "installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor, for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced" when used with the term "Installer" means having a minimum of 5 previous Projects similar in size and scope to this Project, being familiar with the precautions required, and having complied with requirements of the authority having jurisdiction.

J. Trades: Use of titles such as " carpentry " is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as " carpenter." It also does not imply that requirements specified apply exclusively to tradesperson of the corresponding generic name.

K. Assignment of Specialists: Certain Sections of the Specifications require that specified construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and

assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

1. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with Local trade union jurisdictional settlements and conventions.

L. Project Site is the space available to the Contractor for Performance of construction activities, either exclusively or in conjunction with others performing other work as part of the project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.

M. Testing Laboratories: A “testing laboratory” is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

N. Provide: Except as otherwise defined in greater detail, term “provide” means furnish and install, complete and ready for intended use, as applicable in each instance.

O. Approved Equals-Equivalents:

1. The words “similar and equal to”, “or equal”, equivalent” and such other words of similar content and meaning shall for the purposes of this contract be deemed to mean similar and equivalent to one of the named products. For the purpose of this article and for the purpose of the bidding documents, the word “products” shall be deemed to include the words ” articles”, ”materials”, “items’, ” equipment” and “methods”. Whenever in the contract documents one or more products are specified, the words “similar and equal to” shall be inserted.
2. Wherever any product is specified in the contract documents by a reference to the name, trade name, or catalog number of any manufacturer or supplier, the intent is not to limit competition, but to establish a standard of quality which the Architect has determined is necessary for the project. The Contractor may at their option use any product other than that specified in the contract documents provided the same is approved by the Architect in accordance with the acceptable procedures. However no substitutions will be allowed after bidding that changes product type or system type, as specified herein unless otherwise noted.
3. Nothing in the contract documents shall be construed as representing, expressly or impliedly, that the named product is available or that there is or there is not a product similar and equal to any of the name products and the Contractor shall have and make no claim by reason of the availability of lack of availability of the named product or of a product similar and equal to any named product.

P. Quality Assurance: Administrative and procedural requirements for proactive activities to ensure the quality of construction before and during the execution of the Work.

1. Activities and Requirements Included:
   a. General qualification requirements for manufacturers, suppliers, installers, fabricators, and delegated designers.
   b. Administrative and procedural requirements for field services provided by manufacturer's representatives.
   c. General requirements for mockups and field samples constructed, applied, or assembled at the site for review and use as a quality standard.
2. The term “Quality Assurance” as used in the CBC or in CBC-referenced standards may include “Quality Control” activities as defined by this Specification. Such possible discrepancies in terminology do not modify or eliminate any Quality Assurance or Quality Control requirement in the CBC or in these Project Specifications.

Q. Quality Control: Administrative and procedural requirements for reactive activities to evaluate completed activities and elements for conformance with the specified requirements.
   1. Activities and Requirements Included:
      a. Correction of defective construction.
      b. Contractor quality control.
      c. Testing and inspection services.
      d. Testing laboratory services.
      e. Code-required special inspections and procedures.
   2. Where requirements of the CBC or of CBC-referenced standards are referred to in the code as “Quality Assurance” but meet this definition of “Quality Control,” “Quality Control” activities and requirements of this Project Specification shall be taken to mean the same as “Quality Assurance” as used in the CBC.

1.02 TECHNICAL SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Technical Specification Format: These Technical Specifications are organized into Divisions and Sections on the basis of the 2014 Update to the Construction Specifications Institute (CSI) MasterFormat.
   1. The system of groups, subgroups and Divisions are listed in the Table of Contents of this Project Manual. It consists of 50 Divisions, Division 00 though Division 49, some of which are not used or are reserved for future expansion of the MasterFormat.

B. Technical Specification Content: This Technical Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
   1. Abbreviated Language: Language used in Technical Specifications and other Contract Documents is the abbreviated type. Implied words and meaning will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the full context of the Contract Documents so indicates.
   2. Specification Methods: The techniques or methods of specifying to record requirements varies throughout text, and may include “prescriptive,” “open generic descriptive,”” compliance with standards,”” performance,” proprietary,” or a combination of theses. The method used for specifying one unit of work has no bearing on requirements for another unit of work.
   3. Overlapping and Conflicting Requirements: Where compliance with 2 or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimum or levels of quality, the most stringent requirement is intended and will be enforced.

C. Contractor’s Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor’s regardless of whether or not it is specifically indicated as such.
   1. Minimum Quality/Quantity: In every instance, the quality level or quantity shown or specified is intended to be the minimum for the work to be performed or proved. Except as otherwise specifically indicated, the actual work may either comply exactly with that minimum (within specified tolerances). Or may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of the requirements. Refer instances of uncertainty to Architect/Engineer for decision before proceeding.
   2. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entitles, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements should not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the work; they are also not intended to interfere with local union jurisdiction

settlements and similar Conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as “expert “ for the indicated construction processes or operations. Nevertheless. The final responsibility for fulfillment of the entire set or requirements remains with the Contractor.

3. Trades: Except as otherwise indicated, the use of titles such as “ Carpentry “ in specification text, implies neither that the work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as “carpenter”), nor specified requirements apply exclusively to work by tradespersons of that corresponding generic name.

1.03 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable Construction industry standards have the same force and effects as if bound or copied directly into the Contract Documents. Such Standards are made a part of the Contract Documents by reference.

B. Publication Dates: Where the date of issue of a referenced standard is not specified, comply with the standard in effect as of date of Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards specified, and the standards establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity’s construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of documents are needed for performance of a required construction activity, the Contractor shall obtain Copies from the publication source.
2. Although copies of standards needed for enforcement of requirements may be included as part of required submittals, the Architect reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade associations, standards generating organization, authority having jurisdiction, or other entity application to the context of the text provision. Refer to the “Encyclopedia of Associations,” published by Gale Research Co., available in, most libraries.

1.04 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner’s records, submit copies of permits, Licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipt for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 PRODUCTS – Not used

PART 3 EXECUTION – Not used

END OF SECTION

SECTION 01 43 39

MOCKUPS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes general requirements for mockups of building finish assemblies as a standard for comparing quality of work specified in individual sections of Divisions 03 through 32.

1.02 SEQUENCING AND SCHEDULING

A. Mockups shall be constructed as early as possible and must be completed and approved prior to the start of construction of the building assembly or component for which the mockup is to constitute the standard of work.

B. The Contractor is responsible for obtaining the necessary materials and completing an acceptable mockup at least 4 weeks prior to its scheduled milestone for ordering materials for construction. Acceptance by the Owners Project Manager in writing is required before construction of the assembly commences in the building. The Contractor is solely responsible for any cost or delay due to inadequate mockup planning, preparation and assembly.

1.03 ACTION SUBMITTALS

A. All materials installed in a mockup shall have individual shop drawings, product data and color samples reviewed and approved before the mockup is constructed.

B. Wall Mockup Assemblies and Arrangement: As indicated on mockup drawings to be provided by the Architect and submitted for approval by the Owner.

C. Shop Drawings: The General Contractor shall submit shop drawings indicating all details of the proposed mockup construction, including wind bracing and foundations, for approval prior to constructing the mockup.

1.04 QUALITY ASSURANCE

A. Following approval of the Owner and Architect, the accepted mockup shall serve as the standard of visual quality and workmanship for the applicable building assembly or component.

PART 2 PRODUCTS

2.01 MOCKUP MATERIALS AND ASSEMBLIES

A. Mockup sizes and composition shall be specified in the individual sections of Divisions 03 through 32. Products and materials installed in mockup shall be same as those proposed for use in applicable building assembly or component.
   1. Where mockup is to be utilized to compare material or finish options, mockup shall incorporate each option and method for identification.

B. Include other construction as required to properly support and finish mockup panels.
   1. Wall Assembly Mockups: Concrete foundation materials shall comply with Division 03.
   2. Include all required supports and wind bracing.

C. Where applicable, include joint sealants using selected sealant colors.

D. Include surface sealers, waterproofing and weather barriers when they are to be components of the final assembly.

PART 3 EXECUTION

3.01 MOCKUP INSTALLATION

A. Location: In a protected area of the site.

B. Foundations for Wall Assembly Mockups: Construct suitable concrete foundation to carry the panel load and prevent the panel from movement or racking.

C. Construction: Construction shall match proposed building assembly or component construction as nearly as possible. Deviate from actual construction details only as required for stability of the panel. All materials shall be erected or installed according to applicable sections of the Specifications.

3.02 MOCKUP REVIEW

A. Inspection: Mockup is subject to approval of the Architect and Owner prior to proceeding with fabrication or construction.

B. Adjusting: Make minor corrections or revisions to the panel as necessary to obtain approval.

3.03 PROTECTION

A. The Contractor shall keep the mockups on site and maintain them in good condition as a standard for comparing quality of work.

B. Mockup shall be protected from vandalism or construction damage and maintained in good condition until ordered removed.

3.04 REMOVAL

A. The mockup shall be demolished and removed from the site when directed by the Owner.

B. Individual components of the mockup may not be used in the final building construction unless so specified in applicable Specification Section.

END OF SECTION

SECTION 01 45 20

QUALITY CONTROL SERVICES

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements for quality control services.

B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do no relieve the Contractor of responsibility for compliance with Contract Document requirements.

D. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and test, cover production of standard products as well as customized fabrication and installation procedures.

E. Inspection, test and related actions specified are not intended to limit the Contractor's control procedures that facilitate compliance with Contract Document requirements.

F. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.02 DEFINITIONS

A. Quality Assurance: Administrative and procedural requirements for proactive activities to ensure the quality of construction before and during the execution of the Work.
   1. Activities and Requirements Included:
      a. General qualification requirements for manufacturers, suppliers, installers, fabricators, and delegated designers.
      b. Administrative and procedural requirements for field services provided by manufacturer's representatives.
      c. General requirements for mockups and field samples constructed, applied, or assembled at the site for review and use as a quality standard.
   2. The term "Quality Assurance" as used in the CBC or in CBC-referenced standards may include "Quality Control" activities as defined by this Specification. Such possible discrepancies in terminology do not modify or eliminate any Quality Assurance or Quality Control requirement in the CBC or in these Project Specifications.

B. Quality Control: Administrative and procedural requirements for reactive activities to evaluate completed activities and elements for conformance with the specified requirements.
   1. Activities and Requirements Included:
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      b. Contractor quality control.
      c. Testing and inspection services.
      d. Testing laboratory services.
      e. Code-required special inspections and procedures.
   2. Where requirements of the CBC or of CBC-referenced standards are referred to in the code as "Quality Assurance" but meet this definition of "Quality Control," "Quality Control" activities

and requirements of this Project Specification shall be taken to mean the same as “Quality Assurance” as used in the CBC.

1.03 RESPONSIBILITIES

A. Testing Agency: The District will employ and pay an independent agency, subject to approval by the Architect, to perform specified quality control services.

B. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements.
   1. The Contractor is responsible for reimbursing the Owner the costs for retesting of non-complying work.

C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to.
   1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and test.
   2. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
   3. Provisions facilities for storage and curing of test samples, and deli every of samples to testing laboratories.
   4. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
   5. Security and protection of samples and test equipment at the Project site.

D. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
   1. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
   3. The agency shall not perform any duties of the Contractor.

E. Coordination: The Contractor and each agency engaged to perform inspections; tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition to Contractor, each agency shall coordinated activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

F. The Contractor is responsible for scheduling time for inspections, tests, taking samples and similar activities

1.04 SUBMITTALS

A. The independent testing agency shall submit a certified written repot of each inspection, test or similar service directly to the Architect, in duplicate, with a copy to the Contractor.

B. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

C. Report Data: Written reports of each inspection, test or similar services shall include, but not be limited to:
   1. Date of issue.
   2. Project title, OSHPD project number, and Architect's project number.
   3. Name, address and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making the inspection or test.
   6. Designation of the Work and test method.
   7. Identification of product and specification Section.
   8. Complete inspection or test data.
   9. Test results and an interpretation of test results.
   10. Ambient conditions at the time of sample taking and testing.
   11. Comments or professional opinion as to whether inspection or tested Work complies with Contract Document Requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damage construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for 'Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

SECTION 01 71 16

ACCEPTANCE OF CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Procedures and general requirements for examination of existing conditions and verification of acceptable conditions for installation.

B. Related Requirements:
   1. General Product Installation Requirements: Section 01 73 19 Installation.
   2. Cutting and Patching: Section 01 73 29.

1.02 QUALITY ASSURANCE

A. Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for verification of existing conditions to extent that these instructions and recommendations are more explicit or more stringent than requirements specified or indicated.
   1. Notify Architect of any conflicts between manufacturer's instructions or recommendations and requirements specified or indicated.
   2. Coordinate trades constructing substrate and trades installing products to substrate to ensure that surface preparation required by manufacturer's instructions is performed before product installation. Convene pre-installation conference if necessary and discuss issues relating to acceptance of conditions at conference.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.01 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
   1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
   2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Inspection of Substrates: Require installer of each major unit of work to inspect substrate to receive work and conditions under which work is to be performed.
   1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

D. Installer: Report unsatisfactory conditions to General Contractor in writing with copy to Architect. Include recommended corrections.

E. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Field engineering services required for proper execution and completion of work under this contract.

1.02 SITE SURVEY

A. Survey: A site survey prepared for Owner by its separate consultant will be made available to the Contractor.
   1. Such data is offered solely for reference and is not part of Contract Documents.
   2. Data contained in survey is believed to be reliable; however, the Owner does not guarantee its accuracy or completeness.

1.03 SUBMITTALS

A. Submittals for Information:
   1. Surveyor or Engineer: Submit name and address of surveyor or professional engineer to be employed by Contractor to Architect for acceptance before beginning work at site.
   2. Documentation and Records: Surveyor or engineer shall maintain complete and accurate log of control and survey work as it progresses. On request of Architect, submit documentation to verify accuracy of field engineering work.

B. Submittals for Project Record:
   1. Completion Certificate: Upon completion of work, submit certificate to Architect signed by surveyor or engineer certifying that elevations and locations are in conformance with Contract Documents. Note any items of non-conformance.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.01 QUALIFICATIONS

A. Qualifications: Employ land surveyor or professional engineer registered in State of California and acceptable to Owner and Architect.

B. Surveyor or Engineer: Responsible for location of new buildings, building additions and major site elements; establishment of building horizontal and vertical controls; installation of control stakes as required; and final certification that finish grading has been completed within tolerances specified.

3.02 PROJECT SURVEY REQUIREMENTS

A. Reference Points: Architect will identify existing control points and property line stakes indicated on Drawings and site survey. Immediately upon entering Project, locate and maintain

benchmarks and all other grades, lines, levels and dimensions. Report any errors or inconsistencies to Architect before commencing work.

B. Permanent Bench Marks: Surveyor or engineer shall establish minimum of two permanent benchmarks on site, referenced to data established by survey control points.

C. Batter Boards and Levels: Surveyor or engineer shall stake out building additions and new buildings and provide and rigidly set batter boards.
   1. Contractor: Remain responsible for their maintenance and accuracy.
   2. From permanent benchmarks surveyor or engineer shall ascertain grades and levels to building as needed.
   3. Piles or Piers: Cross-stake so centerlines are retained after drilling or driving.

D. Preservation of Monuments and Stakes: Carefully preserve monuments, benchmarks, property markers, reference points, and stakes.
   1. In case of his destruction of these, the Contractor shall be charged with expense of replacement and shall be responsible for any mistake or loss of time that may be caused.
   2. Protect permanent monuments or bench marks which must be removed or disturbed until properly referenced for relocation.
   3. Furnish materials and assistance for proper replacement of such monuments or benchmarks.

E. Layout and Control by Surveyor or Engineer:
   1. Buildings and Additions: Establish building horizontal and vertical controls by instrumentation.
   2. Site: Establish lines, levels and locations by instrumentation. Set control stakes for finish grading. Reset stakes as required during progress of work.

F. Completion: Upon completion of work, surveyor or engineer shall survey site to verify that locations and elevations required by Contract Documents have been achieved within specified tolerances.

G. Each Subcontractor: Provide complete engineering layout for work to be performed under his subcontract, including grades, elevations, and all other engineering required to perform his scope of work.
   1. General Contractor: Provide building horizontal controls and elevation controls.

END OF SECTION

SECTION 01 71 33

PROTECTION OF ADJACENT CONSTRUCTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Protection of existing construction in the area of Work that is to remain.
   2. Protection of property adjacent to the Work.

B. Related Requirements:
   1. Cutting and Patching: Section 01 73 29.
   2. Site Preparation Performance Requirements: Section 01 89 13.
   3. Selective Site Demolition: Section 02 41 13.
   4. Selective Building Demolition: Section 02 41 19.13.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.01 PROTECTION OF WORK AND PROPERTY

A. Demolition, construction, and other operations performed in the course of the work shall not cause deterioration or damage to other adjacent property or utilities, public or private, directly or indirectly.

B. Notify the Architect and Owner immediately if any new construction or existing building or grounds elements are damaged through fire, water, wind, vandalism or construction activities.

C. Perform construction operations so as to minimize and control dust, dirt, and noise within reasonable limits.

D. Existing sod, trees, plants, bushes, ground cover, and landscaping (not scheduled for removal) shall be protected or fully restored or replaced upon completion of construction operations. Replace plant materials with the species and sizes matching damaged items.

E. Construction not specifically required to be modified or removed for work under this contract and construction labeled "to remain" shall remain undisturbed throughout the execution of the work. Provide all appropriate means of protection necessary for accomplishment of this objective. Provide protection from natural elements as required.

F. Provide, install, and maintain all shoring, bracing, and other temporary construction necessary for the protection of existing construction to remain undisturbed and as required for the safety of personnel and public.

3.02 DAMAGE CAUSED BY UTILITY INTERRUPTION

A. If construction activities require interruption of building systems and/or utilities, take measures required to prevent damage to existing building systems and materials
   1 Arrange and pay for hand watering if required to sustain plant materials whenever construction activities interrupt irrigation systems.
   2 Arrange and pay for temporary power to maintain refrigeration systems if perishable foods may be at risk of deterioration.
   3 Notify Architect and Owner 1 week in advance of planned power outages so that potential risks can be identified.

3.03 REMEDIES

A. The Contractor shall be fully responsible for the replacement, restoration, repair, or cleaning of any damage or loss incurred as a result of damage caused by construction activities. Replacement and repair activities shall result in the restoration of damaged areas to conditions existing at the start of construction.

B. Take precautions to protect existing concrete and asphalt pavement from damage due to vehicle loads, parking, and storage.

C. Schedule loading to take advantage of pavement material consolidation during cooler temperatures. Minimize loading paved areas during hot weather. Employ plywood (or other suitable method) to distribute wheel loads to the greatest extent possible.

D. All existing irrigation systems are considered to be fully operational. All damage to sprinkler systems in the vicinity of construction (unless documented as pre-existing) shall be repaired by the Contractor at no additional cost to the Owner. Inspections and/or tests of the existing system shall be conducted by the Contractor in the presence of the Architect and Owner's Representative, in order to establish performance criteria for the reinstalled system. Except as waived in writing by the Architect, the performance of the reinstalled system shall be equal to the existing system. The Contractor shall give written notice to the Owner and the Architect prior to dismantling of the existing underground sprinkler systems.

E. Damaged lawn areas whether damaged by construction activities or lack of water, shall be restored by proper soil preparation and treatment, grading, filling, and the laying of new sod Seeding is not acceptable as a replacement for existing sod.

END OF SECTION

SECTION 01 73 19

INSTALLATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Common requirements for installing products and materials.

B. Related Requirements:
   1. Examination and Acceptance of Substrates and In-Place Construction to Receive Product Installation: Section 01 71 16 Acceptance of Conditions.
   2. Common Product Requirements, Transportation, Storage and Handling of Products: Section 01 60 00 Product Requirements.
   3. Cutting and Patching: Section 01 73 29.

1.02 REFERENCES

A. Reference Standards: Comply with the following as applicable:
   1. United States Department of Justice – 2010 ADA Standards for Accessible Design, September 15, 2010; available at www.ada.gov/ADAStandards_index.htm.

1.03 QUALITY ASSURANCE

A. Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation to extent that these instructions and recommendations are more explicit or more stringent than requirements specified or indicated.
   1. Refer to manufacturer’s warranty, where applicable, and comply with all installation stipulations necessary to obtain warranty.
   2. Compliance with manufacturer’s instructions shall include compliance with manufacturer’s requirements, if any, for verification of conditions and surface preparation prior to installation, and shall include manufacturer’s instructions for protection and cleaning after installation.
   3. Notify Architect of any conflicts between manufacturer's instructions or recommendations and requirements specified or indicated.
   4. Maintain one copy of each on site from time of product delivery to site until installation and final cleaning of product is complete.

PART 2 PRODUCTS

2.01 MATERIALS

A. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

PART 3 EXECUTION

3.01 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

B. Attachment: Provide attachment and connection devices and methods for securing work.
   1. Secure work true to line and level, and within specified tolerances, or if not specified, industry recognized tolerances.
   2. Allow for expansion and building movement.
   3. Exposed Joints:
      a. Provide uniform joint width.
      b. Arrange joints to obtain best visual effect.
      c. Refer questionable visual-effect choices to Architect for final decision.

C. Measurements and Dimensions: Recheck as integral step of starting each installation.

D. Climatic Conditions and Project Status: Install each unit of work under conditions to ensure best possible results in coordination with entire Project.
   1. Isolate each unit of work from incompatible work as necessary to prevent deterioration.
   2. Coordinate enclosure of work with required inspections and tests to minimize necessity of uncovering work for those purposes.

E. Mounting Heights: Where not indicated, mount individual units of work at industry recognized standard mounting heights for particular application indicated.
   1. Refer questionable mounting heights choices to Architect for final decision.
   2. Comply with ADA Standards as applicable.

F. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

G. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

3.02 PROTECTION

A. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 GENERAL

1.01 SUMMARY

A. Work Results: All cutting, fitting and patching required to complete work and to:
   1. Make its parts fit together properly.
   2. Uncover portions of work to provide for installation of ill-timed work.
   3. Remove and replace defective work.
   4. Remove and replace work not conforming to requirements of Contract Documents.
   5. Remove samples of installed work as specified for testing.
   6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

B. Related Requirements:
   1. Selective Site Demolition: Section 02 41 13.
   2. Selective Building Demolition: Section 02 41 19.13.
   3. Selective Interior Demolition: Section 03 41 19.16.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Notification of Architect: Notify Architect well in advance of executing any cutting or alteration that affects:
   1. Work of Owner or any separate contractor.
   2. Structural value or integrity of any element of Project.
   3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
   4. Efficiency, operational life, maintenance or safety of operational elements.
   5. Visual qualities of sight-exposed elements.

PART 2 PRODUCTS

2.01 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 EXECUTION

3.01 EXAMINATION

A. Existing Conditions:
   1. Examine existing conditions of Project, including elements subject to damage or to movement during cutting and patching.
   2. After uncovering work, examine conditions affecting installation of products or performance of work.

B. Notification: Report unsatisfactory or questionable conditions to Architect. Do not proceed with work until Architect has provided further instructions.

3.02 PREPARATION

A. Protection: Provide adequate temporary support as necessary to ensure structural value and integrity of affected portion of work. Provide devices and methods to protect other portions of Project from damage.
   1. Provide protection from elements for that portion of Project that may be exposed by cutting and patching work.

3.03 CUTTING AND PATCHING

A. General: Provide openings in construction that are required for later work.
   1. Various Contractors: Be responsible to supply in advance, proper and sufficiently detailed information for openings.
   2. In event of failure to supply this advance information, required cutting shall be done only after concurrence of Architect and at expense of negligent party.

B. Cutting:
   1. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation or repairs.
   2. Employ the original installer or fabricator to perform cutting and patching for:
      a. Weather-exposed or moisture-resistant elements.
      b. Sight-exposed finished surfaces.
   3. Employ the original installer or fabricator to perform cutting and patching for:
      a. Weather-exposed or moisture-resistant elements.
      b. Sight-exposed finished surfaces.
   4. Cut asphalt, concrete or masonry using masonry saw or core drill as applicable. Pneumatic tools will not be allowed unless accepted by Architect.

C. Core Drilling Through Structural Concrete Floors:
   1. Coordinate exact location of core drilling with Architect before core drilling or cutting structural concrete floor.
   2. Do not core drill or cut concrete joist stems or beams. Drilling will be allowed only at approved locations through thinner areas of concrete slab.
   3. Do not proceed with drilling until Architect's approval of exact location has been received.

D. Fitting: Execute fitting and adjustment of products to provide finished installation to comply with specified products, functions, tolerances and finishes. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

E. Patching: Wherever any pipe, conduit, duct, steel member, bracket, equipment, or other material penetrates or passes through fire-resistant wall, ceiling or floor, completely seal voids in construction with cement grout, plaster, or fire-resistant material, embedding sealing material full thickness of wall, ceiling or floor.

F. Finishing: Where surfaces are exposed, finish with same materials specified in finish schedule or material that is on constructed surfaces.
   1. Work: Accomplish with mechanics skilled in finish trade.
   2. Refinish entire surfaces as necessary to provide even finish to match adjacent finishes:
      a. For continuous surfaces, refinish to nearest intersection.
      b. For assembly, refinish entire unit.

END OF SECTION

SECTION 01 81 13

SUSTAINABLE DESIGN REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. The Design-Build Contractor shall design and construct the project in compliance with all applicable State of California and local sustainable design codes and regulations.
   2. Design and construct the project in compliance with the 2016 California Green Building Standards (CALGreen).
   3. Building commissioning shall be included in the design and construction processes of the building project to verify that the building's energy related systems are installed, calibrated and perform according to the owner's project requirements, basis of design and construction documents.

B. Application for USGBC LEED certification or other sustainable design certification is not a requirement for this project.

1.02 REFERENCES

A. Abbreviations and Acronyms:
   1. CxA: Commissioning Authority.

B. Definitions: Meaning of the following terms as used in these Specifications.
   1. Adhesive: Any substance used to bond one surface to another by attachment. Includes adhesive bonding primers.
   2. Interior: For purposes of this Section, "interior" shall mean inside the weatherproofing system and applied on-site.
   3. Sealant: Any material with adhesive properties that is formulated primarily to fill, seal, or waterproof gaps or joints between two surfaces. Sealants include sealant primers and caulks.

C. Reference Standards: Comply with the following.
   1. California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
   2. South Coast Air Quality Management District (SCAQMD) Rule No. 1168.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA

A. Design and construct the project in compliance with the 2016 California Green Building Standards (CALGreen).
   1. This facility is category OSHPD 1 for purposes of determining the CALGreen chapters and sections adopted by the OSHPD.
   2. Comply with Appendix A6.1 – Voluntary Standards for Health Facilities [OSHPD 1, 2 & 4].

2.02 PERFORMANCE

A. Energy Performance: If the Performance Approach of CALGreen Appendix A6.1 is used, minimum performance shall meet CALGreen Tier 1.

2.03 EQUIPMENT

A. All equipment and appliances shall be ENERGY STAR labeled if ENERGY STAR is applicable to that equipment or appliance.

B. Any appliance for which there is a California standard established in the Appliance Efficiency Regulations may be installed only if the manufacturer has certified to the Commission, as specified in those regulations, that the appliance complies with the applicable standard for that appliance.

2.04 FORMALDEHYDE LIMITS FOR MATERIALS

A. Formaldehyde limits shall be as follows:
   1. Hardwood Plywood: 0.05 ppm.
   2. Particleboard: 0.09 ppm.
   3. Medium-Density Fiberboard (MDF): 0.11 ppm.
   4. Thin MDF: 0.13 ppm.

B. Submittals: Submit third-party certification that formaldehyde emissions comply with standards of CARB Air Toxic Control Measure (ATCM) for Formaldehyde Emissions from Composite Wood Products, and with ANSI A208.1 or A208.2 as applicable, when tested in accordance with ASTM E1333.
   1. Provide documentation that composite wood and agrifiber products contain no urea-formaldehyde resins.

2.05 VOC LIMITS FOR ADHESIVES

A. Provide low VOC types as recommended by the manufacturer of the material being installed. Adhesives shall comply with SCAQMD Rule 1168 and CALGreen.

B. For interior applications use adhesives that comply with the following limits for VOC content when calculated according to SCAQMD Method 304, 316A or 316B:
   1. Indoor Carpet Adhesives: 50 g/L
   2. Carpet Pad Adhesives: 50 g/L
   3. Outdoor Carpet Adhesives: 150 g/L
   4. Wood Flooring Adhesive: 100 g/L
   5. Rubber Floor Adhesives: 60 g/L
   6. Subfloor Adhesives: 50 g/L
   7. Ceramic Tile Adhesives: 65 g/L
   8. VCT And Asphalt Tile Adhesives: 50 g/L
   9. Dry Wall And Panel Adhesives: 50 g/L
   10. Cove Base Adhesives: 50 g/L
   11. Multipurpose Construction Adhesives: 70 g/L
   12. Structural Glazing Adhesives: 100 g/L
   13. Single-Ply Roof Membrane Adhesives: 250 g/L
   14. CPVC Solvent Cement: 490 g/L
   15. PVC Solvent Cement: 510 g/L
   16. ABS Solvent Cement: 325 g/L
   17. Plastic Cement Welding: 250 g/L
   18. Adhesive Primer For Plastic: 550 g/L

19. Contact Adhesive: 80 g/L
20. Special-Purpose Contact Adhesives (Contact Adhesives That Are Used to Bond Melamine-Covered Board, Metal, Unsupported Vinyl, Rubber, or Wood Veneer 1/16 Inch or Less in Thickness to Any Surface): 250 g/L
21. Structural Wood Member Adhesive: 140 g/L
22. Top and Trim Adhesive: 250 g/L
23. Metal to Metal Substrate Applications: 30 g/L
24. Plastic Foams: 50 g/L
25. Porous Materials Substrate Applications Other Than Wood: 50 g/L
26. Wood Substrate Applications: 30 g/L
27. Fiberglass Substrate Applications: 80 g/L

2.06 VOC LIMITS FOR SEALANTS

A. For interior applications use sealants that comply with the following limits for VOC content when calculated according to SCAQMD Method 304, 316A or 316B:
   1. Architectural Sealants: 250 g/L
   2. Architectural Sealant Primer:
      a. Nonporous: 250 g/L
      b. Porous: 775 g/L
   3. Modified Bituminous Sealant Primer: 500 g/L
   4. Other Sealant Primers: 750 g/L

2.07 VOC LIMITS FOR PAINTS AND COATINGS

A. For interior applications use paints, stains, and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the following chemical restrictions:
   1. Flat Coatings: 50 g/L.
   2. Nonflat Coatings: 100 g/L.
   3. Nonflat - High Gloss Coatings: 150 g/L.
   4. Basement Special Coatings: 400 g/L.
   5. Bond Breakers: 350 g/L.
   6. Concrete Curing Compounds: 350 g/L.
   7. Concrete/Masonry Sealers: 100 g/L.
   8. Dry-Fog Coatings: 150 g/L.
   9. Faux Finishing Coatings: 350 g/L.
   10. Fire-Resistive Coatings: 350 g/L.
   11. Floor Coatings: 100 g/L.
   12. Form-Release Compounds: 250 g/L.
   13. Graphic Arts Coatings (Sign Paints): 500 g/L.
   14. High-Temperature Coatings: 420 g/L.
   15. Industrial Maintenance Coatings: 250 g/L.
   16. Low Solids Coatings: 120 g/L.
   17. Magnesite Cement Coatings: 450 g/L.
   18. Mastic Texture Coatings: 100 g/L.
   19. Metallic Pigmented Coatings: 500 g/L.
   20. Multi-Color Coatings: 250 g/L.
   21. Pretreatment Wash Primers: 420 g/L.
   22. Primers, Sealers, and Undercoaters: 100 g/L.
   23. Reactive Penetrating Sealers: 350 g/L.
   24. Recycled Coatings: 250 g/L.
   25. Rust-Preventive Coatings: 250 g/L.
   26. Shellacs, Clear: 730 g/L.
   27. Shellacs, Pigmented: 550 g/L.

28. Stains: 250 g/L.
29. Stone Consolidants: 450 g/L.
30. Swimming Pool Coatings: 340 g/L.
31. Tub and Tile Refinish Coatings: 420 g/L.
32. Waterproof Membranes: 250 g/L.
33. Wood Coatings: 275 g/L.
34. Wood Preservatives: 350 g/L.
35. Zinc-Rich Primers: 340 g/L.

2.08 FLOORING SYSTEMS

A. Flooring materials shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions shall not exceed 16.5 micrograms/cu. m or 13.5 ppb, whichever is less. Where postmanufactured coatings or applications have not been applied, concrete; ceramic and concrete tile; clay and concrete pavers; metal; and organic-free, mineral-based flooring shall be deemed to comply with this requirement.

2.09 ACOUSTICAL CEILINGS

A. Acoustic ceilings shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions shall not exceed 16.5 micrograms/cu. m or 13.5 ppb, whichever is less.

2.10 WALL SYSTEMS

A. Wall systems shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions shall not exceed 16.5 micrograms/cu. m or 13.5 ppb, whichever is less. Where postmanufactured coatings or applications have not been applied, concrete, concrete masonry, clay masonry, gypsum plaster, ceramic and concrete tile, metal, and organic-free, mineral-based materials shall be deemed to comply with this requirement.

2.11 INSULATION

A. Insulation shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions shall not exceed 16.5 micrograms/cu. m or 13.5 ppb, whichever is less, except for insulation manufactured without formaldehyde.

2.12 COMPOSITE WOOD AND AGRIFIBER PRODUCTS

A. Engineered Wood Products:
   1. Determine formaldehyde concentrations in air from wood products under test conditions of temperature and relative humidity in accordance with ASTM D6007 or E1333.
   2. Determine Volatile Organic Compounds {VOC), excluding formaldehyde, emitted from manufactured wood-based panels in accordance with ASTM D6330.

B. Composite Panel Products: Use only composite wood products approved by the California Air Resources Board (CARB) as no-added formaldehyde (NAF) based resins or ultra-low-emitting formaldehyde (ULEF) resins.
   1. Determine formaldehyde concentrations in air from wood-based panel products under test conditions of temperature and relative humidity in accordance with ASTM D6007 or E1333.
   2. Determine Volatile Organic Compounds {VOC), excluding formaldehyde, emitted from manufactured wood-based panels in accordance with ASTM D6330.
   3. Particleboard Manufacturer's, MDF Manufacturer's, and Melamine Laminator's Facility: CPA EPP (Environmentally Preferable Product) Downstream Licensed Facility.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT

A. Construction Waste Diversion: Establish a construction waste management plan for the diverted materials or meet local construction and demolition waste management ordinance, whichever is more stringent.

B. Construction Waste Reduction: Recycle and/or salvage for reuse a minimum of 50 percent of the nonhazardous construction and demolition debris or meet a local construction and demolition waste management ordinance, whichever is more stringent. Calculate the amount of materials diverted by weight or volume, but not by both.

END OF SECTION

SECTION 01 82 13

FOUNDATION PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 WORK RESULTS

A. Design and build foundations and other substructures to support the new buildings and building additions.

B. Foundation design, foundation type, and subgrade proposed to be built by the Contractor shall be based on recommendations contained in the Geotechnical Investigation Report which shall be provided to the Contractor by the Owner, and shall be in compliance with California Building Code.

C. The foundation design shall be reinforced cast-in-place concrete.

D. Waterproofing:
   1. Waterproof outside face of all exterior foundation walls where exterior grade is above interior finish floor.
   2. Provide complete waterproofing system for elevator pits, covering bottom of pit slab and extending over exterior side of all perimeter walls to bottom of floor slab.

E. Foundation Excavation Support and Protection: Design and install shoring system as necessary to protect adjacent buildings, utilities, and improvements from movement, settlement or collapse.

1.02 EXISTING CONDITIONS

A. Geotechnical Data: TCMC will engage a separate consultant to prepare a Geotechnical Report, which will be provided to the Design-Builder for reference. The Owner will not make any guarantees that the information contained therein is accurate, nor will the Owner guarantee conditions indicated to exist at locations of test holes will prevail at other locations on site.

B. Existing Underground Utilities: TCMC will provide the Design-Builder with available as-built documentation of existing underground utilities. The Owner will not make any guarantees that the information contained therein is accurate. The Design-Builder shall be responsible, before excavation begins, to physically locate underground facilities in accordance with applicable state law and regulations.

C. Existing TCMC Building Foundations: The original construction drawings indicate that the existing building is supported by a spread footing foundation system.
   1. Original Construction Drawings: Materials and assemblies indicated on original drawings will be made available for reference to the Design-Builder. The Owner makes no guarantee of their reliability, accuracy or completeness. Alterations made during original construction and subsequent work should not be expected to be indicated. Reference to the original drawings does not relieve the Design-Builder from the obligation to field verify existing materials and conditions.

PART 2 PRODUCTS

2.01 FOUNDATION DESIGN CRITERIA

A. Foundation Type and Load Capacity: Follow the recommendations of the Geotechnical Report provided by the Owner, including recommendations regarding the design depth for footings, allowable soil bearing pressure, equivalent fluid densities or lateral earth pressure coefficients for the design of earth retaining structures and building components, modulus of subgrade reaction, and any other pertinent data derived from the recommendations of the Geotechnical Report.

B. Settlement: Foundation design shall follow the recommendations of the Geotechnical Report provided by the Owner regarding limitations on foundation settlement, and, in particular, shall take measures to limit differential settlement where new building additions adjoin an existing building.

C. Foundation Excavation and Support: Contractor shall be solely responsible for design of both temporary and permanent shoring systems as required to resist lateral earth pressures and surcharges due to traffic, storage of materials, adjacent structures and all other loads imposed on adjacent soil.
   1. Comply with recommendations of soil and foundation investigation.
   2. Type of system used must be compatible with construction procedures and structural details and be acceptable to the Owner.
   3. Protect existing active sewer, water, gas electricity and other utility services and structures. Because of adjacent underground utilities, tie-back bracing systems, if used, must be carefully constructed to avoid any damage to utilities.
   4. System design and calculations must be acceptable to local authorities having jurisdiction.

PART 3 EXECUTION

3.01 PREPARATION

A. Layout and Elevation Controls: Establish lines, levels and locations by instrumentation. See Section 01 71 23 Field Engineering.

B. Locating Underground Facilities: Comply with applicable state law and regulations and with the Common Ground Alliance Excavation Best Practices.
   1. Unless otherwise specified in state law, call the One Call Center for facility location at least two working days, not to include the day of notice, and no more than ten working days prior to beginning excavation.
      a. Underground Service Alert Southern California: 800/227-2600; www.digalert.org.
   2. Prior to excavation, verify locate markings and check for evidence of unmarked utilities.
   3. Underground Facility Avoidance: Plan excavations to avoid damage to and minimize interference with existing underground facilities in or near the work area.
   4. Marking Preservation: Protect and preserve staking, marking, and other designations for underground facilities until no longer required for proper and safe excavation.

C. Foundation Excavation and Support: Wherever shoring is required, locate the system to clear permanent construction and to allow workmen access to construct new foundations. Provide shoring system adequately anchored and braced to resist earth and hydrostatic pressures.
   1. Coordinate with surveyor employed by Contractor to provide surveying and layout as required to install shoring.
      a. Surveyor shall survey adjacent structures and improvements, establishing exact elevations at fixed points to act as benchmarks.
      b. Surveyor shall clearly identify benchmarks and record existing elevations.

c. During excavation, Surveyor shall re-survey benchmarks weekly, maintaining accurate log of surveyed elevations for comparison with original elevations. Promptly notify Owner if changes in elevations occur or if cracks, sags or other damage is evident.

2. Repair any damage or replace damaged existing adjacent improvements.
3. Remove temporary excavation support system components when no longer required. Coordinate with backfill of foundation walls.

3.02 INSTALLATION

A. Excavation and Backfill for Foundations: Section 31 00 00 Earthwork.

B. Concrete Work: Division 03 Concrete.

3.03 SITE QUALITY CONTROL

A. General: See Section 01 45 20 Quality Control Services.

B. Subgrade Testing and Inspection: Verification of foundation subgrade conditions shall be performed by a Geotechnical Engineer employed by the Owner who will place qualified personnel on site during earthwork operations as necessary.

C. Concrete Testing and Inspection: Concrete work shall be inspected and tested in accordance with Section 01 45 20 and the Special Inspection provisions of the CBC.

END OF SECTION

SECTION 01 83 13

SUPERSTRUCTURE PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Design, fabricate, and erect structural systems for new buildings and additions to existing buildings in accordance with the California Building Code and referenced standards. Includes, but is not limited to, the following system components:
      a. Floor structural framing, decks, slabs and toppings.
      b. Columns.
      c. Roof structural framing, joists, and decks.
      d. Seismic and wind lateral force resisting systems.
      e. Fireproofing.
      f. Stairs.
   2. Expansion Control: Provide seismic rated expansion joints between existing building and large additions and within new buildings as required by structural analysis.

B. Related Requirements:
   1. Concrete Work: Division 03 Concrete.
   2. Steel Work: Division 05 Metals.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Reference Standards: Comply with the following standards as applicable and as referenced in the CBC.
   1. American Concrete Institute (ACI) Standards:
      a. ACI 318-14 – Building Code Requirements for Structural Concrete.
      b. Other standards as referenced in Division 03 Concrete.
   2. American Institute of Steel Construction (AISC) Standards:
      a. Design, Detailing, Fabrication and Erection: ANSI/AISC 360-10 - Specification for Structural Steel Buildings.
      b. Other standards as referenced in Division 05 Steel.
   3. American Society of Civil Engineers (ASCE) Standards:
      a. ASCE/SEI 7-10 – Minimum Design Loads for Buildings and Other Structures.
   4. American Welding Society (AWS) Standards:
      a. AWS D1.1/D1.1M:2015 – Structural Welding Code – Steel.
      b. AWS D1.3/D1.3M:2008 – Structural Welding Code - Sheet Steel.
   5. The Masonry Society (TMS) Standards:
      a. TMS 402/602-16 – Building Code Requirements and Specification for Masonry Structures.

C. Guide References and Standard Practices: Comply with recommendations of the following except as otherwise specified in this Project Manual.
   1. American Concrete Institute (ACI) Committee Reports, Guides, Standard Practices, and Commentaries:
      a. ACI 302.1R-15 – Guide for Concrete Floor and Slab Construction.
      b. ACI 302.2R-06 – Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA

A. Structural Design Loads: Structural loading criteria shall be developed for the building using site and project specific criteria, the CBC, and the criteria and procedures indicated below.
   1. Dead Loads: Minimum design dead loads for common building materials shall be obtained from ASCE/SEI 7 as applicable. Loads for materials not listed in ASCE/SEI 7 and equipment loads shall be obtained from other recognized sources.
   2. Roof Live Loads: A minimum roof live load of 20 psf shall be provided for in the design to account for construction and maintenance loads. The minimum roof live load shall not be reduced. The minimum roof live load shall be applied in accordance with ASCE/SEI 7 and shall be used as a loading condition for the roof.
   3. Floor Live Loads: In accordance with the CBC.
   4. Wind Loads: Wind loads for both the main wind force resisting system and for components and cladding shall be determined in accordance with the CBC using the following parameters:
      a. Basic Wind Speed: 115 mph.
      b. Wind Exposure Category: C
   5. Seismic Loads: Seismic loads shall be determined in accordance with the CBC. The total lateral seismic force shall be determined using the following parameters:
      a. Site Location:
         1) Longitude: 117.29178 degrees West.
         2) Latitude: 33.18425 degrees North.
      b. Design Spectral Response Acceleration:
         1) S_{DS}: 0.760
         2) S_{D1}: 0.435.
      c. Seismic Importance Factor, I_p: 1.5
      d. Seismic Force Coefficients:
         1) đp: 1.0
         2) R_p: 2.5
      e. Seismic Design Category: D.
   6. Load Combinations: In accordance with the CBC, AISC 325 and ACI 318.

B. Deflections: Deflections of structural members and systems shall not be greater than allowed by applicable codes, references, and material standards (CBC, ACI, AISC, etc.) and shall not impair the serviceability of the structure. Deflection limits needed to restrict damage to ceilings, partitions, and other fragile non-structural elements shall not exceed the deflection over span length limits permitted by the CBC.

C. Vibrations: Structural design shall include mitigation of excessive structural vibrations.
   1. Mitigate floor vibrations due to live loads noticeable to occupants of the building.
   2. Limit structural vibrations due to wind loads on the exterior enclosure.

2.02 CAST-IN-PLACE CONCRETE STRUCTURAL SYSTEMS

A. Design and build cast-in-place concrete structural systems in accordance with the CBC and applicable standards of the American Concrete Institute as referenced by the CBC.

B. See Division 03 Concrete for related requirements.

C. Minimum Compressive Strength of Concrete: For each application, design concrete mix to comply with the CBC and ACI 318 as required by the structural design requirements and to meet or exceed the standards of ACI 318 for concrete durability.

D. Post-Tensioned Concrete Structural Systems: Design and install post-tensioned concrete work in conformance with ACI 318.
   1. Materials: Comply with ACI 318 and PTI Guide Specifications for Post-Tensioning Materials.
      a. Unbonded Tendons: Completely shop coated with non-volatile, low-friction, mineral oil base grease with rust-preventing additive.
         1) Coating Material: Remain ductile, free from cracks, and shall not become fluid within temperature range of -20 deg F to +140 deg F.
      b. Anchorages for Unbonded Tendons: Develop 100 percent of minimum specified ultimate strength of tendons with minimal permanent deformations that will not decrease required ultimate strength of anchorage.
      c. Sheathing for Unbonded Tendons: Consist of durable, waterproof material capable of maintaining tendon tightly bundled during shipment, placing and concreting, and shall be continuous over tendon length to remain unbonded.
   2. Post-Tensioned Concrete Slab Design Drawings: Include:
      a. Layout plan, indicating slab thicknesses, top elevations and locations of steps and recesses, and locations and depths of turned down edges and interior thickened slabs.
      b. Tendon layout and dimensions locating tendons in plan at all points. Detail horizontal curvature of tendons at blockouts and anchorages. Show openings in slabs and beams.
      c. Tendon profiles showing chair heights and location for each tendon and method of tendon support.
      d. Calculated elongation of each tendon at jacking point.
      e. Details of special reinforcement in tendon anchorage zones required for contemplated anchorage devices and arrangement.
      f. Details, location and arrangement of tendon dead end and stressing end anchorage devices.
      g. Location and details of construction joints.
      h. Tendon and mild steel placing sequence.
   3. Post-Tensioned Concrete Design Calculations:
      a. Average final effective force in each tendon after all losses. Calculated final effective force at any point along tendon profile shall not be less than 90 percent, nor greater than 115 percent of average final effective force in tendon. Additional short tendons may be added at Contractor's option and expense to overcome effect of losses at points distant from stressing points.
      b. Calculate friction losses along tendon in accordance with ACI 318, including effects of both horizontal and vertical curvature and based on friction and wobble coefficients determined from field tests on other projects of similar size, proportions, material properties, and construction techniques, made within last year. Field verification of friction and wobble coefficients prior to stressing operations on first portion of work constructed is required.
      c. Size and number of tendons required to achieve final design forces indicated on Drawings based on average final effective force per tendon computed above.
   4. Safety: Be responsible for taking precautions to ensure that stressing operation is conducted in safe manner.
   5. Tendon Supplier: Provide initial job site instruction and supervision of Contractor's personnel in stressing operation, and necessary calibrated stressing units. In order to ensure that proper calibration is maintained, exercise care in handling stressing equipment.5. Concrete Strength: Do not apply prestressing force until concrete in members has reached 75 percent of specified design strength. Strength of concrete in place shall be determined from tests of field-cured cylinders made by testing agency.

6. Prestressing: Acceptable if total elongation for all tendons in same direction of element is within 95 percent and 100 percent of total calculated elongation of tensions, and each individual measured elongation is within 90 percent and 115 percent of its calculated value.
    a. For flat plate structures with banded arrangement of tendons, element to which this criteria shall apply is defined as all of tendons in one band of banded direction or all of tendons in one bay of uniform direction.
    b. For slab systems prestressed in one direction, element is defined as all of tendons in one bay of system.
7. The cable ends shall be cut off and cone holes grouted flush with edge of slab.
8. Design-Build Contractor shall be responsible for coordinating the placement of sleeves and all other items penetrating through post-tensioned concrete slabs. Contractor shall prepare and submit a drawing showing the locations of all sleeves and other items penetrating post-tensioned slabs.

2.03 STRUCTURAL STEEL SYSTEMS

A. Provide structural steel framing and support members, tension rods and cables, sag rods which form part of structural framing, purlins, pipe or tube columns and struts, complete with required braces, hangers, connection plates, welds, washers, bolts, nuts, shims, anchor bolts and templates.

B. Reference Standards for Structural Steel Framing: See Section 05 12 00 Structural Steel Framing.

C. Regulatory Requirements:
1. Structural steel work shall be subject to all applicable provisions of federal, state and local building and safety codes including Occupational Safety and Health Administration (OSHA) Safety and Health Standards for the Construction Industry, OSHA – 29 CFR Part 1926 "Safety Standards for Steel Erection " (OSHA Subpart R), and all other codes referenced therein.
    a. The Drawings and Specifications shall not convey or be construed as eliminating any requirements specified by OSHA Subpart R.
    b. Items that may be considered trip hazards shall be field attached.

D. Steel Joists:
1. Comply with Standard Specifications of Steel Joist Institute (SJI) as applicable:
    a. ANSI SJI-K-2010 – Standard Specification for Open Web Steel Joists, K-Series, Effective December 31, 2010.
    b. ANSI SJI-LH/DLH-2010 – Standard Specification for Longspan Steel Joists, LH-Series and Deep Longspan Steel Joists, DLH-Series, Effective December 31, 2010.
    c. ANSI SJI-JG-2010 – Standard Specification for Joist Girders, Effective December 31, 2010.
2. Manufacturer Qualifications: Current designs checked by the Steel Joist Institute and found to conform to its standard specifications and load tables, and each plant inspected and certified by the Steel Joist Institute to manufacture the products incorporated into the structural design of the Project.

E. Steel Decking:
1. Reference Standards:
    a. American National Standards Institute (ANSI) / Steel Deck Institute (SDI) Standards: www.sdi.org.
        1) ANSI/SDI RD1.0-2017 – Standard for Steel Roof Deck.
        2) ANSI/SDI C1.0-2017 – Standard for Composite Steel Floor Deck.
        3) ANSI/SDI NC1.0-2017 – Standard for Non-Composite Steel Floor Deck.

4) ANSI/SDI QA/QC-2017 – Quality Control and Quality Assurance for Installation of Steel Deck.
5) SDI MOC3 - Manual of Construction with Steel Deck.

b. ANSI/AISI Standards:
1) Materials and Computation of Structural Properties: AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members.

c. American Welding Society (AWS) Standards:
1) AWS D1.3/D1.3M:2008 – Structural Welding Code - Sheet Steel.

2. All steel deck and mechanical fasteners shall have current published ICC-ES Evaluation Report indicating ICC approval as acceptable method of construction under the IBC. Comply with all limitations on use of deck and fasteners stipulated in Evaluation Report.

3. Steel Roof Deck:
a. Steel for Roof Deck Units: Conform to Section A3 of the AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
1) Prime Painted Sheet Steel: ASTM A1008-16, Grade C, D or E.
2) Galvanized Sheet Steel: ASTM A653 Structural Quality, Grade 33 or higher.
3) Minimum Yield Strength: 33,000 psi.

b. Performance Requirements: Design to meet the following structural criteria.
1) Maximum Flexural Working Stress: 20,000 psi.
2) Maximum Roof Deflection: 1/240 span length, center to center of supports under live load.

4. Composite Floor Deck:
a. Performance Requirements: Design to meet the following structural criteria.
1) Maximum Flexural Working Stress in Metal Deck Under Dead Load Plus Construction Load: 0.6 times minimum yield stress, 36 ksi maximum.
2) Live Load Stress: Yield stress less dead load flexural stress divided by 2.
3) Concrete: 0.45 times specified 28-day strength for allowable strength design.
4) Construction Loads: 20 psf uniformly distributed or 150 pounds concentrated at any point on a 1'-0 wide section of deck.
5) Maximum Floor Deflection: 1/180 span length but not to exceed 3/4 inch, center-to-center of supports under weight of wet concrete plus construction loads. 1/360 span length, center-to-center of supports under superimposed dead load plus live load.

5. Finish for all Composite Floor Deck and for Roof Deck to Receive Fireproofing: Galvanized, ASTM A924 with a minimum coating class of G60 as defined in ASTM A653.

2.04 FLOOR SLABS

A. Follow recommendations of ACI 302.1R and ACI 302.2R.

B. Underslab Vapor Retarders: Provide vapor barrier directly below floor slabs-on-grade meeting requirements of Section 07 26 16 Below-Grade Vapor Retarders.

C. Finish concrete floor slabs to within tolerances specified in Section 03 35 00 Concrete Finishing.

D. Cure floor slabs in accordance with Section 03 39 00 Concrete Curing using methods compatible with floor finishes to be applied.

2.05 STAIRS

A. Provide stairs in accordance with CBC requirements utilizing structural materials compatible with those used for the building framing system.
1. Steel Stairs: Comply with Section 05 51 00 Metal Stairs.

2.06 RAILINGS AND GUARDRAILS

A. Design and construct railings and guardrails for stairs, balconies, ramps, landings, and similar floor edge conditions in accordance with the CBC.

B. Structural Design Criteria:
   1. Railings, guardrails, and railing attachments shall be designed to support all load conditions required by the CBC.
      a. Continuous Force Applied to Top Rail in Any Direction: 50 pounds per lineal foot.
      b. Concentrated: 200 pound lateral force applied in any direction at any point on the rail.
      c. Wind and Seismic Loading: In accordance with the CBC.

C. Pipe Railing Systems: Comply with ANSI/NAMM AMP 521-01 (R2012) – Pipe Railing Systems Manual Including Round Tube, Fourth Edition.

D. Provide handrails and handrail brackets where stairs abut walls.

PART 3 EXECUTION

3.01 SITE QUALITY CONTROL

A. Special Inspection and Testing: Owner will provide special inspection and testing in accordance with the CBC.

END OF SECTION

ECTION 01 83 16

EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
1. Design and build exterior vertical enclosure systems for each building or building addition in accordance with the CBC and to provide specified performance.
a. Exterior vertical enclosure includes the following components:
1) Exterior wall assemblies.
2) Windows.
3) Exterior doors.
4) Storefront and curtain wall systems.
2. Design and build exterior vertical enclosures for building additions to be aesthetically compatible with the existing building.
3. For purposes of this RFP, the initial basis of design exterior wall finish systems shall be:
a. Curtain wall.
b. Exposed cast-in-place concrete, smooth texture.
c. Aluminum composite wall panels.
3. Design and construct exterior enclosure systems to include continuous insulation, air barrier and water resistant barrier in accordance with the code.
4. Test air barrier system for compliance with performance specifications.
5. Test windows, storefronts, and curtain wall systems to verify resistance to moisture infiltration.
6. Design and build helipad on roof of new building addition.

B. Related Requirements:
1. Structural Design Loads: Section 01 83 13 Superstructure Performance Requirements.
2. Exterior Horizontal Enclosure Performance Requirements:
a. Section 01 83 19 Roofing Performance Requirements.
b. Section 01 83 21 Rooftop Heliport Performance Requirements.
3. Cold-Formed Metal Framing: Section 05 40 00.
4. Gypsum Sheathing: Section 06 16 43.
5. Thermal Insulation: Section 07 21 00.
6. Joint Sealants: Section 07 92 00.
7. Door Hardware: Section 08 71 00.
8. Glazing: Section 08 80 00.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Abbreviations and Acronyms:
1. ACM: Aluminum composite material.

C. Definitions: Meaning of the following terms as used in these Specifications.
1. Air Barrier Assembly: A combination of air barrier materials and building components that are designated and designed within the building envelope to act as a continuous barrier to the movement of air.
2. Air Barrier Material: A building product designed and constructed to provide the primary resistance to airflow through the building envelope.

3. Air Barrier System: The combination of assemblies used in building construction to create a plane of air tightness throughout the building envelope and to control air leakage. Includes, at a minimum, opaque walls, fenestration, roof/ceiling, and floor/foundation.
4. Air and Weather Barrier: An assembly of air and water-resistive barrier materials that combines the functions of an air barrier and a water-resistive weather barrier.
5. Air Leakage: The movement/flow of air through the building envelope, which is driven by either or both positive (infiltration) or negative (exfiltration) pressure differences or test pressures across the building envelope.
6. Air Leakage Rate: The volume of air movement/unit time across the building envelope.
7. Air Tightness: Property of a building envelope which will inhibit air leakage, air tightness is determined by measuring the airflow rate required to maintain a specific induced test pressure.
8. Building Envelope: The boundary or air barrier separating the interior conditioned space of a building from the outside environment including below-grade exterior walls and floors.
9. Conditioned Space: Any mechanically heated and/or cooled space.
10. Single Zone: A space in which the pressure difference between any two places differs by no more than 10-percent of the inside to outside pressure difference.
11. Storefront: A non-residential, non-load bearing assembly of commercial entrance systems and windows designed to span between the floor and the structure above, designed for high use/abuse and strength, and for field fabrication and glazing. Storefront includes punched windows, ribbon windows, and window wall where the same framing system used for first floor entrance and window framing is to be utilized for windows at other locations and for other floors.
12. Test Boundary: Boundary of the portion of the building which is actually tested.
13. Test Fan: A calibrated variable speed fan that is typically temporarily mounted in an opening in the envelope for the purpose of providing a test pressure and for measuring the flow rate required to establish that test pressure. Other commonly used terms are "blower door" and "door fan".
14. Water-Resistive Barrier: The assembly of water-resistive materials and accessories that direct incidental water that may pass through the exterior finish wall cladding and primary rain screen out of the wall cladding while providing moisture protection for underlying sheathing materials.
15. Weather Barrier: The water-resistive barrier that protects walls of the exterior enclosure, including joints and junctions to abutting construction such as the perimeter of door and window openings, from the infiltration of moisture due to weather.

D. Reference Standards: Comply with the following except as otherwise specified in this Project Manual.
   1. American Architectural Manufacturers Association (AAMA); www.aamanet.org:
      a. AAMA 501.2-09 – Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.
      b. AAMA 503-14 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems.
      c, AAMA 611-14 - Voluntary Specification for Anodized Architectural Aluminum.
      d. AAMA 2604-13 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
   2. ASTM International Standards; www.astm.org:
      a. ASTM E779-10 - Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
      b. ASTM E2110-11 - Standard Terminology for Exterior Insulation and Finish Systems (EIFS).

E. Guide References and Standard Practices: Comply with recommendations of the following.
   1. American Architectural Manufacturers Association (AAMA):
      a. AAMA CW 10-12 - Care and Handling of Architectural Aluminum from Shop to Site.

1.03 SUBMITTALS

A. Qualification Statements:
   1. Air Barrier Testing Agency Qualifications: Submit a minimum of 3 buildings, each 10,000 square feet or larger (non-residential) that have been tested using ASTM E779. The information submitted must include a building description, building size (SF), address and test results.

B. Certification of Compliance: Submit a Certification of Compliance showing building air leakage test results to the Building Official with copies to the Owner and the Architect.

1.04 WARRANTIES

A. Curtain Wall Warranty: Endorse and forward to the Owner a five year written warranty covering work performed under this section. Warranty shall cover replacement costs of remedying leaks, system failure, aluminum panel or glass fallout, sealant failure, or finish failure and other damage to the building or persons and property caused by system failure. Warranty shall cover defective materials including glazing and caulking specified in other sections, workmanship and performance and shall provide for the prompt repair of leaks at no additional cost to the Owner. Warranty shall commence on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SYSTEMS

A. Vertical Building Enclosure System: When aluminum curtain wall is part of a building enclosure system, including entrances, entrance hardware, windows, storefront framing and related products, provide building enclosure system products from a single source manufacturer.

2.02 GLAZED ALUMINUM CURTAIN WALL PERFORMANCE REQUIREMENTS

A. Thermal Movement: Completed curtainwall/window wall systems shall be capable of withstanding expansion and contraction of components caused by a temperature range from minus 20 deg F to plus 150 deg F without buckling, stress on glass, stress or breakage of veneer stone, edge seal failure, excess stress on curtainwall/window wall structure, anchors and fasteners or reduction in performance.

B. Static Pressure Air Infiltration: Completed systems shall have a maximum infiltration of 0.06 cfm/sq. ft. at 1.56 psf when tested in accordance with ASTM E283.

C. Water Penetration (Static Pressure): No uncontrolled water other than condensation of the indoor face of any curtainwall/window wall component when tested in accordance with ASTM E331, with differential static pressure equal to 20 percent of the inward acting design wind load pressure but not less than 4.0 psf.

D. Structural Performance: Complete curtainwall/window wall systems shall be designed for seismic resistance and to withstand positive and negative wind pressure loading calculated in accordance with CBC, with a safety factor of 1.5 applied; loads action perpendicular to wall plane. Test per ASTM E330 Procedure A.
   1. Maximum Allowable Deflection of Framing: L/175.

2. Maximum Allowable Deflection of Metal Panels: L/60.
3. In Plane Deflection on Any Glass Lite at Interior or Exterior Corner Mullions: 1/4-inch.
4. Maximum Allowable Deformation in a Framing Member: 0.20 percent.
5. Maximum 25 percent reduction in glass bite.
6. No permanent damage to anchors and fasteners.

E. Complete system to act as a rain screen, draining to exterior any water entering the frame cavity.
1. Water penetrating curtain wall/window wall systems shall be contained within the systems by gutters and drained to exterior by weep holes. No uncontrolled water infiltration is allowed.

F. Anchors: Capable of transmitting design loads and thermal expansion loads assigned to a single anchor; with a safety factor of 2.5.

2.03 ALUMINUM-FRAMED STOREFRONT PERFORMANCE REQUIREMENTS

A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:
a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.
d. Loosening or weakening of fasteners, attachments, and other components.

B. Wind Load: Fabricate and install framing systems to withstand component wind forces calculated in accordance with the CBC, with maximum deflection of 1/175 of span. Reinforce framing systems as required to meet criteria.

C. Air Infiltration:
1. Fixed Framing and Glass Area: Not exceed 0.06 cfm/ft^2 of fixed area when laboratory tested in accordance with ASTM E283.
2. Entrance Doors:
a. Pair of Doors: Maximum air leakage of 1.0 cfm/sq. ft. (5.08 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
b. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. (2.54 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

E. Water Infiltration: No water penetration at test pressure of 6.24 psf when laboratory tested in accordance with ASTM E331.

F. Fabricate door and frame system to withstand 40 years of 4,000 open/close cycles per day.

2.04 AIR BARRIER PERFORMANCE REQUIREMENTS

A. The building thermal envelope of all new buildings, additions, and buildings undergoing major renovations included in this Project shall have an air leakage rate that does not exceed 0.40 cfm per square foot of the total building envelope area at a differential pressure of 75 Pa.

B. The building thermal envelope shall be constructed with a continuous air barrier that complies with the code requirements to control air leakage into, or out of, the conditioned space. The Design-Build Contractor shall be responsible to make the air barrier continuous, to seal all

penetrations, to weather-lap overlapping materials that also serve as the weather barrier, to pay special attention to continuity at roof/wall interfaces, to make the air barrier continuous at soffits and cornices, and to seal penetrations at doors, windows and skylights. The air barrier shall be tied into all penetrations including exhaust ducts, vents, scuppers, pipes, etc.

1. The air barrier shall be continuous throughout the building thermal envelope (at the lowest floor, exterior walls, and ceiling or roof), with all joints and seams sealed, and with sealed connections between all transitions in planes and changes in materials and at all penetrations.
2. The air barrier component of each assembly shall be joined and sealed in a flexible manner to the air barrier component of adjacent assemblies, allowing for the relative movement of these assemblies and components.
3. The air barrier shall be installed in accordance with the manufacturer's instructions and in such a manner as to achieve the performance requirements.
4. Where lighting fixtures with ventilation holes or other similar objects are to be installed in such a way as to penetrate the continuous air barrier, provisions shall be made to maintain the integrity of the continuous air barrier.
5. Compartmentalize spaces with combustion equipment that are under negative pressure and provide make-up air.

C. Air Barrier Materials Performance Requirements: Air permeability not to exceed 0.004 cfm/ft^2 under a pressure differential of 0.3 inches water (1.57 lb./ft^2) (0.02 L/s.m^2 under a pressure differential of 75 Pa) when tested in accordance with ASTM E2178.
   1. Air Barrier Materials: Listed and evaluated by the ABAA.

D. Air Barrier Assembly Requirements: Materials and components that have an average air leakage not to exceed 0.04 cfm/ft^2 under a pressure differential of 0.3 inches water (1.57 lb./ft^2) (0.02 L/s.m^2 under a pressure differential of 75 Pa) when tested in accordance with ASTM E2357.

E. Building Air Barrier Requirements: Test the completed building using both pressurization and depressurization and document that the air leakage rate of the building thermal envelope does not exceed 0.40 cfm/ft^2 under a pressure differential of 0.3 inches water in accordance with ASTM E779, ASTM E1827, or an equivalent approved method. Testing to be performed by an approved agency with sufficient airflow-producing equipment.

F. The Contractor shall be responsible for retaining the services of a qualified Testing Agency to perform the air barrier testing, and, in the event that the air barrier does not pass such tests, to investigate, identify, and seal all leaks, and to have the air barrier retested until it successfully passes the test.

2.05 AIR AND WEATHER BARRIER SYSTEMS

A. Products shall have current ICC Evaluation Service (ICC-ES) report finding that products to be provided under this section comply with or are suitable alternates to those specified in the International Building Code or later as water-resistive/moisture protection barriers, and that they comply with surface-burning characteristics required by code for these applications.

B. Performance: The weather barrier shall be capable of performing as a continuous vapor-permeable weather barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Weather barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

C. Performance Testing Requirements:
   1. Water Penetration Resistance: ASTM E331, pass. Treated panel with joints must not leak when tested against continuous water spray of 5 gallons per square foot per hour, and exposed to negative air pressure on the reverse side.
   2. Water Damage Resistance: ASTMD2247, pass. Tested sample with joints must not show signs of cracking, crazing, blistering during 2-week exposure to 100 degrees F, 100 percent RH.
   3. Weathering: AC212, pass. After 21 days of testing, samples must not show cracking or bond failure of the coating, nor leak during 5-hours of 22 inches of hydrostatic head pressure testing.
   4. Adhesion to Sheathing and Flashing: ASTMC297, pass. Samples must show strong adhesion of membrane to flashing materials and substrates when applied to substrate with and without joints. Passing requires minimum of 15 pounds per square inch of adhesive strength.
   5. Air Leakage Under Wind Load: ASTM E283. Treated wall assembly must resist air leakage (infiltration and exfiltration) through the wall assembly.
   6. Surface Burning: ASTM E84.
      a. Flame Spread: Less than 25.
      b. Smoke Developed: Less than 450.

2.06 INSULATION

A. Insulate exterior enclosure using insulation with no added formaldehyde.
   1. Certification by Manufacturers. Insulation shall be certified by Department of Consumer Affairs, Bureau of Home Furnishing and Thermal Insulation that the insulation conductive thermal performance is approved pursuant to the California Code of Regulations, Title 24, Part 12, Chapters 12-13, Article 3,“Standards for Insulating Material.”
   2. All insulating material shall be installed in compliance with the flame spread rating and smoke density requirements of the Title 24, Part 2, California Building Code.

B. Insulation Types: Section 07 21 00 Thermal Insulation.

2.07 COMPOSITE WALL PANEL SYSTEM

A. Provide a watertight rout and return dry panel system. The panel system shall consist of a dry gasket interlocking system. Any panel system utilizing a continuous field applied joint sealant is unacceptable.

B. Panel System: The panel system as detailed shall consist of ACM panels and a system of custom aluminum extrusions. Include concealed dry gasketed perimeter extrusions, extruded stiffeners, gaskets, fasteners and shall include related flashings, sealants between jamb panels and previously installed adjacent construction, and other miscellaneous accessories required for a complete watertight installation. Assembly shall be water and airtight without reliance on a membrane.
   1. Perimeter Extrusions: Extruded aluminum with integral weather-stripping as detailed on Drawings, so as to provide the following essential features.
      a. Rout and return the ACM on all perimeters.
      b. Exposed edge of the ACM shall be protected inside an extruded aluminum pocket.
      c. Maximum overall panel thickness, including the attachment shim space, shall not exceed 2 inches.
      d. The ACM shall be mechanically attached to all perimeter extrusions. The mechanical fastener must not penetrate any portion of the outer (exterior) skin of the aluminum composite material. Attachment of the ACM to the perimeter extrusions with structural silicone is not allowed.
      e. Do not substitute sealants for dry gasketing shown at the metal panel joinery.

2. Stiffeners: Extruded aluminum sections secured to edge trim and bonded to rear face of ACM with silicone, and of sufficient size and strength to maintain flatness of the panel within the specified tolerances.
3. Reveals at Panel: Joint size between the faces of the perimeter extrusions shall be 1/2-inch, nominal.
4. Flatness Criteria: Maximum 1/8-inch in 15'-0" on panel in any direction for assembled units. (Non-accumulative).

C. Column Covers: Round or square ACM panels to match wall panel system. Diameters as indicated on Drawings.

D. Typical joinery shall be attached with concealed fasteners. When exposed fasteners are required in isolated conditions, the fastener shall be obscured in the panel joinery.

E. Code Performance Requirements: Work of the section shall conform to all applicable codes and regulations.
1. Thermal Design Criteria: Make allowances for free and noiseless vertical and horizontal thermal movement due to the contraction and expansion of component parts, for an ambient temperature range from -20 degrees F to +180 degrees F. Buckling of panels, separation/opening of joints, undue stress on fasteners, failure of sealants or any other detrimental effects due to thermal movement of component parts will not be permitted. Fabrication, assembly and erection procedure shall take into account the ambient temperature range at the time of the respective operation.
2. Wind Loads: Assemblies herein specified shall be designed for flexural, shear and torsional stresses for the following positive and negative wind pressures acting normal to the plane of the assemblies. Loading design shall; be based on the California Building Code and design loads noted, but in no case less than 20 pounds per square foot with 25 pounds per square foot corner pressure.
3. Material Stress and Deflection:
    a. Normal to the plane of the wall between structural supports, deflection of the attached perimeter-framing members shall not exceed L/175 of span length or 3/4-inch, whichever is less.
    b. At connection points of framing members to anchors, anchor deflection in any direction shall not exceed 1/16-inch. Where connection points are not clearly defined, maximum anchor deflection shall not exceed 1/16-inch.
    c. Stresses must take into account interaction and in no case shall allowable values exceed the yield stress.
    d. At 1.5 times design pressure, permanent deflections of framing members shall not exceed L/1000 of the span length, and components shall not experience failure or gross permanent distortion. At connection points of framing members to anchors, permanent set shall not exceed 1/16-inch.

F. Wall System Performance To Be Verified by Laboratory Testing of Test Specimens:
1. Air Infiltration: When tested in accordance with ASTM E283, the air infiltration at 6.24 psf must not exceed 0.06 cfm per square foot of wall area.
2. Static Water Infiltration: When tested at a differential static pressure of 15.0 psf for 15 minutes, in accordance with ASTM E331, any uncontrolled water passing into the room-side beyond the interior barrier of the wall system shall not be permitted. The panel system shall be designed to provide controlled drainage to the exterior face of the wall for any leakage of water occurring at joints and/or condensation taking place within the wall system.
3. Dynamic Water Infiltration: Shall be tested in accordance with AAMA 501 with a slipstream velocity, creating a pressure on the wall equivalent to 15.0 psf with a water spray rate of 5 gallons per hour per square foot for 15 minutes with no uncontrolled water leakage to the room-side.

4. Structural Performance: Shall be tested in accordance with ASTM E330 at design pressure. Deflection limitations are listed previously. After initial test, test at 150 percent of design pressure; no permanent deformation exceeding L/1000 or failure to structural members allowed.
5. Seismic Racking: There shall be no failure or deterioration of the system when the unit is laterally racked to 3/4-inch in both directions and repeated for three (3) cycles. System must pass the static water requirements following the seismic racking.

G. Bond Integrity Test: In accordance with ASTM D1781 for bond integrity, simulating resistance to delaminating:
1. Peel Strength: 22.5 in lb/in (min).

H. Fire Performance:
1. ASTM E84: Maximum value flame spread 0, smoke developed 0.
2 ASTM E162-11: No surface flaming.
3. NFP 285: If ACM has a fire rated core.

I. ACM Composite Material:
1. Composite: Two sheets of aluminum sandwiching a core of extruded thermoplastic formed in a continuous process with no glues or adhesives between dissimilar materials. Total composite thickness to be 4mm.
2. Face Sheets: 0.020 inch thick aluminum.
3. Finish: 3- Coat PVDF finish system.
   a. Coating Performance: The coating shall meet or exceed the performance requirements of AAMA 620. In particular, the coating must have successfully passed the following tests:
      1) Humidity Resistance:
         a) Test Method: ASTM D2247 and ASTM D714.
         b) Results: None or few blisters when subjected to condensing water fog at 100 percent relative humidity and 100 degrees Fahrenheit for 4,000 hours.
      2) Salt Spray Resistance:
         a) Test Method: ASTM B117; expose coating system to 4,000 hours, using 5 percent NaCl solution.
         b) Results: Less than 1/16-inch average creepage from scribe, and none or few #8 blisters.
      3) Outdoor Weather Exposure:
         a) Ten (10) year exposure at 45 degree angle facing south Florida exposure.
         b) Maximum color change of 5 Delta E units as calculated in accordance with ASTM D2244.
         c) Maximum chalk rating of #8 accordance with ASTM D4214.
         d) No checking, crazing, adhesion loss.
   b. Color: As selected by Architect from manufacturer's standards.
   b. Color: See Drawings.

J. Aluminum Extrusions:
1. Perimeter Extrusions:
   a. Alloy: AA-6063-T6.
2. Stiffeners:
   a. Alloy: AA-6063-T6.

2.08 MASONRY

A. If concrete unit masonry site walls, concrete unit masonry veneer, or any similar exposed application of concrete unit masonry is incorporated into the design, include integral water

repellent admixtures into the masonry units and into the mortar mix. A field-applied water repellent may also be used to supplement the integral water repellents in the masonry.

PART 3 EXECUTION

3.01 INSTALLATION

A. Air Barrier: Construct the air barrier system to meet the applicable provisions of the code for building air tightness and the Work Results and Performance requirements specified in this Section.

3.02 STOREFRONT AND CURTAIN WALL TESTING

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Water-Spray Tests: During progress of storefront and curtain wall installation and glazing, and before installation of interior finishes has begun, representative areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.
   1. Perform at least three tests in presence of Architect, prior to 10, 35, and 70 percent completion of storefront installation.
   2. Verify non-operable storefront glazing to be free of leaks, including at gaskets, sealants, perimeters, splices, and frame intersections.
   3. Conduct test using hose with special nozzle and thoroughly wet entire glass surface in accordance with AAMA 501.2.
   4. Retest leaking areas until modifications prove to be watertight.

C. Air Infiltration Resistance and Water Leakage Resistance Testing of Newly Installed Curtain Wall, Entrance and Storefronts: Field test in accordance with AAMA 503.
   1. Test at least one 100 square foot area that is representative of the system installation as designated by the Architect.
   2. Test installation soon after the designated area is installed and sealants are cured, but before installation of gypsum board, insulation, and other finish materials.
   3. Perform air leakage resistance testing before wetting wall for water leakage testing.
   4. Air Infiltration Resistance: Considered acceptable if measured air leakage does not exceed 1.5 times the specified laboratory testing air infiltration performance rate, or 0.09 cfm/sf, whichever is greater.
   5. Water Leakage Resistance: Considered acceptable if no leakage, as defined by AAMA 503 is observed after testing at a static test pressure of 4.18 psf, or 20 percent of the positive design wind load times 0.667, whichever is greater.
   6. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.

3.03 AIR BARRIER TESTING

A. Retain the services of a qualified Testing Agency to perform air barrier testing.
   1. Coordinate with the Testing Agency to determine roles and responsibilities for preparing the building in the “closed” envelope condition.
   2. Provide responsible HVAC technician and electrician support for the Testing Agency in order to properly isolate the HVAC system from the test and provide appropriate power sources for test equipment.
   3. Ensure that all windows and doors along the test envelope are kept closed. Schedule subcontractors to ensure that there is no entry and exit through doors in the test envelope during the test. Ensure that no subcontractors are working in the area of the test fans during their operation.

B. Scheduling Air Barrier Testing: The air leakage test to determine final compliance with the air tightness requirement shall be conducted when all components of the air barrier assembly have been installed and inspected, and have passed any intermediate testing procedures as detailed in the Drawings and Specifications. The test may be conducted before finishes that are not part of the air barrier assembly have been installed. For example, if suspended ceiling tiles, interior gypsum boards, or cladding systems are not part of the air barrier assembly, the test may be conducted before they are installed.
   1. Do not schedule testing to occur until all doors and windows and all parts of the air barrier and all penetrations through the air barrier are in place.
   2. Otherwise, schedule testing to be performed as soon in the construction process as possible, and before any exterior veneer materials are installed over the air barrier, to allow access to the barrier to fix leaks without removal of the exterior finish materials that will be installed outboard of it.
      a. If exterior finish materials must be removed to modify or repair the air barrier in order for the air barrier to pass testing, the cost of such cutting and patching shall be borne by the Contractor.

C. Testing by Testing Agency:
   1. Test the completed building air barrier system and demonstrate that the air leakage rate of the building envelope does not exceed 0.40 cfm per square foot of the total building envelope area at a differential pressure of 75 Pa.
   2. Testing Agency shall provide direction to the General Contractor, or self-perform, preparation of the building as follows in order to isolate “intentional” holes in the test boundary:
      a. Disable the HVAC system and exhaust fans.
      b. Mask, seal, or close dampers to outside air and makeup air intakes.
      c. Mask, seal, or close dampers to ventilation and exhaust outlets.
      d. Close and lock all windows and doors on the limits of the test boundary.
      e. Fill all plumbing traps with water.
      f. For suspended ceiling plenums, remove one tile for every 500 square feet of ceiling area.
      g. Disable vented and non-sealed combustion equipment or place in the ”pilot” position.
      h. Prop open all interior doors within the test boundary.
      i. Open windows or doors of interior spaces that are beyond, but adjacent to, the test boundary to introduce ambient conditions to non-exterior walls on the test boundary.
   3. Record the exact building preparation and equipment set up conditions. Include photo documentation of representative setup conditions, including fan, pressure gauge, and pressure monitoring station type and location, to be included in the final report.
   4. Test the whole building as a single space (single zone), unless one of the conditions noted below exists and prevents single-zone testing:
      a. The test zones identified in design are separate and compartmentalized. In this case, each zone must be tested with each subject to the criteria specified.
      b. The building requires test airflow in excess of 125,000 CFM at 75-Pascals (Pa) and cannot be tested as a single zone. In this case, accomplish testing by one of the following means:
         1) Separate the building into multiple temporary test zones using boundary pressure neutralization.
         2) Erect temporary walls to create multiple test zones.
         3) Use the installed building HVAC system to induce the test pressure.
      c. The building is five (5) stories or taller and the floor-to-floor pressure differential requirements of 3.3.9 cannot be satisfied. In this case, floor-by-floor testing may be necessary.
   5. Test fans are generally placed in doors of the test envelope. Other openings in the test envelope may be used. The testing agency must have access to these locations, be able to

open them, and be allowed to remove closure hardware that interferes with test equipment set-up.

6. The building HVAC system may be used for testing, in lieu of portable equipment, if the building requires 125,000 CFM or more to induce an envelope pressure of 75-Pa. The following requirements apply if the HVAC system is used:
   a. There must be sufficient outside air supplied through installed air handlers to induce a pressure of 75-Pa.
   b. Airflow measurement devices shall be documented to measure air flows within 5-percent of actual airflows.
   c. Pressure gauges must be digital with a resolution of 0.1-Pa and accurate to within plus-or-minus 1-percent of reading or plus-or-minus 0.25-Pa, whichever is greater, and must have means of adjustable time averaging to compensate for wind.
7. Accomplish tests using both pressurization and depressurization. If an airflow in excess of 125,000 CFM at 75-Pa is required to perform the test, one or the other can be used to accommodate the type of pressure inducing equipment utilized.
8. Record measured flow rates required to establish a minimum of 12 positive and 12 negative induced envelope pressures spanning at least a 25-Pa range. Induced envelope pressure test points shall be averaged over at least 20 seconds and shall be no lower than 75-Pa. If the 75-Pa pressure (induced) differential cannot be achieved and the maximum allowable flow (in CFM) is exceeded, than the building is insufficiently air tight to pass the test. If the 75-Pa pressure (induced) differential cannot be achieved and the maximum allowable flow (in CFM) is NOT exceeded, then the testing agency did not provide sufficient equipment to induce the required pressure.
9. Verify that pressures in the extremities of the envelope and between the floors do not differ from one another by more than 10-percent of the average induced envelope pressure.
10. Record baseline pressures prior to and immediately after each test (pressurization and depressurization). Baseline pressure points shall be taken across the envelope where each point is an average taken over at least 120 seconds. The initial baseline pressure point must not exceed 30-percent of the minimum induced envelope pressure test point used in the analysis.
11. Follow detailed testing, calculation, and reporting procedures specified in the Protocol.
12. Perform the test only when it is verified that the continuous air barrier is in place and installed without failures in accordance with installation instructions. Coordinate the testing schedule to coordinate testing with air barrier, cladding, and fenestration installation.
13. Use test fan measurement equipment calibrated at least every four (4) years in compliance with ASTM E1258. Calibration certificates must show the deviations from the calibration equations that must not exceed plus-or-minus 5-percent of the flow reading for a range of airflows and backpressures (the pressure across the fan). For each test fan flow range configuration used in a test, the calibrations shall include the minimum and maximum airflows allowed by the manufacturer for that range plus at least one intermediate flow. For each flow rate, calibrations shall include data at backpressures within plus-or-minus 10-percent of 25, 50, and 75-Pa. Digital pressure gauges and test fans may be calibrated separately and used interchangeably as long as they meet the requirements of this section.
14. Use pressure gauges that are digital with a resolution of 0.1-Pa and accurate to within plus-or-minus 1-percent of reading or plus-or-minus 0.25-Pa, whichever is greater, and have a means of adjustable time averaging to compensate for wind. Pressure gauges shall have their calibration checked and accuracy verified minimum every two (2) years (or sooner, based on the gauge manufacturer's recommendations) against a National Institute of Standards and Technology (NIST) traceable standard over at least 16 pressures from at least +250 to -250-Pa or to the greatest pressure used during a test.
15. If the building test fails, identify air leakage paths in accordance with ASTM E1186-03 by infrared thermography scanning using an infrared camera with a resolution of 0.1oC or better, by smoke tracer (neutral buoyancy smoke or theatrical smoke) or by other listed methods.

16. Submit written test results, meeting the reporting requirements of ASTM E779, including all calculated values, to the Building Official for approval.

END OF SECTION

SECTION 01 83 19

ROOFING PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
1. Design and build a complete roofing system for new buildings and building additions in accordance with CBC requirements. The installed system shall provide and accomplish a complete watertight barrier against weather, precipitation, wind and other environmental conditions and shall channel all roof drainage to locations off of the roof and away from walls of the building.
2. If design of building additions includes intersecting new roofing with existing roofing, cut and patch existing roofing and roof insulation to achieve continuity.
3. Where required, patch existing roofing and roof insulation at closed over roof openings.
4. Where required, patch existing roofing and roof insulation around new openings in existing roof.
5. Design and construct sheet metal flashing and roof specialties for new roofing and modifications to existing roofing, if required.
6. Provide roof ladders and roof hatches as necessary for accessing areas of new roofs.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Reference Standards: Comply with the following except as otherwise specified in this Project Manual.
1. ASTM International Standards:
   a. ASTM C1289-16 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
   b. ANSI/ASTM D41/D41M-11(2016) - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
   c. ANSI/ASTM D226/D226M-09 - Standard Specification for Asphalt-Saturated Organic Felt Used In Roofing and Waterproofing.
   d. ASTM D312/D312M-16 - Standard Specification for Asphalt Used in Roofing.
   e. ASTM D1079-16 – Standard Terminology Relating to Roofing and Waterproofing.
   f. ASTM D1863/D1863M-05(2011)e1 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
   g. ASTM D2178/D2178M-15a - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
   h. ASTM D2626/D2626M-04(2012)e1 - Standard Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing.
   i. ASTM D4637-08 – EPDM Sheet Used in Single-Ply Roof Membrane.
   j. ASTM D4586/d4586M-07(2012)e1 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
   k. ASTM E108-11 – Standard Test Methods for Fire Tests of Roof Coverings.
2. Factory Mutual Insurance Company Reference Standards:
   a. FM Approvals LLC; www.fmapprovals.com – FM Approval Standards:
      1) FMG Approval Guide; www.approvalguide.com.
      2) Class Number 4470 – Approval Standard for Class 1 Roof Covers.
   b. FM Global (FMG) Operating Standards: www.fmglobal.com.
      1) FMG Property Loss Prevention Data Sheet 1-28 – Wind Design, October 2016.

2) FMG Property Loss Prevention Data Sheet 1-28R, 1-29R – Roof Systems, September 1998.
3) FMG Property Loss Prevention Data Sheet 1-29 – Roof Deck Securement and Above-Deck Roof Components, April 2016.
4) FMG Property Loss Prevention Data Sheet 1-49 – Perimeter Flashing, June 1985, Revised September 2000..

3. National Roofing Contractors Association (NRCA):
   a. NRCA Roofing Manual: Architectural Metal Flashing Condensation and Air Leakage Control, and Reroofing - 2014.
4. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
   a. Architectural Sheet Metal Manual, 7th Edition, 2012.
5. Underwriters Laboratories, Inc. Reference Standards:
   a. Roofing Materials and Systems Directory.
   b. UL 55-A – Materials for Built-Up Roof Coverings, 2004 edition.
   c. UL 790 – Standard Test Methods for Fire Tests of Roof Coverings, 2004 edition.
   d. UL Online Certifications Directory; http://database.ul.com.
   e. Fire Resistance Directory.

C. Guide References and Standard Practices:
1. National Roofing Contractors Association (NRCA):
   a. NRCA Roofing Manual: Membrane Roof Systems – 2015.
   b. Handbook of Accepted Roofing Knowledge (HARK).

1.03 INFORMATIONAL SUBMITTALS

A. Certificates:
1. Manufacturer's Project Acceptance:
   a. Prior to submittal of shop drawings, transmit Drawings, this Section, related Sections, and proposed roofing and insulation system to the primary roofing manufacturer for review.
   b. Submit a completed manufacturer's application for roof guarantee form along with shop drawings of the roofs showing all dimensions, penetrations, and details. The form shall contain all the technical information applicable to the project including deck types, roof slopes, base sheet and/or insulation assemblies (with method of attachment, and fastener type), and manufacturer's membrane assembly proposed for installation. The form shall also contain accurate and complete information requested including proper names, addresses, zip codes and telephone numbers. The Project must receive approval, through this process, prior to shipment of materials to the Project site.
   c. Prior to starting roofing, submit a signed statement by the primary roofing manufacturer stating that the proposed application will comply with the Manufacturer's requirements in order to qualify the Project for the specified guarantee.

B. Test and Evaluation Reports:
1. Test Reports: Upon request, submit certified laboratory test reports confirming physical characteristics of materials used in the performance of the roofing work.
2. FM Listing: Submit evidence that membrane, base sheets and other components of system meet FM 4470 as part of roofing system listed in FMRC Approval Guide for Class 1 for noncombustible construction, as applicable.
   a. Wind Class: FM Windstorm Class 1-90.
3. UL Roof Materials and Systems Directory Listing: Submit evidence that roof materials and system conform to the UL listing noted on the Drawings. Other listings may be considered if proposed by General Contractor, but must be approved by both the Architect and the local Building Official.
4. Submit evidence by an accredited independent testing agency or agencies that the roof configuration meets the design wind load pressure(s).

D. Manufacturer's Reports:
   1. Submit written report from manufacturer's representative after inspection of roof deck to verify deck is satisfactory for installation of system.
   2. Submit additional report indicating roof has been installed in accordance with manufacturer's requirements.

E. Qualification Statements:
   1. Letter from the proposed primary roofing manufacturer confirming that the proposed applicator is an acceptable contractor authorized to install the proposed system.

1.04 WARRANTY

A. Built-Up Bituminous Roofing:
   1. Manufacturer's Warranty: Provide five year written warranty covering materials for built-up roofing system in accordance with Section 01 78 00.
      a. Cover leaks that result from either material or workmanship defects.
      b. No deductible.
      c. Non-prorated.
   2. Installer's Warranty: Provide five-year standard NRCA written warranty for workmanship.

B. Modified Bituminous Membrane Roofing:
   1. Manufacturer’s Roof Membrane Guarantee: Upon successful completion of the Project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's ten year labor and materials membrane guarantee. The guarantee shall be a term type, without deductibles or limitations on coverage amount, and shall be issued at no additional cost to the Owner. This guarantee shall not exclude random areas of ponding from coverage.
   2. Roofing Contractor: Furnish written warranty on roofing, flashing and sheet metal work for 2 years from the date of Notice of Acceptance covering leakage and other defects due to failure in materials and/or workmanship. The Contractor shall repair all damages due to failures covered at no cost to the Owner.

C. Elastomeric or Thermoplastic Roofing:
   1. Provide a manufacturer's written total system warranty against defects in materials and workmanship in roofing system for a period of twenty (20) years.

D. Patches of Existing Roofing:
   1. Existing Roof Warranty: Submit evidence that existing roof warranty has not been voided by patching.
   2. New Warranty: Roofing subcontractor shall provide and deliver a warranty against defects in materials and workmanship in patched roofing and flashings for a period of two years from completion of work.

E. Notification: Roofing manufacturers and/or roofing contractors shall notify the Owner during bidding of any condition that would prevent issuance of specified warranties or guarantees.

PART 2 PRODUCTS

2.01 PERFORMANCE

A. Fire Resistance Requirements:
   1. External Fire Resistance: UL Class A.
   2. Internal Fire Resistance Rating: Strictly comply with detailed requirements of UL fire rated roof assembly listed in UL Fire Resistance Directory as referenced on Drawings.

3. Materials: UL labeled.

B. FMG Listing: Membrane, base flashings and other components of system shall meet FM 4470 as part of roofing system listed in FMRC Approval Guide for Class 1 for noncombustible construction, as applicable.
   1. Wind Resistance: Factory Mutual Class 1-90.

C. UL Listing: Membrane, base flashings and other components of system shall be labeled and listed in the current UL Roofing Materials and Systems Directory for the applications indicated.

D. Wind Uplift Resistance Capacity: Roofing system shall have been successfully tested by a qualified testing and inspecting agency to have a wind uplift failure load exceeding the Field, Perimeter, and Corner Design Loads listed in the ANSI/SPRI WD-1 table applicable to the new construction parameters by a factor of safety of at least 2.0.

2.02 MEMBRANE ROOFING TYPE

A. New Membrane Roofing: Design-Builder shall select from the following acceptable roofing types:
   1. Built-up bituminous roofing, 4-ply.
   2. Modified bituminous roofing, cold adhesive applied or torch-applied.
      a. Atactic-Polypropylene-Modified Modified Bituminous Membrane Roofing; or
      b. Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing.
   3. Ethylene-Propylene-Diene-Monomer (EPDM) Roofing, minimum 60 mils, fully adhered.
   4. Polyvinyl-Chloride (PVC) Roofing, minimum 60 mils, fully adhered.
   5. Thermoplastic-Polyolefin (TPO) Roofing, minimum 60 mils, fully adhered.

B. Patches of Existing Roofing and New Roofing to be Joined to Existing Roofing Membrane to Form Continuous Membrane: Match existing roofing type.

2.03 ROOF INSULATION

A. General: Provide insulation board and fastening system approved and fully warrantable by roofing manufacturer for use with the membrane system selected and consistent with specified roof system fire resistance criteria.

B. Roof Insulation System: Flat polyisocyanurate rigid insulation mechanically fastened to structural roof deck, overlain by minimum 1/2-inch roof board. Provide factory-tapered crickets and insulation top layer.
   1. System and insulation products shall be approved by roofing manufacturer.
   2. Meet requirements of Performance article and Reference Standards.

C. Rigid Roof Insulation: Roof insulation shall be UL and FM approved. Insulation shall be approved in writing by the insulation manufacturer for intended use and for use with the specified roof assembly. Maintain a maximum panel size of 4 feet by 4 feet where polyisocyanurate / fiberboard insulation is specified to be installed in hot asphalt or insulation adhesive.
   1. Polyisocyanurate: A closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber reinforced organic facers, in full compliance with ASTM C 1289, Type II, Class 2, Grade 2 (20 psi).
      a. Polyisocyanurate Tapered Roof Insulation: Tapered panels and standard fill panels composed of a closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber reinforced organic facers, in full compliance with ASTM C1289, Type II, Class 2, Grade 2 (20 psi). The tapered system shall provide for roof slopes, in no case less than 1/4-inch per foot.

D. Insulation Fasteners: Approved by FM and system manufacturer.
   1. Fully coated with manufacturer's standard fluoropolymer paint for corrosion resistance. Provide type approved by UL and FM 4470 and warrantable by manufacturer for roofing insulation and wind uplift criteria.
   2. Provide length required for thickness of insulation and required penetration of deck substrate.
   3. Provide metal washers where required.

2.04 ROOF WALKWAYS

A. For Single-Ply Membrane Roofing: Provide manufacturer’s standard walkway pads or rolls to protect roofing at paths to and around rooftop mechanical equipment.

B. For Built-Up and Modified Bituminous Membrane Roofing: Provide precast concrete pavers with smooth finish and welded fabric reinforced corners to provide paths to and around rooftop mechanical equipment.

2.05 SHEET METAL FLASHING

A. Roofing system supplier shall provide all flashing, counterflashing, parapet caps and copings, scuppers, gutters and downspouts where metal is in direct contact with roofing membrane.

B. Sheet Metal: ASTM A653 commercial quality sheet steel, G90 commercial hot-dip galvanizing. Provide 24 gage minimum. Prefinished, coil stock coated with fluoropolymer coating where exposed to view.

PART 3 EXECUTION

3.01 SITE QUALITY CONTROL

A. Inspection: Representative of roofing manufacturer shall make inspections prior to start of installation, during installation and upon completion of installation to ascertain that entire system has been installed according to manufacturer's specifications and approved details.

END OF SECTION

SECTION 01 83 21

ROOFTOP HELIPORT PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
1. Design and build a helipad on roof of new emergency department building addition that will accommodate air ambulance helicopter operations and emergency medical service (EMS) personnel and equipment.
2. Coordinate design of helipad, building layout, and vertical transportation facilities to minimize patient transport time between helipad and emergency department.
3. Establish a 6 foot or more air gap on all sides above the level of the roof to minimize the turbulent effect of air flowing over the roof edge.
4. Electromagnetic Effects on Helicopter Navigational Equipment: Take consideration of the location of any MRI with respect to the heliport location. Where appropriate, provide a warning sign alerting pilots to the presence of an MRI. Take steps to inform pilots of the locations of MRIs and other similar equipment.
5. To the extent feasible, align the preferred approach/departure path with the predominant winds.

B. Related Requirements:
1. Structural Design Performance Requirements: Section 01 83 13 Superstructure Performance Requirements.
2. Vertical Enclosure: Section 01 83 16 Exterior Enclosure Performance Requirements.
3. Roofing: Section 01 83 19 Roofing Performance Requirements.
3. Concrete Decking: Division 03 Concrete.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Abbreviations and Acronyms:
1. FATO: Final approach and takeoff area. A defined area over which the pilot completes the final phase of the approach to a hover or a landing and from which the pilot initiates takeoff. The FATO elevation is the lowest elevation of the edge of the TLOF.
2. FARA: Final approach reference area. An obstacle-free area with its center aligned on the final approach course. It is located at the end of a precision instrument FATO.
3. TLOF: Touchdown and liftoff area. A load-bearing, generally paved area, normally centered in the FATO, on which the helicopter lands and/or takes off.

C. Definitions: Meaning of the following terms as used in these Specifications.
1. Heliport. The area of a structure used or intended to be used for the landing and takeoff of helicopters, together with appurtenant facilities.
2. Large Helicopter. A helicopter with a maximum takeoff weight of more than 12,500 lbs.
3. Medium Helicopter. A helicopter with a maximum takeoff weight of 7,001 to 12,500 lbs.
4. Small Helicopter. A helicopter with a maximum takeoff weight of 7,000 lbs or less.

D. Reference Standards: Comply with the following except as otherwise specified in this Project Manual.
   1. United States Department of Transportation, Federal Aviation Administration (FAA); www.faa.gov.
      a. AC 150/5345-27 - Specification for Wind Cone Assemblies.
      b. FAA Airports Engineering Brief 87 (EB 87), Heliport Perimeter Light for Visual Meteorological Conditions (VMC).

E. Guide References and Standard Practices:
   1. United States Department of Transportation, Federal Aviation Administration (FAA); www.faa.gov.
      a. AC 150/5390-2C – Heliport Design, 24 April 2012, Chapter 4, Hospital Heliports.

1.03 REGULATORY REQUIREMENTS

a. The FAA will conduct an aeronautical study of the proposed heliport under part 157. Title 14 CFR Part 157.7. While determinations consider the effects of the proposed action on the safe and efficient use of airspace by aircraft and the safety of persons and property on the ground, the determinations are only advisory. Except for an objectionable determination, each determination will contain a determination-void date to facilitate efficient planning of the use of the navigable airspace. A determination does not relieve the proponent of responsibility for compliance with any local law, ordinance or regulation, or state or other federal regulation. Aeronautical studies and determinations will not consider environmental or land use compatibility impacts.

PART 2 PRODUCTS

2.01 STRUCTURAL PERFORMANCE

A. In addition to meeting all structural performance requirements for the roof of the building, design and construct the TLOF and any load-bearing surfaces to support the loads imposed by the design helicopter and support equipment.
   1. Static Load. For design purposes, the design static load shall be equal to the helicopter's maximum takeoff weight applied through the total contact area of the wheels or skids.
   2. Dynamic Load. For design purposes, assume the dynamic load at 150 percent of the maximum takeoff weight of the design helicopter applied through the main undercarriage on a wheel equipped helicopter or aft contact areas of skid-equipped helicopter.

B. Design the FATO outside of the TLOF to be load-bearing unless the minimum width and length or diameter of TLOF is increased to the overall length of the design helicopter.
   1. If the FATO is load bearing, design the portion abutting the TLOF to be contiguous with the TLOF, with the adjoining edges at the same elevation.
   2. If the FATO is unpaved, treat the FATO to prevent loose stones and any other flying debris caused by rotor downwash.

2.02 WEATHERPROOFING PERFORMANCE

A. The Heliport area on the roof shall be designed and constructed to be completely weatherproof, meeting all the requirements for roofing as specified in Section 01 83 19.

2.03 FIRE RESISTANCE REQUIREMENTS

A. Fire Resistance Requirements:
   1. External Fire Resistance: UL Class A.

2. Internal Fire Resistance Rating: Strictly comply with detailed requirements of UL fire rated roof assembly listed in UL Fire Resistance Directory as referenced on Drawings.
3. Materials: UL labeled.

2.04 HELIPAD DECKING

A. Construct rooftop and other elevated heliport TLOFs of metal, concrete, or other materials subject to local building codes.

B. Use a finish for TLOF surfaces that provides a skid-resistant surface for helicopters and non-slippery footing for people.

2.05 SAFETY NET

A. If platform is elevated 30 inches or more above its surroundings, design and install a safety net, meeting state and local regulations but not less than 5 feet wide.

B. Design the safety net to have a load carrying capability of 25 lbs/sq ft.

C. Ensure the net does not project above the level of the TLOF.

D. Fasten both the inside and outside edges of the safety net to a solid structure.

E. Construct nets of materials that are resistant to environmental effects.

2.06 WIND CONE

A. Use a wind cone conforming to AC 150/5345-27, Specification for Wind Cone Assemblies, to show the direction and magnitude of the wind. Use a color that provides the best possible color contrast to its background.

B. Locate the wind cone so it provides the pilot with valid wind direction and speed information in the vicinity of the heliport under all wind conditions.

C. Wind Cone Lighting. For night operations, illuminate the wind cone, either internally or externally, to ensure it is clearly visible.

2.07 TIEDOWNS

A. Install recessed tiedowns to accommodate extended or overnight parking of based or transient helicopters. If tiedowns are provided, recess them so as not to be a hazard to helicopters. Ensure any depression associated with the tiedowns is of a diameter not greater than ½ the width of the smallest helicopter landing wheel or landing skid anticipated to be operated on the heliport surface.

B. Provide storage for tiedown chocks, chains, cables and ropes off the heliport surface to avoid fouling landing gear.

2.08 HELIPORT MARKERS AND MARKINGS

A. Follow recommendations of AC 150/5390-2C. Use paint or preformed material for surface markings.

B. Hospital Heliport Identification Marking:
   1. Standard Hospital Heliport Identification Symbol: Mark the TLOF with a red “H” in a white cross. The minimum height of the “H” is 10 feet. Locate the “H” in the center of the TLOF and orient it on the axis of the preferred approach/departure path. Place a 12-inch wide red bar under the “H” when it is necessary to distinguish the preferred approach/departure direction.
   2. Alternative Marking: As an alternative to the standard marking, use a red “H” with a white 6-inch wide border within a red cross with a 12 inch wide white border and a surrounding red TLOF. Where it is impractical to paint the whole TLOF red, paint the TLOF so the minimum dimension (length, width, or diameter) of the outer red area is equal to the RD of the design helicopter but not less than 40 feet.

C. TLOF Markings:
   1. TLOF Perimeter Marking. Mark the TLOF perimeter with markers and/or lines. Define the perimeter of a paved or hard surfaced TLOF with a continuous, 12-inch-wide, white line.
   2. Touchdown/Positioning Circle (TDPC) Marking. Use an optional TDPC marking to provide guidance to allow a pilot to touch down in a specific position on paved surfaces. A TDPC marking is a yellow circle with an inner diameter of ½ D and a line width of 18 inches. Locate a TDPC marking in the center of a TLOF.
   3. TLOF Size and Weight Limitations: Mark the TLOF to indicate the length and weight of the largest helicopter it will accommodate. Place these markings in a box in the lower right-hand corner of the TLOF, or on the right-hand side of the “H” of a circular TLOF, when viewed from the preferred approach direction. The box is to be 5 feet square. The numbers are to be 18 inches high. If necessary, interrupt the TDPC marking with this marking. The numbers are to be black with a white background.

D. FATO Markings:
   1. FATO Perimeter Marking. Define the perimeter of a load-bearing FATO with markers and/or lines. Do not mark the FATO perimeter if any portion of the FATO is not a load-bearing surface. In such cases, mark the TLOF perimeter.
      a. Define the perimeter of a paved load-bearing FATO with a 12-inchwide dashed white line. Use marking segments approximately 5 feet in length, and with end-to-end spacing of approximately 5 feet to define the corners of the FATO and the perimeter.

2.09 HELIPORT LIGHTING

A. Follow recommendations of AC 150/5390-2C. Light the heliport with FATO and/or TLOF perimeter lights. Design flush light fixtures and installation methods to support point loads of the design helicopter transmitted through a skid or wheel.

B. Load-Bearing FATO Perimeter Lights. Use green lights meeting the requirements of EB 87 to define the perimeter of a load bearing FATO.
   1. Do not light the FATO perimeter if any portion of the FATO is not a load-bearing surface.
   2. Use a minimum of three flush or raised light fixtures per side of a square or rectangular FATO. Locate a light is located at each corner, with additional lights uniformly spaced between the corner lights. Using an odd number of lights on each side will place lights along the centerline of the approach.
   3. To define a circular FATO, use an even number of lights, with a minimum of eight, uniformly spaced. Space lights at a maximum of 25 feet. Locate flush lights within 1 foot (inside or outside) of the FATO perimeter.
   4. As an option, use a rectangular light pattern even if the TLOF is circular.
   5. In the case of an elevated FATO with a safety net, ensure raised FATO perimeter lights are no more than 8 inches high, and locate them 10 feet from the FATO perimeter.

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 84 00

INTERIORS PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Design and build interiors of new buildings and additions in accordance with CBC requirements.
   2. Interior construction includes, but is not limited to:
      a. Interior partitions, including radiation shielded partitions.
      b. Interior windows, including interior radiation shielding windows.
      c. Interior doors and frames, including interior radiation shielding doors and frames.
      d. ICC/ICU entrances.
      e. Access doors and panels.
      f. Suspended ceiling construction.
      g. Acoustical insulation.
      h. Interior railings and handrails.
      i. Interior signage.
      j. Toilet compartments.
      k. Cubicle curtains and track.
      l. Corner guards, crash rails, and protective wall covering.
      m. Toilet accessories.
      n. Wall finishes, including wall coverings and painting.
      o. FRP panels.
      p. Flooring.
      q. Stair finishes.
      r. Ceiling finishes.

B. Related Requirements:
   1. Typical Room Data Sheets.
   2. Technical Specifications in Divisions 03 through13.

PART 2 PRODUCTS

2.01 FIRE RESISTANCE OF INTERIOR FINISH MATERIALS

A. Flame Spread: Do not exceed flame spread classifications in CBC Table 803.9.

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 85 00

CONVEYING EQUIPMENT PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
1. Design and build vertical transportation system for the building.
2. Proposed vertical transportation including type, location, number, size and speed of elevators shall be demonstrated to Owner with calculations and provided appropriately.
3. At a minimum, provide separate visitor, patient, and service elevators.
4. Abide by all industry standards and code requirements, including but not limited to CBC and CDPH.

1.02 REFERENCES

A. Reference Standards: Comply with CBC and other applicable codes and elevator codes at the Project site, including but not limited to the following:
1. ADAAG - Accessibility Guidelines for Buildings and Facilities.
2. ANSI/NFPA 70 - National Electrical Code.
3. ANSI/NFPA 80 - Fire Doors and Windows.
4. ASME/ANSI A17.1 - Safety Code for Elevators and Escalators.
5. ICC/ANSI A117.1 - Accessible and Usable Buildings and Facilities.

1.03 QUALITY ASSURANCE

A. Qualifications:
1. Manufacturer: Provide elevators manufactured by a firm with a minimum of 10 years' experience in the fabrication, installation and service of elevators.
2. Installer: Elevator shall be installed by the manufacturer, or a manufacturer recommended installer with a minimum 5 years' experience in the installation and service of traction elevators.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA

A. Elevator Cabs Designed for Patient Transport:
1. Opening Size: 4'-6" by 8'-0"
2. Cab Height: 8 feet.
3. Clear Height Under Suspended Ceiling: 8'-7"

2.02 REGULATORY REQUIREMENTS

A. Comply with most stringent requirements of the following:
1. Building Codes and Standards:
a. State and local codes, ordinances and laws.
b. ANSI/ASME A17.1 Safety Code for Elevators.
c. NFPA 101 Life Safety Code.
d. AWS Structural Welding Code.

2. Permits: Obtain and pay for all permits, inspections and certifications required to install and operate the elevator.
3. Inspection and Testing: In accordance with requirements of local jurisdiction, obtain required permits, inspections and tests.
4. Accessibility: Elevator shall be designed in response to Americans With Disabilities Act Accessibility Guidelines (ADAAG).
    a. Signals: Comply with NEII handicapped provisions.

2.03 ELEVATOR PERFORMANCE

A. Car Performance:
1. Car Speed: Within 5 percent of contract speed under any loading condition or direction of travel.
2. Car Capacity: Safely lower, stop and hold (per code) up to 125 percent of rated load.

B. System Performance:
1. Vertical Vibration (maximum): 25 mg.
2. Horizontal Vibration (maximum): 25 mg.
3. Jerk Rate (maximum): 4.0 ft/sec^3.
4. Acceleration (maximum) 1.5 ft/sec^2.
5. In Car Noise: Maximum 55 dB(A).
6. Leveling Accuracy: Within 0.2 inches.
7. Starts per hour (maximum): 80.

2.04 SIGNAL DEVICES AND FIXTURES

A. Car Operating Panel: Provide car operating panel with all push buttons, key switches, and message indicators for elevator operation.
1. Provide integral car operating panel. Panel shall contain bank of round, mechanical, illuminated buttons marked to correspond to landings served, emergency call button, door open button, door close button, and key switches for lights, inspection, and exhaust fan. Buttons shall have amber illumination (halo) and shall be flush with panel. All buttons to have raised text and Braille marking on left hand side. The car operating display panel shall be a 7-segment amber display. All texts, when illuminated, shall be amber. The car operating panel shall have a brushed stainless steel finish.
2. Additional features of car operating panel shall include:
    a. Car Position Indicator within operating panel (amber).
    b. Elevator Data Plate marked with elevator capacity and car number on car top.
    c. Help button with raised markings.
    d. In car stop switch per local code.
    e. Firefighter's hat.
    f. Firefighter's Phase II Key-switch.
    g. Call Cancel Button.

B. Hall Fixtures: Hall fixtures shall be provided with necessary push buttons and key switches for elevator operation. Hall fixtures shall have a brushed stainless steel finish.
1. Hall fixtures shall feature round, mechanical, illuminated buttons in raised fixture housings. Hall fixtures shall correspond to options available from that landing. Buttons shall be flat flush in vertically mounted fixture. Hall Lanterns and hall indicators shall feature amber illumination, all numbers will be 7-segment amber display.

C. Car Lantern and Chime: A directional lantern visible from the corridor shall be provided in the car entrance. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound. The chime will sound once for up and twice for down.

2.05 ELEVATOR OPERATION AND CONTROLLER

A. Elevator Operation
   1. Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.

B. Standard Operating Features to include:
   1. Full Collective Operation.
   2. Fan and Light Control.
   3. Load Weighing Bypass.
   4. Independent Service.
   5. Ascending Car Uncontrolled Movement Protection
   6. Top of Car Inspection Station.

C. Elevator Control System for Inspections and Emergency
   1. Provide devices within controller to run the elevator in inspection operation.
   2. Provide devices on car top to run the elevator in inspection operation
   3. Provide within controller an emergency stop switch to disconnect power from the brake and prevents motor from running.
   4. Provide the means from the controller to mechanically lift and control the elevator brake to safely bring car to nearest available landing when power is interrupted.
   5. Provide the means from the controller to reset the governor over speed switch and also trip the governor.
   6. Provide the means from the controller to reset the emergency brake when set because of an unintended car movement or ascending car over speed.
   7. Provide the means for the control to reset elevator earthquake operation.

2.06 DOOR OPERATOR AND CONTROL

A. Door Operator: A closed loop permanent magnet VVVF high-performance door operator shall be provided to open and close the car and hoistway doors simultaneously. Door movement shall be cushioned at both limits of travel. Electro-mechanical interlock shall be provided at each hoistway entrance to prevent operation of the elevator unless all doors are closed and locked. An electric contact shall be provided on the car at each car entrance to prevent the operation of the elevator unless the car door is closed.

B. The door operator shall be arranged so that, in case of interruption or failure of electric power, the doors can be readily opened by hand from within the car, in accordance with applicable code. Emergency devices and keys for opening doors from the landing shall be provided as required by local code.

C. Doors shall open automatically when the car has arrived at or is leveling at the respective landings. Doors shall close after a predetermined time interval or immediately upon pressing of a car button. A door open button shall be provided in the car. Momentary pressing of this button shall reopen the doors and reset the time interval.

D. Door hangers and tracks shall be provided for each car and hoistway door. Tracks shall be contoured to match the hanger sheaves. The hangers shall be designed for power operation with provisions for vertical and lateral adjustment. Hanger sheaves shall have polyurethane tires and pre-lubricated sealed-for-life bearings.

E. Electronic Door Safety Device. The elevator car shall be equipped with an electronic protective device extending the full height of the car. When activated, this sensor shall prevent the doors from closing or cause them to stop and reopen if they are in the process of closing. The doors

shall remain open as long as the flow of traffic continues and shall close shortly after the last person passes through the door opening.

PART 3 EXECUTION

3.01 SITE QUALITY CONTROL

A. Running Test: In addition to the other requirements, inspections, tests and remedies herein provided upon completion of the elevator installation and before final inspection make, in the presence of the Architect, a running speed test with full maximum load on each elevator car to determine whether the elevator equipment as installed meets the speed, capacity and other requirements of the specifications.

B. Replacement: In the event the equipment does not meet requirements of the specifications, promptly remove from the premises work condemned by the Architect as failing to conform to the specifications, and promptly replace and re-execute work in accordance with the specifications without expense to the Owner. Bear expense of making good work of other contractors destroyed or damaged by such removal or replacement.

3.02 DEMONSTRATION

A. The elevator contractor shall make a final check of each elevator operation with the Owner or Owner's representative present prior to turning each elevator over for use. The elevator contractor shall demonstrate that control systems and operating devices are functioning properly.

3.03 MAINTENANCE

A. Provide maintenance service consisting of examinations and adjustments of the elevator equipment for a period of 12 months after date of Substantial Completion.

B. Maintenance service shall be provided by elevator manufacturer recommended service personnel. Manufacturer recommended parts and supplies shall be used in maintenance service as in the original manufacture and installation.

C. Maintenance service be performed during regular working hours of regular working days and shall include regular time call back service.

D. Maintenance service shall not include adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents.

END OF SECTION

SECTION 01 86 00

FACILITIES SERVICES PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Design and build fire suppression systems for new buildings and additions in accordance with CBC requirements.
   2. Design and build complete plumbing systems for new buildings and additions in accordance with CBC requirements, including but not limited to sanitary design and installation of:
      a. Soil, waste and vent piping and connections to the City of Oceanside sanitary sewer system.
      b. Hot and cold water piping and connections to the City of Oceanside potable water system.
      c. Valves, traps, cleanout drains.
      d. Roof flashing for vent piping.
      e. Furnish and install appropriate plumbing fixtures and accessories.
      f. Secure and pay for necessary permits and fees. Prepare and submit drawings and calculations as necessary to obtain permits.
   3. Design and build HVAC systems for new buildings and additions in accordance with CBC requirements.
   4. Design and build electrical systems for new buildings and additions in accordance with CBC requirements.
   5. Design and build communications systems for new buildings and additions in accordance with CBC requirements.
      a. Include nurse call system matching existing system.
   6. Design and build electronic safety and security systems for new buildings and additions in accordance with CBC requirements.
      a. Coordinate with Owner and existing system.

B. Related Requirements:
   1. HVAC: Technical Specifications in Division 23.
   2. Electrical: Technical Specifications in Division 26.
   3. Communications: Section 27 05 00 Common Work Results for Communications.
   4. Fire Alarm System: Section 28 31 11 Digital, Addressable Fire-Alarm Systems.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Reference Standards: Comply with the following except as otherwise specified in this Project Manual.
   1. National Fire Protection Association (NFPA); www.nfpa.org:
      a. NFPA 13 - Standard for the Installation of Sprinkler Systems, 2016 edition.
      b. NFPA 54 - National Fuel Gas Code, latest edition.

1.03 COORDINATION

A. Contractor shall not fabricate or install any piping without first verifying, in cooperation with contractors of other Divisions of the Work, that the piping can be run as contemplated within the physical constraints of the Structural and Architectural Work.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
   2. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 PRODUCTS

2.01 FIRE SUPPRESSION

A. NFPA Compliance: Install fire protection systems in accordance with NFPA 13 "Standard for the Installation of Sprinkler Systems".

B. UL Compliance: Provide fire protection products in accordance with UL standards; provide UL label on each product.

C. Fire Department/Marshal Compliance: Install fire protection systems in accordance with local regulations of fire department of fire marshal.

D. Provide wet-pipe sprinkler system.

E. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities to comply with installation requirements. Provide sizes and types matching piping and equipment connections; provide fittings of materials which match pipe materials used in fire protection systems.

F. Seismic Performance: Sprinkler piping shall withstand the effects of earthquake motions determined according to NFPA 13 and ASCE/SEI 7.

2.02 PLUMBING

A. Domestic Water Piping:
   1. Seismic Performance: Domestic water piping and support and installation shall withstand effects of earthquake motions determined according to ASCE/SEI 7.
   2. Piping materials shall bear label, stamp, or other markings of specified testing agency.
   3. Comply with NSF 61 for potable domestic water piping and components.

B. General Duty Valves:
   1. ASME Compliance:
      a. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
      b. ASME B31.1 for power piping valves.
      c. ASME B31.9 for building services piping valves.
   2. NSF Compliance: NSF 61 for valve materials for potable-water service.

C. Hangers and Supports:
   1. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
      a. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
      b. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

c. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

D. Domestic Water Piping Specialties:
   1. Minimum Working Pressure for Domestic Potable Water Piping Specialties: 125 psig.
   2. NSF Compliance:
      a. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components.
      b. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9."

E. Healthcare Plumbing Fixtures:
   1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   2. Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities" for plumbing fixtures for people with disabilities.
   3. Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.
   4. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
   5. Select combinations fixtures and trim, faucets, fittings, and other components that are compatible.
   6. Comply with the following applicable standards and other requirements specified for medical plumbing fixtures:
      a. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
      b. Plastic Bathtubs: ANSI Z124.1.
      c. Plastic Shower Enclosures: ANSI Z124.2.
      d. Plastic Lavatories: ANSI Z124.3.
      e. Plastic Laundry Trays: ANSI Z124.6.
      f. Plastic Mop-Service Basins: ANSI Z124.6.
      g. Plastic Shower Enclosures: ANSI Z124.2.
      h. Plastic Sinks: ANSI Z124.6.
      i. Porcelain-Enameled, Formed-Steel Fixtures: ASME A112.19.4M.
      j. Slip-Resistant Bathing Surfaces: ASTM F462.
      k. Solid-Surface-Material Lavatories and Sinks: ANSI/ICPA SS-1.
      l. Stainless-Steel Commercial, Handwash Sinks: NSF 2 construction.
      m. Vitreous-China Fixtures: ASME A112.19.2M.
      n. Water-Closet, Flush Valve, Tank Trim: ASME A112.19.5.
      o. Water-Closet, Flushometer Tank Trim: ASSE 1037.
   7. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
      a. Backflow Protection Devices for Faucets with Hose-Thread Outlet: ASME A112.18.3M.
      b. Diverter Valves for Faucets with Hose Spray: ASSE 1025.
      c. Faucets: ASME A112.18.1.
      d. Hose-Connection Vacuum Breakers: ASSE 1011.
      e. Hose-Coupling Threads: ASME B1.20.7.
      f. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
      g. NSF Materials: NSF 61.
      h. Pipe Threads: ASME B1.20.1.
      i. Sensor-Actuated Faucets and Electrical Devices: UL 1951.
      j. Supply Fittings: ASME A112.18.1.
      k. Brass Waste Fittings: ASME A112.18.2.

8. Comply with the following applicable standards and other requirements specified for bathtub/shower and shower faucets:
    a. Backflow Protection Devices for Hand-Held Showers: ASME A112.18.3M.
    b. Combination, Pressure-Equalizing and Thermostatic-Control Antiscald Faucets: ASSE 1016.
    c. Faucets: ASME A112.18.1.
    d. Hand-Held Showers: ASSE 1014.
    e. High-Temperature-Limit Controls for Thermal-Shock-Preventing Devices: ASTM F445.
    f. Hose-Coupling Threads: ASME B1.20.7.
    g. Manual-Control Antiscald Faucets: ASTM F444.
    h. Pipe Threads: ASME B1.20.1.
    i. Pressure-Equalizing-Control Antiscald Faucets: ASTM F 444 and ASSE 1016.
    j. Sensor-Actuated Faucets and Electrical Devices: UL 1951.
    k. Thermostatic-Control Antiscald Faucets: ASTM F 444 and ASSE 1016.
9. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
    a. Atmospheric Vacuum Breakers: ASSE 1001.
    b. Brass and Copper Supplies: ASME A112.18.1.
    c. Flexible Water Connectors: ASME A112.18.6.
    d. Manual-Operation Flushometers: ASSE 1037.
    e. Plastic Tubular Fittings: ASTM F409.
    f. Brass Waste Fittings: ASME A112.18.2.
    g. Sensor-Operation Flushometers: ASSE 1037 and UL 1951.
10. Comply with the following applicable standards and other requirements specified for miscellaneous components:
    a. Grab Bars: ASTM F446.
    b. Hose-Coupling Threads: ASME B1.20.7.
    c. Off-Floor Fixture Supports: ASME A112.6.1M.
    d. Pipe Threads: ASME B1.20.1.
    e. Plastic Toilet Seats: ANSI Z124.5.
    f. Supply and Drain Protective Shielding Guards: ICC A117.1
11. Comply with the following applicable standards and other requirements specified for miscellaneous components:
    a. Disposers: ASSE 1008 and UL 430.
    b. Dishwasher Air-Gap Fittings: ASSE 1021.
    c. Flexible Water Connectors: ASME A112.18.6.
    d. Floor Drains: ASME A112.6.3.
    e. Grab Bars: ASTM F446.
    f. Hose-Coupling Threads: ASME B1.20.7.
    g. Hot-Water Dispensers: ASSE 1023 and UL 499.
    h. Off-Floor Fixture Supports: ASME A112.6.1M.
    i. Pipe Threads: ASME B1.20.1.
    j. Plastic Shower Receptors: ANSI Z124.2.
    k. Plastic Toilet Seats: ANSI Z124.5.
    l. Supply and Drain Protective Shielding Guards: ICC A117.1.
12. Drinking Fountains and Water Coolers:
    a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
    b. Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; for fixtures for people with disabilities.
    c. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.

d. ARI Standard: Comply with ARI's "Directory of Certified Drinking Water Coolers" for style classifications.
e. ARI Standard: Comply with ARI 1010, "Self-Contained, Mechanically Refrigerated Drinking-Water Coolers," for water coolers and with ARI's "Directory of Certified Drinking Water Coolers" for type and style classifications.
f. ASHRAE Standard: Comply with ASHRAE 34, "Designation and Safety Classification of Refrigerants," for water coolers. Provide HFC 134a (tetrafluoroethane) refrigerant, unless otherwise indicated.

F. Sanitary Drainage Systems:
1. Components and installation shall be capable of withstanding the following minimum working pressure, unless otherwise indicated:
a. Soil, Waste, and Vent Piping: 10-foot head of water.
b. Sanitary Sewer, Force-Main Piping: 50 psig 100 psig.
2. Seismic Performance: Soil, waste, and vent piping and support and installation shall be capable of withstanding the effects of seismic events determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures."
3. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components.

G. Building Support Plumbing Systems:
1. Stormwater Drainage Piping:
a. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:
1) Storm Drainage Piping: 10-foot head of water (30 kPa).
2) Storm Drainage, Pressure Piping: 50 psig (345 kPa).
b. Seismic Performance: Storm drainage piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
2. Gas Systems:
a. Natural gas pressures shall not exceed two (2) pounds per square inch gauge on customer side of the meter.

2.03 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

A. See Division 23 for requirements.

2.04 ELECTRICAL

A. See Division 26 for requirements.

2.05 COMMUNICATIONS

A. Data Communications: Comply with Section 27 05 00.

B. Nurse Call System: Extend existing nurse call system into new buildings and additions in coordination with Owner’s requirements.

C. Clock System: Extend existing clock system into new buildings and additions in coordination with Owner’s requirements.

2.06 ELECTRONIC SAFETY AND SECURITY

A. Access Control: Extend existing access control system in coordination with Owner’s requirements.

B. Fire Detection and Alarm: Comply with Section 28 31 11.
   1. Interface with existing fire alarm system.

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 89 13

SITE PREPARATION PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Selective clearing, grubbing, tree and shrub removal, earth stripping, and topsoil and sod stockpiling within area of work to prepare site for new construction.
   2. Selective demolition of site elements within area of work to prepare site for new construction.
   3. Protect existing trees and other existing plants within and adjacent to area of work.
   4. Provide Best Management Practice (BMP) temporary sedimentation control devices during site and foundation construction in accordance with the standards adopted by the City of Oceanside, California, including, but not necessarily limited to, the following:
      a. Temporary inlet protection at storm sewer inlets and points of concentrated discharge.
      b. Silt fencing.
      c. Sediment traps.
      d. Construction entrance vehicle tracking control.

B. Related Requirements:
   1. Protection of Adjacent Construction: Section 01 71 33.
   2. Locating Underground Utilities: Section 01 85 13 Foundation Performance Requirements.
   3. Selective Site Demolition: Section 02 41 13.
   4. Earthwork: Section 31 00 00.

1.02 SEQUENCING

A. Erosion and sedimentation controls shall be installed before any earth disturbing activities commence.

B. Construction shall be phased in a manner to limit earth disturbing activities (i.e. the entire Project site should not be disturbed if construction will only be occurring in one particular section).

1.03 SCHEDULING

A. Temporary Erosion and Sedimentation Control Scheduling:
   1. Remove temporary erosion and sedimentation control devices in each area as permanent landscaping and drainage facilities are installed.
      a. Final stabilization has been achieved when all earth disturbing activities at the site have been completed, and uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.
   2. Construction Entrance Vehicle Tracking Control: Remove before installation of permanent pavement or landscaping at vehicle tracking control locations.
   3. All temporary erosion and sedimentation control devices shall be removed before the area of work is turned over to the Owner.

PART 2 PRODUCTS

2.01 EXISTING MATERIALS

A. Disposition of Cleared and Demolished Materials: Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

PART 3 EXECUTION

3.01 PROTECTION, GENERAL

A. Protection of Adjacent Construction: Comply with Section 01 71 33.

B. Benchmarks: Protect and maintain benchmarks and survey control points from disturbance during construction.

C. Protect existing site improvements to remain from damage during site clearing.
   1. Restore damaged improvements, if any, to their original condition, as acceptable to Owner.

3.02 TREE AND PLANT PROTECTION

A. General: Preserve and protect existing trees and plants at site that are designated to remain, and those adjacent to site.

B. Barriers: Provide temporary barriers to height of six feet, around each, or around each group, of trees and plants at drip line.

C. Trimming: Trim roots and branches that interfere with construction.
   1. Employ qualified tree surgeon to remove, and to treat cuts.
   2. Do not cut roots greater than 1-inch in diameter without advance notice to Owner.
   3. Cut close to boles in manner that tree will present balanced appearance.
   4. Treat scars resulting from removal of branches over 1-inch in diameter with heavy coat of approved tree paint.

D. Root Systems: Maintain natural cover of turf around root systems. Replace turf if necessary.

E. Stockpiles: Place stockpiles of topsoil and other excavated material so that they will not slough off onto root systems of existing trees.

F. Contaminates: Dispose of solvents, oils and other materials which may be harmful to plant life in containers and remove from site. Remove and replace contaminated soil with good soil at completion of work.

G. Tree Protection:
   1. Carefully supervise excavating, grading and filling and subsequent construction operations, to prevent damage to plant materials.
   2. Protect against breaking and skinning of roots and skinning and bruising of bark.
   3. Erect tree protective fencing at the dripline where possible and at 2 feet from the edge of construction in other locations.
   4. Trees to be Transplanted: Protect and maintain trees to be transplanted, if any.

H. Areas Under Trees: The following are prohibited within the tree protective fencing and within drip line of existing trees to remain:
   1. Grading, trenching or other earthwork.
   2. Soil stockpiling or stripping.
   3. Installation of utility, drainage, irrigation and other underground lines.
   4. Vehicular traffic or parking of personal vehicles, job trailers, portable toilets and other equipment.
   5. Storage or stockpiling of construction materials, products or debris.
   6. Prevent dumping of refuse or chemically injurious materials or liquids.
   7. Prevent puddling or continuous running water.
   8. Do not leave diesel or gasoline equipment running.

H. Protection: Carefully supervise excavating, grading and filling and subsequent construction operations, to prevent damage to plant materials. Protect against breaking and skinning of roots and skinning and bruising of bark.

I. Tree Watering: Water at least every 14 days during construction period by forming suitable dikes and/or soaking devices at drip line and applying approximately 6 inches of water each time. Water frequency during rainy season may be reduced upon acceptance of Architect.

J. Replace, or suitably repair, trees and plants designed to remain which are damaged or destroyed due to construction operations.

3.03 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Comply with the erosion control standards of the City of Oceanside, California.

B. Stormwater discharges from construction activities shall not cause, have the reasonable potential to cause, or measurably contribute to an exceedance of any water quality standard.

C. Sediment caused by accelerated soil erosion shall be removed from runoff water before it leaves the construction site.

D. Bulk storage structures for petroleum products and any other chemicals shall have secondary containment or equivalent protection to contain all spills and prevent any spilled material from entering State waters.

E. The Contractor shall keep a record of all inspections on site and available for review by the Owner and City staff. Inspection reports must identify any incidents of non-compliance with the terms and conditions of the Permit.

F. A Vehicle Tracking Pad (VTP) shall be placed at all exits from the site to prevent track-out onto City streets. If track-out does occur, the Contractor shall immediately sweep the street of debris. Recycled crushed concrete or asphalt shall not be used for vehicle tracking pads. All sediment collected in sediment traps shall be removed upon initial acceptance.

G. All site wastes (including trash and building materials) must be properly managed to prevent potential pollution of State waters.

H. The Contractor shall inspect the construction site (including all erosion and sedimentation control facilities, storage containers, and construction equipment) a minimum of every 14 calendar days and within 24 hours after a precipitation event that cause surface erosion.

I. Erosion and sedimentation control facilities requiring maintenance or adjustment shall be repaired immediately after observation of the failing device.

J. All sediment collecting devices shall be cleaned when sediment levels accumulate to half the design of the device.

3.04 SELECTIVE CLEARING

A. Execute site clearing in manner to limit unnecessary dust and noise. Burning of materials on site not allowed.

B. Vegetation In Building Areas, Paving Areas, Areas to Receive Other New Site Improvements and Areas Indicated to be Regraded: Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
   1. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
   2. Removal: Include new and old stumps of trees and their roots. If impossible to remove roots, grind stumps to 12 inches below finish grade.

C. Vegetation In Other Areas of Site:
   1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
      a. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
      b. Use only hand methods for grubbing within drip line of remaining trees.
   2. Remove trees and shrubs indicated for removal. Architect will tag trees to be removed.
   3. Clear existing vegetation in areas indicated to be sodded or seeded.

D. Tree Removal: Fell trees in manner not to injure standing trees, plants and other improvements to remain.

E. Waste Management: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property.

3.05 SELECTIVE SITE DEMOLITION

A. Comply with Section 02 41 13.

3.06 EARTHWORK

A. Comply with Section 31 00 00.

END OF SECTION

SECTION 01 89 16

SITE IMPROVEMENTS PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
1. Design and construct new drives, parking lots, and sidewalks and extensions or modifications to existing drives, parking lots, and sidewalks as indicated on proposed site plan.
    a. Include concrete curb and gutter.
    b. Include pavement markings.
    c. Include concrete loading dock paving.
    d. Include exterior equipment pads.
    e. Include exterior steps and ramps.
2. Design and install site furnishings.
3. Design and install exterior signage.
4. Design and install landscaping within project limits.
    a. Include design and installation of new planting irrigation.
    b. Replace and repair existing sprinkler system at areas disturbed by construction operations.
    c. Replace and repair existing sod at areas disturbed by construction operations.
    d. Include new plantings, including, but not limited to, the following:
        1) Soil preparation.
        2) Fertilizing.
        3) Soil conditioning.
        4) Landscape grading.
        5) Sodding.
        6) Trees, shrubs, and perennials.

B. Related Requirements:
1. Site Preparation Performance Requirements: Section 01 89 13.
2. Concrete Work: Division 03 Concrete.
    a. Section 03 30 00 Cast-In-Place Concrete.
    b. Section 03 35 00 Concrete Finishing.
    c. Section 03 39 00 Concrete Curing.
3. Asphalt Paving: Section 32 12 00 Flexible Paving.
4. Concrete Paving: Section 32 13 13.
5. Exterior Lighting: Division 26 Electrical.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Reference Standards: Comply with the following.
1. AASHTO T 250 – Thermoplastic Traffic Line Material.
2. ADAAG - Accessibility Guidelines for Buildings and Facilities.
3. American Society of Agricultural and Biological Engineers (ASABE) and International Code Council (ICC) Standards:
    a. ASABE/ICC 802-2014 - Landscape Irrigation Sprinkler and Emitter Standard.
4. ANSI Z60.1-2004 - American Standard for Nursery Stock.

5. CALTRANS Standard Specifications, Dept. of Transportation, Business and Transportation Agency, State of California, which shall be made a part of these specifications by reference.
6. U.S. Federal Highway Administration - Manual on Uniform Traffic Control Devices (MUTCD), 2003 Edition Including Revision 1 dated November 2004 and Revision 2, dated December 2007; www.mutcd.fhwa.dot.gov.

1.03 QUALITY ASSURANCE

A. Qualifications:
   1. Weed Control: All weed control shall be executed by a Licensed Commercial Pesticide Applicator (LCPA).

1.04 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:
   1. Sprinkler System: Submit a controller programming schedule indicating length of time each zone is to be operated. Coordinate controller/watering operations with Owner's maintenance personnel.

B. Sprinkler System Record Drawings: Maintain and submit complete set of Record Drawings for sprinkler system at contract closeout.

1.05 MAINTENANCE MATERIAL SUBMITTALS

A. Sprinkler System: In addition to installed systems, provide Owner with:
   1. Two sprinkler heads of each size and type.
   2. Two valve keys for operating manual valves (two drain valve keys and two gate valve keys).
   3. Two keys for each type of valve cover.
   4. Two wrenches for removing and installing each type of head.

1.06 WARRANTY

A. All trees, shrubs, perennials, and other plant materials, except annuals, shall be guaranteed to take root and grow and thrive for a period of 1 year after final acceptance of the work.

B. Trees, shrubs and evergreens that die back and lose the form and size originally specified shall be replaced, even if they have taken root and are growing after the dieback.

C. Within 15 calendar days of written notification by the Owner, remove and replace all guaranteed plant materials which, for any reason, fail to meet requirement of guaranty.
   1. Replacement planting for trees shall be done in the spring planting season only, except as approved otherwise.
   2. Replacements shall be made to same specifications required for original materials and shall carry the same guaranty from the time they are replaced.
   3. Inadequate or improper maintenance by Owner shall not be cause for replacement provided Contractor shall have submitted throughout guaranty period a monthly letter of report to Owner on improper or inadequate maintenance practices and observations.
   4. In accordance with original specifications. Fully restore areas damaged by replacement operations to their original condition.

PART 2 PRODUCTS

2.01 ASPHALT

A. Refer to Section 32 12 00.

2.02 CONCRETE

A. Refer to Section 03 30 00 Cast-In-Place Concrete.

2.03 STRIPING PAINT FOR PARKING AREAS AND DRIVES

A. Paint: One of the following:
   1. Solvent Base Traffic Paint: AASHTO M248, Type F.
   2. Acrylic Waterborne Paint:
      a. Composition: 100 percent acrylic emulsion.
         1) Pigment Percent by Weight: 45 to 55 percent.
         2) Total Non-volatile: 73 percent minimum.
         3) Non-Volatile Vehicle: 48 percent minimum.
         4) Volatile Content: Less than 150 grams volatile organic matter per liter of total non-volatile paint material.
         5) Volume of Solids: 58 percent minimum.

B. Thermoplastic Striping Material for Drives: One of the following:
   1. Hot Extruded Alkyd Thermoplastic Compound: AASHTO M249.
   2. Epoxy Thermoplastic (ETP) Hot Spray Traffic Marking Material: AASHTO T250.
      a. Composition: Two epoxy resins, calcium carbonate filler, glass beads, and either titanium dioxide pigment for white or silica-encapsulated lead chromate pigment for yellow formulation.

C. Colors: Match existing.
   1. Handicapped: Blue and white.

D. Glass Beads for Reflective Markings:
   1. For Hot Extruded Thermoplastic Markings: AASHTO M247, Type II, including moisture resistance requirements.
   2. For Epoxy Thermoplastic (ETP): ASTM D2205, Type I.
   3. For Traffic Paint: AASHTO M247, Type I, including moisture resistance requirements.

2.04 PLANTING IRRIGATION

A. Sprinkler Systems: Provide materials and equipment to match and be compatible with existing materials and equipment.

B. Design Requirements: Contractor shall design system allowing 1-1/2 inches of water per week delivered to each zone based upon available service size and water pressure. Number of zones shall be optional with the contractor except that shrubbery heads shall be zoned separately. No piping or spray head may be located within 5 feet of the building. Provide shrubbery heads at all shrubbery areas.

C. Automatic Control System: Provide a low voltage system manufactured expressly for control of automatic circuit valves of landscape irrigation systems. Provide unit of capacity to suit number of circuits as indicated. Wall-mount station controller.
   1. Timing Device: Adjustable, 24 hour and 7 to 14 day, clocks to operate any time of day and skip any day in a 7 day or 14 day period. Allow for manual or semi-automatic operation without disturbing present automatic operation.

2.05 PLANTS

A. Trees, Shrubs, and Perennials:
   1. Plants shall be symmetrical and typical for species and variety.
   2. Plants shall be sound, healthy, vigorous, and free from disease and insect pests or their eggs.
   3. All plant material shall conform to the requirements in ANSI Z60.1.

B. Sod:
   1. Species: Grass blend to match existing sod unless otherwise approved by Owner.
   2. Source: Commercial sod nursery; obtain the Owner's representative's approval prior to delivery to site.
   3. Sod shall have healthy, vigorous root system, with regularly fertilized, mowed, weed control program providing thick turf, free of objectionable weeds.
   4. Each Piece of Sod: Sandy-loam soil base that will not break, crumble or tear during sod installation.
   5. Cut in strips 18 inch wide no more than 24 hours prior to delivery, kept damp on pallets at site, and laid in place within 24 hours of delivery.

PART 3 EXECUTION

3.01 ASPHALT PAVING

A. Refer to Section 32 12 00.

3.02 CONCRETE PAVING

A. Concrete Drives and Vehicular Paving: Refer to Section 32 13 13.

B. Concrete and Concrete Testing: Refer to Section 03 30 00 Cast-In-Place Concrete.

3.03 CURB AND GUTTER

A. Construct curb and gutter in accordance in strict conformity with the ordinances of the City of Oceanside, California.

B. Finish Grading:
   1. Cut or fill and finish grade as required to bottom of curb and gutter within a tolerance of 0.02-foot (1/4-inch).
   2. Fine grade to smooth, level surface prior to installation of forms.

C. Where new curb and gutter abuts existing asphalt paving, cut asphalt to a straight line and pour toe of gutter against asphalt to avoid necessity of patching asphalt.

D. Concrete Forming and Placement: Comply with Section 03 30 00.

E. Tolerance: Test the gutters with a 20 foot straight edge laid parallel to the centerline of the roadway while the concrete is still plastic. Straight edging shall be done along the edge of the gutter cross-section. Irregularities in excess of 1/4 inch shall be corrected immediately.

F. Finishing: Refer to Section 03 35 00.
   1. Finish all curb and gutter surfaces while the concrete is still green to a brush finish. For any surface areas that are too rough or where surface defects make additional finishing necessary, the curb shall be rubbed to a smooth surface with a soft brick or wood block, with water used liberally.
   2. Finish edges with a edging tool having a radius of 1/2 inch.
   3. Remove all curb and gutter forms within 24 hours after concrete is in place, and fill minor defects with mortar composed of one part Portland cement and two parts fine aggregate. Plastering is not permitted.

G. Concrete Curing: Comply with Section 03 39 00.

H. Backfilling: After the concrete has set sufficiently, but no later than 3 days after the pouring, the spaces in front and back of the curb and other excavation generated from this work shall be refilled to the required elevation with suitable material, placed and thoroughly compacted in layers not to exceed 6 inches.
   1. Final Grade Tolerance: $\pm$ 0.1 foot.

3.04 SIDEWALKS AND OTHER EXTERIOR FLATWORK

A. Construct sidewalks, ramps and flatwork in strict conformity with the ordinances of the City of Oceanside, California.

B. Requirements for Users with Disabilities:
   1. Handicapped Ramps: Comply with standards of ADAAG.
   2. Provide tactile warning surfacing at curb cuts and elsewhere as required by code.

C. Fine Grading:
   1. Cut or fill and finish grade as required to bottom of pavement within a tolerance of 0.02 foot (1/4-inch).
   2. Fine grade to smooth, level surface prior to installation of forms.
   3. Slope: Slope subgrade and slabs next to building away from building.

D. Where curb integral with flatwork abuts existing asphalt paving, cut asphalt to a straight line and place toe of curb against asphalt to avoid necessity of patching asphalt.

E. Concrete Forming and Placement: Comply with Section 03 30 00.

F. Walks, Patios, Ramps, Equipment Pads, and Other Flatwork Subject to Pedestrian Traffic Only: Full 4 inches unless indicated otherwise.

G. Control Joints: Provide scored joints with minimum depth of 3/4-inch. Locate control joints at 6 feet maximum on center for walks and 12 feet maximum for other flatwork.

H. Walks, Sidewalks, Ramps, and Steps: Light broom finish perpendicular to direction of travel.

I. Concrete Curing: Comply with Section 03 39 00.

J. Backfilling: After the concrete has set sufficiently, but no later than 3 days after placement, backfill to slab edges with topsoil or gravel as applicable, placed and thoroughly compacted.
   1. Final Grade Tolerance: Plus-or-minus 0.1 foot.

K. Protection: Slabs and Flatwork: Do not open to traffic for at least 72 hours after placing and until concrete has reached minimum compressive strength of 1800 psi.
   1. Protect concrete surfaces from staining, cracking, chipping, and other damage during progress of the work, and leave in good condition upon completion.

3.05 PAVEMENT MARKING

A. Preparation and Layout:
   1. After paving is fully cured, sweep paving clean.
   2. Layout: Layout and paint symbols, direction arrows, signs, etc., on asphalt paving and concrete paving.

B. Lines: Four inches wide, unless otherwise indicated on Drawings, painted by mechanical striping machine.

C. Markings: Apply lining and other markings sufficient quantity to produce completely opaque lines and markings.
   1. Extruded Thermoplastic Markings: 90-mil thickness unless indicated otherwise.
   2. Reflective Markings: Apply glass spheres uniformly to the wet paint at a rate of 4.5 plus or minus 0.5 pounds of glass spheres per gallon.

D. Paint curbs at fire lanes, drop-off locations, and other locations where required by local ordinance.

3.06 SPRINKLER SYSTEM AND SOD REPAIR

A. Sprinkler System: Repair and replace existing sprinkler system damaged by construction operations and at areas of new construction requiring alterations to existing system.
   1. Repair, replace and revise system as required to provide complete operating system to provide proper irrigation for remaining landscaped areas and to avoid sprinkling of adjacent paving, building and other improvements.
   2. Provide materials and equipment to match and be compatible with existing materials and equipment.

B. Sod Areas: Repair and replace existing sod areas damaged by construction operations. Grade to provide even transition between existing and replaced areas. Water as required to establish repaired and replaced sod.

3.07 NEW SPRINKLER SYSTEM

A. Excavation: The width of the trench in which the pipe will be placed shall be sufficient to allow thorough tamping or puddling of suitable backfill material under and over the pipe. Boring will be permitted only where the pipe must pass under concrete sidewalk or curb and gutter (previously constructed pavement) which cannot be removed. In backfilling the bore, the final density of the backfill must match that of the surrounding soil.

B. Sprinkler Piping: Install sprinkler piping from the various electric valves out to the sprinkler heads.

C. Sprinkler Heads: Set heads plumb and 1-1/2 inches above finish grade in sod areas.

D. Testing and Flushing: After all piping, risers and valves are in place and connected, but prior to installation of sprinkler heads, quick coupler assemblies, and hose valves, thoroughly flush piping system under a full head of water. Maintain flushing for three minutes through furthermost valve. After flushing, cap all risers.

3.08 PLANTING

A. Pre-Planting Inspection:
   1. All plant materials shall be inspected at the place of growth and/or on the Project site before planting commences. Plants shall be inspected for size, variety, condition, defects and injury. The Owner's representative reserves the right to reject unsatisfactory plant material at any time during the work.
   2. Notify the Owner's representative of the source of material no later than 30 days after award of the Contract.
   3. All fertilizers, pre-mixed backfill mixes, mulches and soil amendments shall be inspected at the site by the Owner's representative before they are used in planting operations.

B. Landscape Grading: When weeding, soil preparation, and soil conditioning have been completed and soil has been thoroughly water settled, all planting areas should be smooth-graded, ready for seeding or sodding. Finish grades shall conform to site grading plans and produce a smooth even surface without abrupt changes. Minor adjustments of finish grades shall be made at the direction of the Owner's representative, if required.
   1. Establish finish grades to within 0.04 foot of grades indicated on Drawings, less 1-1/2-inch for sod in areas to receive sod.
   2. Compact surface grade prior to sodding or planting and mulching firm but not hard (80 percent Standard Proctor density at within 2 percent of optimum moisture).
   3. Shrub Areas: Finished grade shall be 1-1/2 inches below top of adjacent pavement, curbs, edging, or wall, unless indicated otherwise on Drawings.
   4. Lawn Areas: Finished grade shall be ¾ inches below top of adjacent pavement, curbs, or edging.
   5. Prior to approval of grades, rake to a smooth, even surface free of debris, clods, rocks and vegetable matter.
   6. Drainage: All grades shall provide for natural runoff of water without low spots or pockets. Flow-line grades shall be accurately set and shall not be less than 2 percent gradient wherever possible.
   7. Slopes: Tops and toes of all slopes shall be rounded to produce a gradual and natural-appearing transition between relatively level areas and slopes.

C. Sodding: Moisten sod bed thoroughly. Lay sod smoothly, edge to edge, and with staggered joints. Butt edges tightly.

D. Tree and Shrub Planting: Do not install plant materials until planting areas have been graded and prepared as specified and approved by Owner's representative. Plants shall be planted immediately after containers are cut and containers shall be regularly removed from the site.

E. Double stake all trees up to and including 2-1/2 inch caliper. Set stakes plumb and at right angles to prevailing wind.

F. Continuously maintain all plantings in areas included in the contract from the beginning of contract work, during the progress of work, and for a period of 60 days after completion of all work until final acceptance of all contract work by the Owner.

3.09 PROTECTION

A. Protection of Concrete Work:
   1. Protect all exposed surfaces of concrete from premature drying and frost.
   2. Protect freshly placed concrete against rain damage.
   3. Protect all concrete surfaces from staining, cracking, chipping and other damage during progress of work, and leave in good condition upon completion.

3.10 SITE QUALITY CONTROL

A. Concrete Testing: All testing, with the exception of slump tests, shall be performed by an approved testing laboratory. Comply with testing requirements specified in Section 03 30 00.

B. Record of Work: A record shall be kept by the Contractor listing the time and date of placement of all concrete. Such record shall be kept until the completion of the project and shall be available to the Architect for examination at any time.

END OF SECTION

DIVISION 02 – EXISTING CONDITIONS

SECTION 02 41 13

SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Remove and dispose of site elements designated for removal including, but not necessarily limited to, the following:
      a. Curb and gutter.
      b. Sidewalks.
      c. Paving.
   2. Dispose of debris off site.
   3. Cleanup and leave site prepared for further construction.

B. Related Requirements:
   1. Selective Demolition of Building Assemblies and Components: Section 02 41 19 Selective Demolition.

1.02 REGULATORY REQUIREMENTS

A. Permits: Obtain all required right of way permits from the City of Oceanside.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.01 SITE DEMOLITION

A. Remove designated existing site improvements as indicated.

B. Execute demolition in manner to limit unnecessary dust and noise.

C. Where new concrete adjoins existing concrete cut existing concrete to straight line using masonry saw.

3.02 WASTE MANAGEMENT

A. During demolition operations, keep premises free from accumulations of waste material and rubbish caused by employees or work, and at completion of work remove rubbish, tools and surplus material and leave premises clean and ready for subsequent work. Promptly remove waste, rubbish or debris from site.

END OF SECTION

SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Erect dustproof enclosures separating occupied from unoccupied areas before beginning demolition. Include infection control partitions for demolition in operating hospital treatment areas. Remove enclosures when work is completed and patch surfaces damaged by work.
   2. Remove existing building components and equipment as required by new construction.
   3. Provide shoring and bracing as necessary to ensure structural safety during demolition and until erection of new construction.
   4. Cap and identify exposed utilities.
   5. Legally dispose of debris off site.
   6. Clean up and leave work areas prepared for new construction.

B. Related Requirements:
   1. Selective Site Demolition: Section 02 41 13.
   2. Cutting and Patching: Section 01 73 29.

1.02 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Existing Utility Services:
   1. Capping: Arrange and pay for disconnecting, removing and capping utility services within areas of demolition. Disconnect and stub off. Notify affected utility company in advance and obtain approval before starting this work.
   2. Identification: Place markers to indicate location of disconnected services. Identify service lines and capping locations on Project Record Documents.

B. Materials Ownership:
   1. Materials to be Removed by Owner: Items which are removed prior to start of demolition shall remain property of Owner. All other items indicated to be removed but not indicated for reinstallation shall become property of Contractor who shall remove them from site.
      a. Items to be Removed By Owner: Will be designated with marking prior to pre-bid tour of site.
   2. Unless otherwise indicated, demolition waste becomes property of Contractor.

C. Coordination with Occupants: Portions of the building outside the area of work will remain occupied during construction. Do not interfere with use of occupied portions of building. Maintain free and safe passage to and from occupied areas.

D. Predemolition Conference: Conduct conference at Project site.
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   5. Review areas where existing construction is to remain and requires protection.

1.04 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report for review and approval, including drawings, that indicates the measures proposed for protecting individuals and property, for dust control, and for weather enclosure of the existing building to remain. Indicate proposed locations and construction of enclosures and barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

C. Predemolition Photographs or Video: Submit before Work begins.

1.05 SITE CONDITIONS

A. Existing Conditions:
   1. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
   2. Asbestos-Containing Materials: This Project is not known to have asbestos-containing materials in area designated for construction.

PART 2 PRODUCTS – Not Used.

PART 3 EXECUTION

3.01 PREPARATION

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

E. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Dust Protection: Erect and maintain dustproof partitions as required to prevent spread of dust, fumes and smoke to other parts of building. Erect and maintain infection control partitions from floor to underside of ceiling with zipper opening as indicated on Drawings. On completion, remove partitions and repair damaged surfaces to match adjacent surfaces.
   5. Cover and protect furniture, furnishings, and equipment that have not been removed.

F. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

G. Exterior Openings: Erect secure and weatherproof closures for exterior openings where work includes temporary penetration of exterior assemblies.

3.02 SELECTIVE DEMOLITION OF BUILDING ASSEMBLIES AND COMPONENTS

A. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

B. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Demolish in orderly and careful manner as required to accommodate new work. Protect existing foundations and supporting structural members.
   1. Execute demolition in manner to limit unnecessary dust and noise. Burning of materials on site not allowed.
   2. Hazardous Materials: If the Contractor suspects that existing hazardous materials have been uncovered during demolition, do not disturb; immediately stop work in the area and notify the Owner. Hazardous materials will be removed by Owner under a separate contract.
   3. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   4. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   5. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   6. Maintain adequate ventilation when using cutting torches.
   7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

C. Protection:
   1. Provide necessary temporary shoring and bracing to support and protect portions of existing building during demolition operations. Leave such shoring in place until permanent supports have been installed. Be solely responsible for design, safety and adequacy of temporary shoring and bracing and its ability to carry load for which intended.
   2. Protect existing slab to remain. Perform demolition using methods that leave slab surface in optimal condition to receive new construction.

D. Safety: Cease operations and notify Architect immediately if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume until safety is restored.

E. Repair: Repair demolition performed in excess of that required at no cost to Owner.

3.03 EXISTING FLOOR COVERINGS

A. Remove existing floor coverings where indicated or new floor coverings are scheduled. Remove existing mastic and leave floors smooth and clean and ready for new floor coverings.

3.04 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
   2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3.05 CLEANING

A. During demolition operations, keep premises free from accumulations of waste material or rubbish caused by employees or work, and at completion of work remove rubbish, tools and surplus material and leave premises clean and ready for subsequent work.

3.06 WASTE MANAGEMENT

A. General: Comply with Section 01 81 13.

B. Promptly remove waste, rubbish or debris from site.

C. Disposal of Demolished Materials: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site.
   1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

END OF SECTION

DIVISION 03 – CONCRETE

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Cast-in-place concrete materials and placement.

B. Related Requirements:
   1. Concrete Finishing: Section 03 35 00.
   2. Concrete Curing: Section 03 39 00.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Reference Standards: Comply with the following except as otherwise specified in this Project Manual.
   1. American Concrete Institute (ACI) Standards:
      a. ACI 117-10(15) – Specification for Tolerances for Concrete Construction and Materials.
      b. ACI 301-10 - Specifications for Structural Concrete.
      c. ACI 305.1-14 – Specification for Hot Weather Concreting.
      d. ACI 318-14 – Building Code Requirements for Structural Concrete, Parts 2 and 3.
   2. ASTM International Standards:
      a. ASTM C94/C94M – Ready-Mixed Concrete.
      b. ASTM C494/C494M-11 – Chemical Admixtures for Concrete.

C. Guide References and Standard Practices: Comply with recommendations of the following except as otherwise specified in this Project Manual.
   1. American Concrete Institute (ACI) Guide References:
      a. ACI 211.5R-01 – Guide for Submittal of Concrete Proportions.
      b. ACI 302.1R-15 – Guide for Concrete Floor and Slab Construction.
      c. ACI 305R-10 – Guide to Hot Weather Concreting.
      d. ACI 309R-05 – Guide for Consolidation of Concrete.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

A. Concrete Materials, General: Provide materials in accordance with ACI 301.

B. Cementitious Materials:
   1. Portland Cement: ASTM C150.
      a. Type: Type I/II.

C. Aggregate:
   1. Fine Aggregate: Natural sand.
   2. Coarse Aggregate: Gravel or crushed stone containing no deleterious substances that cause surface spalling.

3. Normal Weight Aggregate: ASTM C33, obtained from same source throughout Project.
    a. Aggregate for Concrete Floor Mixes: Contain 0.2 percent or less coal, lignite, or low-density deleterious material.
4. Lightweight Coarse Aggregate: In accordance with ASTM C330.
5. Aggregate for Colored, Sandblasted or Bush Hammered Concrete: Buff or gray aggregate only. Pink not allowed. One source for all concrete.

D. Water: Potable.

E. Air Entraining Admixture: ASTM C260/C260M-10a.

F. Chemical Admixtures:
1. Water Reducing Admixture: ASTM C494, Type A.
2. High Range Water Reducing Admixture (Superplasticizer): ASTM C494, Type F or G.

2.02 PROPORTIONING AND DESIGN OF CONCRETE MIXES

A. Reference Standards: ACI 301 and ACI 318.

B. Design: Proportion ingredients for mixes in accordance with ACI 301.

C. Supplementary Cementitious Materials: Fly ash will be allowed as a cementitious component of any mix unless otherwise indicated. Fly ash shall not exceed 20 percent of total cementitious material by weight.

D. Admixtures:
1. All admixtures shall be chemically compatible with cementitious materials and all other admixtures used in the mix.
2. All admixtures shall be chloride free. No calcium chloride shall be added to concrete.
3. Superplasticizer: Contractor's option at:
    a. All pumped concrete.
    b. Concrete with water/cement ratio below 0.50.
    c. All architectural concrete.
    d. All concrete required to be watertight.

E. Chloride Ions: Maximum water-soluble chloride ion concentration in all concrete mixes shall not exceed 0.15 percent by weight of cementitious materials, except as follows.
1. Concrete Over Metal Decks: Maximum 0.06 percent.
2. Concrete in Post-Tensioned Decks: Maximum 0.06 percent.

F. Strengths: 4,000 psi unless higher strength required by structural design.

G. Water/Cementitious Material Ratio: Conform to ACI 301 and ACI 318. Comply with strictest applicable requirement:
1. Concrete Placed by Pumping: 0.50 maximum.
2. Concrete with Design Strength of 4,000 psi or Greater: 0.50 maximum.
3. Concrete for Floor Slabs to Receive Coating, Carpeting, or Adhered Flooring: 0.42 maximum.
4. Calculation of Water-Cementitious Material (w/cm) Ratios: Water includes free surface moisture on aggregates and liquid admixture.

H. Concrete for Floors: Follow recommendations of ACI 302.1R. In addition to other requirements specified, concrete for floors shall be proportioned to comply with the following:
1. Proportion concrete to minimize shrinkage.
2. Concrete for trowel-finished interior floors shall be non-air-entrained.

3. Aggregate Grading: Grade aggregate to optimize finishing characteristics of mix while minimizing drying shrinkage and mixing water requirement.
    a. Fine Aggregate Grading: Comply with ACI 302.1R, Table 5.1.
    b. Coarse Aggregate Grading: Comply with the following unless otherwise specified.
        1) Maximum Coarse Aggregate Size for Slabs 5-inches and Thicker: 1½-inch.
        2) Maximum Coarse Aggregate Size for 4-Inch Thick Slabs: 1-inch.
        3) Maximum Coarse Aggregate Size for Slabs on Metal Deck and Topping Slabs on Precast Concrete: 3/4-inch.
        4) Maximum Coarse Aggregate Size for Topping and Metal Pan Fill 2-Inches or Less in Thickness: 1/2-inch.
    c. Combined Aggregate Grading:
        1) The percent retained on two adjacent sieve sizes shall be not less than 5 percent.
        2) The percent retained on three adjacent sieve sizes shall not be less than 8 percent.
        3) When the percent retained on each of two adjacent sieve sizes is less than 8 percent, the total percent retained on either of these sieves and the adjacent outside sieve shall be at least 13 percent.
4. Cementitious Material Content: Comply with ACI 301, Table 4.2.2.1. Provide amount necessary to properly cut, trim, finish, and compact the floor slab surface.
5. Proportion concrete to include Type A water-reducing admixture or Type F or G high-range water-reducing admixture.
6. Concrete for Floors Subject to Vapor Emission Limitations: Design mix with minimum water content necessary for proper placement, so that, after curing and drying, moisture content can be controlled to within 3 pounds per 1000 square foot over 24 hours using quantitative testing methods specified in Section 09 05 61.
    a. Water content of mix shall be limited to that required to produce a slump between 2 and 3 inches prior to addition of water-reducing admixture.
        1) Maximum Slump at Placement with Type A Water-Reducing Admixture: 4 inches.
        2) Maximum Slump at Placement with High-Range Water-Reducing Admixture: 8 inches.
    b. Maximum Water/Cementitious Material Ratio: 0.42.

2.03 BATCHING AND TRANSIT MIXING

A. Provide ready-mixed concrete in accordance with ASTM C94. On-site mixed concrete not allowed.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Install concrete work in accordance with ACI 301.

B. Installation Tolerances: Comply with ACI 117.

END OF SECTION

SECTION 03 35 00

CONCRETE FINISHING

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Finishing top surface of freshly placed concrete in wall forms.
   2. Finishing freshly placed concrete floor slabs-on-grade, concrete floor slabs on metal deck, and concrete topping slabs.
   3. Concrete floor slab flatness requirements, testing and surface tolerance verification.
   4. Finishing cured concrete floor slabs.
      a. Sealing Class 1 floor slabs not receiving other concrete finish or finish flooring.
      b. Sealing Class 4 floor slabs not receiving other concrete finish or finish flooring.
      c. Sealing, densifying, hardening, and dustproofing Class 5 floor slabs.
   5. Treatment of formed surfaces.

B. Related Requirements:
   1. Placing and Consolidating Concrete: Section 03 30 00 Cast-In-Place Concrete.
   2. Concrete Curing: Section 03 39 00.

1.02 REFERENCES

A. Definitions:
   1. Architectural Concrete: Cast-in-place concrete for exposed applications subject to Architect's review and acceptance based on color, surface finish and/or other aesthetic criteria in addition to structural requirements and basic quality requirements specified in ACI 301 and in these Specifications.
      a. Reference Standard: ACI 303.1.
      b. Includes as-cast architectural concrete that requires no further surface treatment after stripping of forms, except for possible repairs of defects.
      c. Includes architectural concrete requiring special surface finish treatment, such as grout cleaning, bushhammering, sandblasting, or staining.
   2. Class 1 Floor: Single course concrete floor slab designed to remain exposed in service and to bear foot traffic only.
   3. Class 2 Floor: Single course concrete floor slab designed to receive applied floor covering and to bear foot traffic only.
   4. Class 3 Floor: Two-course concrete floor slab designed to remain exposed in service or to receive applied floor covering and to bear foot traffic and light vehicular traffic.
      a. Includes new parking garage floor slabs over existing slabs.
      b. Bondbreaker for Unbonded Topping: Section 03 30 00.
      c. Preparation of Existing Slab to Receive Bonded Topping: Section 03 30 00.
   5. Class 4 Floor: Single course concrete floor slab designed to remain exposed in service or to receive applied floor covering and to bear foot traffic and light vehicular traffic.
      a. Includes new single-course parking garage floor slabs bearing directly on subgrade.
   6. Class 5 Floor: Single course concrete floor slab designed to remain exposed in service and to bear industrial vehicular traffic with pneumatic wheels and moderately soft solid wheels.
   7. Class 6 Floor: Single course concrete floor slab designed to remain exposed in service and to bear heavy-duty industrial vehicular traffic with hard wheels and heavy wheel loads.
   8. Class 9 Floor: Concrete floor slab requiring critical surface tolerance to enable proper equipment performance in service, as described in ACI 302.1R.

B. Reference Standards: Comply with following except as modified by supplementary requirements of this Project Specification.
   1. American Concrete Institute (ACI) Standards:
      a. ACI 117-10 – Specification for Tolerances for Concrete Construction and Materials.
      b. ACI 301-10 - Specifications for Structural Concrete.
      c. ACI 303.1-97 – Standard Specification for Cast-In-Place Architectural Concrete.
   2. ASTM International (ASTM):
      a. ASTM E1155-14 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Number.

C. Guide References and Standard Practices: Comply with recommendations of the following except as otherwise specified in this Project Manual.
   1. American Concrete Institute (ACI) Committee Reports, Guides, Standard Practices, and Commentaries:
      a. ACI 302.1R-15 – Guide for Concrete Floor and Slab Construction.
   2. American National Standards Institute (ANSI) Standards:
      a. ANSI A108 - American National Standard Specifications for Installation of Ceramic Tile:
         1) A108.01 – General Requirements: Subsurfaces and Preparations by Other Trades – 2013 (Revised).
   3. ASTM International Standard Practices:
      a. ASTM F710-11 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

1.03 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Concrete flatwork finisher shall have a minimum of two years' experience on equivalent projects.

PART 2 PRODUCTS

2.01 SEALERS FOR FLOOR SLABS

A. All concrete sealers and other concrete treatment products shall be certified to be VOC compliant with all applicable federal, state and local regulations.

B. Curing and Sealing Compounds: Section 03 39 00.

C. Water-Based Acrylic Sealers for Class 1 Floor Slabs: ASTM C309, Type I and ASTM C1315, Class B. Minimum 30 percent solids content.

PART 3 EXECUTION

3.01 FINISHING FORMED CONCRETE AFTER PLACEMENT

A. Where tops of cast-in-place concrete walls will form finished surface, immediately finish concrete in form by skilled cement finisher. Strike smooth at indicated elevation and float to texture consistent with finish of adjacent formed surface. Top of walls and similar unformed surfaces not finished to level will be subject to removal and replacement.

3.02 FINISHING CONCRETE FLOOR SLABS AFTER PLACEMENT

A. General: Comply with ACI 301.

3.03 FLOOR SLAB FLATNESS AND LEVELNESS TOLERANCES

A. Floor Slab Flatness and Levelness Tolerances: ASTM E1155. Finish floors to following Floor Profile Quality Classification in accordance with ACI 117.
   1. Slab-On-Grade Floors:

Floor Class And Use (See Drawings)	Specified Composite Overall Value: Floor Flatness Number F_F	Specified Composite Overall Value: Floor Levelness Number F_L
Class 1 Noncritical mechanical rooms and other similar non-public areas; floors to receive access flooring	20	15
Class 1 or Class 4 Floor areas to receive polished concrete finish	40	30
Class 2 Carpeted areas	25	20
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile up to and including 16” tile edge size, and with grout joints 1/4” or larger	25	20
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile 18” through 24” tile edge size, and with grout joints 1/4” or larger	32	25
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile up to and including 16” tile edge size, and with 3/16” grout joints	32	25
Class 2 Floors to receive thin-set or medium set large format ceramic, porcelain, or stone tile up to 36” tile edge size, and with grout joints 1/4” or larger	50	50
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile 18” through 24” tile edge size, and with 3/16” grout joints	50	50
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile up to and including 16” tile edge size, and with 1/8” grout joints	50	50

Floor Class And Use (See Drawings)	Specified Composite Overall Value: Floor Flatness Number F_F	Specified Composite Overall Value: Floor Levelness Number F_L
Class 2 Floors to receive thin-set or medium set large format ceramic, porcelain, or stone tile up to 36" tile edge size, and with 3/16" grout joints	60	60
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile 18" through large format 36" tile edge size, and with 1/8" grout joints	60	60
Class 2 Floors to receive resilient flooring, fluid-applied flooring, or wood flooring	35	25

2. Slab on Metal Deck Floors, Structural Slab Floors, and Topping Slabs:

Floor Class And Use (See Drawings)	Specified Composite Overall Value: Floor Flatness Number F_F	Specified Composite Overall Value: Floor Levelness Number F_L
Class 1 Noncritical mechanical rooms and other similar non-public areas; floors to receive access flooring	20	N/A
Class 2 Carpeted areas	25	N/A
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile up to and including 16" tile edge size, and with grout joints 1/4" or larger	25	20 (shored) N/A (unshored)
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile 18" through 24" tile edge size, and with grout joints 1/4" or larger	32	25 (shored) N/A (unshored)
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile up to and including 16" tile edge size, and with 3/16" grout joints	32	25 (shored) N/A (unshored)
Class 2 Floors to receive thin-set or medium set large format ceramic, porcelain, or stone tile up to 36" tile edge size, and with grout joints 1/4" or larger	50	N/A

Floor Class And Use (See Drawings)	Specified Composite Overall Value: Floor Flatness Number F_F	Specified Composite Overall Value: Floor Levelness Number F_L
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile 18” through 24” tile edge size, and with 3/16” grout joints	50	N/A
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile up to and including 16” tile edge size, and with 1/8” grout joints	50	N/A
Class 2 Floors to receive thin-set or medium set large format ceramic, porcelain, or stone tile up to 36” tile edge size, and with 3/16” grout joints	60	N/A
Class 2 Floors to receive thin-set or medium set ceramic, porcelain, or stone tile 18” through large format 36” tile edge size, and with 1/8” grout joints	60	N/A
Class 2 Floors to receive resilient flooring, fluid-applied flooring, or wood flooring	35	25 (shored) N/A (unshored)

B. Comply with stricter tolerance requirements of floor finish manufacturers where applicable.

C. Flatness, Levelness, and Grade Conformity Tests: All floor flatness, levelness, and grade conformity tests shall be made on each newly installed floor slab within 8 hours after completion of the final troweling operation.
   1. Flatness and Levelness tests shall be made using an "F-Meter" as manufactured by Allen Face & Company of Wilmington, NC. Grade Conformity tests shall be made using an optical or laser level.
   2. F_L levelness tolerances specified shall not apply to any slab that is to be inclined or cambered.
   3. No F_L levelness tolerances will be applied to any unshored elevated construction.
   3. General Conformity to Design Grade:
      a. Verify each unshored elevated floor to be within plus-or-minus 1-1/4-inch of its elevation as specified on the Drawings in its entirety.
      b. Verify each slab-on-grade floor and each shored elevated floor to be within plus-or-minus 3/4-inch of its elevation as specified on the Drawings in its entirety.
   4. Remedy for Out of Tolerance Work:
      a. Each floor shall be subdivided into sections bounded either by the column and half column lines, or the construction and control joints, whichever subdivision yields the smaller areas.
      b. All floor sections measuring at or above both the specified Floor Flatness (F_F) and Floor Levelness (F_L) numbers shall be accepted for F number compliance as constructed.

c. All floor sections which fail to meet or exceed both the specified F_F and the specified F_L shall be corrected in their entirety.
   1) Such corrective work on elevated slabs may take the form of grinding or depression-and-retopping.
   2) Such corrective work on slabs-on-grade may take the form of grinding, depression-and-retopping, or removal-and-replacement.
   3) In all cases, the particular method of correction to be employed shall be determined solely by the Owner.

END OF SECTION

SECTION 03 39 00

CONCRETE CURING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Final curing of cast-in-place concrete slabs.
   2. Final curing of formed cast-in-place concrete.

B. Related Requirements:
   1. Placing and Consolidating Concrete: Section 03 30 00 Cast-In-Place Concrete.
   2. Concrete Finishing, Initial Curing, and Sealing: Section 03 35 00 Concrete Finishing.
   3. Common Work Results for Flooring Preparation: Section 09 05 61.

1.02 REFERENCES

A. Definitions:
   1. Class 1 Floor: Single course concrete floor slab designed to remain exposed in service and to bear foot traffic only.
   2. Class 2 Floor: Single course concrete floor slab designed to receive applied floor covering and to bear foot traffic only.
   3. Class 4 Floor: Single course concrete floor slab designed to remain exposed in service or to receive applied floor covering and to bear foot traffic and light vehicular traffic.
   4. Class 5 Floor: Single course concrete floor slab designed to remain exposed in service and to bear industrial vehicular traffic with pneumatic wheels and moderately soft solid wheels.
   5. Class 6 Floor: Single course concrete floor slab designed to remain exposed in service and to bear heavy-duty industrial vehicular traffic with hard wheels and heavy wheel loads.
   6. Class 9 Floor: Concrete floor slab requiring critical surface tolerance to enable proper equipment performance in service, as described in ACI 302.1R.

B. Reference Standards: Comply with following except as modified by supplementary requirements of this Project Specification.
   1. American Concrete Institute (ACI) Standards:
      a. ACI 301-10 - Specifications for Structural Concrete.
      b. ACI 305.1-14 – Specification for Hot Weather Concreting.
      c. ACI 308.1-11 – Specification for Curing Concrete.

C. Guide References and Standard Practices: Comply with recommendations of the following except as otherwise specified in this Project Manual.
   1. American Concrete Institute (ACI) Guide References:
      a. ACI 302.1R-15 – Guide for Concrete Floor and Slab Construction.
      b. ACI 305R-10 – Guide to Hot Weather Concreting.
      c. ACI 308R-16 – Guide to External Curing of Concrete.

D. Field References:
   1. ACI SP-15 (10) – Field Reference Manual: Keep at least one (1) copy on site at all times.
   2. Other reference standards, guide references and standard practices listed above shall be kept on site when directed by Architect or Engineer.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Comply with requirements of related Division 03 sections for concrete forming, placement, and finishing.
   2. Concrete Floor Slabs: Coordinate with requirements of Section 09 05 61 and with various finish flooring sections under Division 09 to ensure concrete curing methods are proper to allow slabs to receive finish flooring. Comply with requirements of various Sections for slab tolerances, finishes, curing, etc. Be responsible to repair or replace slabs as required and specified in those sections to meet flooring requirements.

1.04 AMBIENT CONDITIONS

A. Hot Weather Curing: Comply with ACI 308.1, part 3.6. Protect to prevent rapid drying. Start finishing and curing as soon as possible. Use liquid applied evaporation retardants, fogging, wind screens, or shade (individually or in combination) to control the rate of bleed water evaporation and subsequent drying of the concrete. When loss of moisture from the concrete cannot be controlled by the aforementioned measures, alternate curing procedures must be implemented such as placing and finishing concrete at night or postponing or delaying placement until conditions are acceptable.

PART 2 PRODUCTS

2.01 WATER

A. Water used for curing shall be free of materials that have the potential to stain concrete or are known to cause deterioration of concrete or reinforcing steel.

2.03 CURING COMPOUNDS

A. All concrete curing compounds and other concrete treatment products shall be certified to be VOC compliant with all applicable federal, state and local regulations.

B Curing Compound - Vertical Surfaces: ASTM C309.

C. Water-Based Curing and Sealing Compounds for Class 1 Floor Slabs: ASTM C309, Type I and ASTM C1315, Class B. Minimum 30 percent solids content.

D. Solvent-Based Curing and Sealing Compounds for Class 1 Floor Slabs: ASTM C309, Type I and ASTM C1315, Class B. Minimum 30 percent solids content, maximum moisture loss of 0.030 grams per square centimeter (300 square feet per gallon coverage):

E Dissipating Resin Type Curing Compounds: ASTM C309, Type I (ID), Class B, VOC-compliant.

PART 3 EXECUTION

3.01 FINAL CURING, GENERAL

A. Reference Standards: Curing shall be in accordance with ACI 301 and ACI 308.1 procedures.

B. Protect exposed surfaces of concrete from premature drying.

C. Maintain concrete with minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of concrete.

D. Avoid rapid drying at the end of the curing period.

END OF SECTION

DIVISION 05 – METALS

SECTION 05 05 19

POST-INSTALLED CONCRETE ANCHORS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Methods common to multiple sections for fastening metals, fabrications, manufactured products, hangers, and equipment to in-place concrete, precast concrete, or concrete masonry,. including:
      a. Post-installed mechanical anchors.
      b. Post-installed adhesive anchors.

1.02 REFERENCES

A. Definitions:
   1. Interior Use: For purposes of this Section, "Interior Use" shall mean interior applications in a non-corrosive environment.
   2. Exterior Use: For purposes of this Section, "Exterior Use" shall mean applications exposed to weather in service and interior applications in a potentially corrosive environment, including, but not limited to, the interior of parking structures, pool rooms, pool equipment rooms, vehicle service and wash areas, animal holding rooms, shower areas and steam rooms.

B. Reference Standards: See Section 01 42 00.
   1. American Concrete Institute (ACI) Standards:
      a. ACI 355.2-07 - Qualification of Post-Installed Mechanical Anchors in Concrete.
      b. ACI 355.4-11 - Qualification of Post-Installed Adhesive Anchors in Concrete.
   2. International Code Council Evaluation Service (ICC-ES) Standards:
      a. AC193 – Acceptance Criteria for Mechanical Anchors in Concrete Elements.
      b. AC308 – Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements.

1.03 ACTION SUBMITTALS

A. Procedures: Submit for review, action and return in accordance with Section 01 33 00.

B. Product Data: Submit manufacturer's technical data for the following.
   1. Post-Installed Anchors: Submit for each type proposed for use on Project. Include statement of proposed applications and locations for each type of anchor.

1.04 INFORMATIONAL SUBMITTALS

A. Procedures: Submit for information and verification in accordance with Section 01 33 00.

B. Evaluation Reports: Submit ICC-ES Evaluation Report for each manufactured anchor product proposed for use on the Project.

C. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.

D. Manufacturer's Instructions:
   1. Submit manufacturer's installation instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General Requirements: Comply with Section 01 65 00 and Section 01 66 00.
   1. Protect metals from corrosion.

B. Storage and Handling Requirements:
   1. Storage: Store manufactured anchors in accordance with manufacturer's recommendations.

PART 2 PRODUCTS

2.01 PRODUCT OPTIONS

A. Basis of Design Anchor Manufacturer and Model: Where anchor manufacturer and model is indicated on Drawings, provide indicated product.

B. Where anchor manufacturer and model is not indicated on Drawings, subject to compliance with other specified requirements, provide one of the products named in this Section for anchor type indicated.
   1. Include anchors required to comply with installation instructions and typical details of product manufacturers and equipment suppliers under all divisions of these Specifications, where anchors are not furnished by supplier of the product or equipment to be anchored.

C. Substitution Requests: Required for all proposed post-installed anchor manufacturers and products not named in this Section or on Drawings.
   1. Submit current ICC-ES report with each proposed anchor substitution request. Report shall include compliance documentation for the proposed:
      a. Base material to receive anchor;
      b. Base material condition limitations;
      c. Applicable loading conditions; and
      d. Load direction(s).
   2. Submittals: Submit in accordance with Section 01 25 00.

2.02 REGULATORY REQUIREMENTS

A. Manufactured post-installed anchors shall have published ICC-ES Evaluation Report (ICC-ESR) indicating conformance with current applicable ICC-ES Acceptance Criteria and ICC approval as acceptable method of construction under the IBC. Comply with all limitations on use of anchors stipulated in Evaluation Report.

B. Post-Installed Anchors for Supporting Fire Sprinkler Systems: Comply with NFPA 13. Anchors shall be qualified in accordance with UL for use with "Pipe Hanger Equipment and Fire Protection Systems."

2.03 POST-INSTALLED ANCHOR MATERIALS, GENERAL

A. Interior Use: Unless otherwise indicated on the Drawings, provide carbon steel anchors with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1) or hot-dip galvanizing in accordance with ASTM A153.

2.04 MECHANICAL ANCHORS

A. Regulatory Requirements:
   1. Mechanical Anchorage to Concrete: Expansion anchors, wedge anchors, sleeve anchors, undercut anchors, and drop-in anchors shall have current ICC-ES report that demonstrates compliance with ACI 355.2 as supplemented by AC193 for use in cracked concrete.
      a. Structural Anchorages and Safety Related Anchorages in Structures Designed for Seismic Design Category C, D, E, or F: Documentation shall also show that anchor has passed simulated seismic tests in accordance with ACI 355.2.
         1) Seismic Design Category: See General Notes on Structural Drawings.

B. Wedge Anchors for Anchorage to Solid Concrete:
   1. Manufacturers and Products: Where anchor manufacturer and product is not indicated, subject to compliance with requirements, provide the following:
      a. Hilti Inc.; www.us.hilti.com - Kwik Bolt TZ (KB-TZ). Refer to ICC ESR-1917.
   2. Description: Wedge type expansion anchor, torque-controlled, complete with required nuts and washers.
   3. Provide anchors with length identification markings conforming to ICC ES AC193.
   4. Type and size as indicated on Drawings or by manufacturer of product to be anchored.

2.05 CARTRIDGE INJECTION ADHESIVE ANCHORS

A. Regulatory Requirements.
   1. Adhesive Anchorage to Concrete: Adhesive anchors shall have current ICC-ES report that demonstrates compliance with ACI 355.4 as supplemented by AC308 for use in cracked concrete.
      a. Structural Anchorages and Safety Related Anchorages in Structures Designed for Seismic Design Category C, D, E, or F: Documentation shall also show that anchor has passed simulated seismic tests in accordance with ACI 355.4.
         1) Seismic Design Category: See General Notes on Structural Drawings.

B. Manufacturers and Products – Anchorage to Concrete: Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Architect, provide one of the following:
   1. Hilti Inc.; www.us.hilti.com – HIT RE 500-SD Adhesive Anchoring System with two-component epoxy with threaded rod anchors. Refer to ICC ESR-2322.
   2. ITW Red Head division of Illinois Tool Works; www.itwredhead.com – Epcon G5 Adhesive Anchoring System with two-component epoxy and threaded rod anchors. Refer to ICC ESR-1137.
   3. Powers Fasteners; www.powers.com - PE1000+ Epoxy Adhesive Anchoring System with two-component epoxy and threaded rod anchors. Refer to ICC ESR-2583.
   4. Simpson Strong Tie Co.; www.strongtie.com – Set-XP Epoxy Adhesive Anchors with two-component epoxy and threaded rod anchors. Refer to ICC ESR-2508.

C. Steel Anchors: Threaded steel rod or inserts, complete with nuts, washers, adhesive injection system. Type and size as indicated on Drawings.
   1. Interior Use: Unless otherwise indicated on the Drawings, provide carbon steel threaded rods conforming to ASTM A36, ASTM A 193 Type B7 or ISO 898 Class 5.8 with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1) or carbon steel rods conforming to ASTM A510 with chemical composition of AISI 1038.

PART 3 EXECUTION

3.01 INSTALLATION

A General: Install post-installed anchors and inserts in accordance with applicable ICC-ES Report and with manufacturer's instructions in accurately drilled holes of required diameter and depth.
1. Avoid installing anchors in contact with galvanically dissimilar metals.

B. Drilling:
1. Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, and grout has achieved full design strength.
2. Drill holes with rotary impact hammer drills using carbide-tipped bits and core drills using diamond core bits. Drill bits shall be of diameters as specified by the anchor manufacturer. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.
   a. Cored Holes: Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer.
   b. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Architect and Structural Engineer if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging prestressing tendons, electrical and telecommunications conduit, and gas lines.

C. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in part to be fastened. Set anchors to manufacturer’s recommended torque, using a torque wrench. Following attainment of 10 percent of the specified torque, 100 percent of the specified torque shall be reached within 7 or fewer complete turns of the nut. If the specified torque is not achieved within the required number of turns, the anchor shall be removed and replaced unless otherwise directed by the Architect and Structural Engineer.

D. Cartridge Injection Adhesive Anchors: Clean all holes in accordance with manufacturer instructions to remove loose material and drilling dust prior to installation of adhesive. Holes may be dry, damp or wet. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive. Follow manufacturer recommendations to ensure proper mixing of adhesive components. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface. Remove excess adhesive from the surface. Shim anchors with suitable device to center the anchor in the hole. Do not disturb or load anchors before manufacturer specified cure time has elapsed.

E. Observe manufacturer recommendations with respect to installation temperatures for cartridge injection adhesive anchors and capsule anchors.

3.02 ADJUSTING

A. Remove and replace misplaced or malfunctioning anchors. Fill empty anchor holes and patch failed anchor locations with high-strength non-shrink, nonmetallic grout. Anchors that fail to meet proof load or installation torque requirements shall be regarded as malfunctioning.

3.03 SITE QUALITY CONTROL

A. Special Inspection and Testing, General: See Section 01 45 20. Special Inspection and testing of post-installed anchors will be performed by an independent testing agency engaged by the Owner.

B. Testing of Post-Installed Anchors: . Quality control testing shall be performed by independent testing agency. A manufacturer's representative shall be available to consult with the testing agency prior to and during the testing.
   1. Testing: Comply with Expansion Anchor Bolt Notes on Structural Drawings.

C. Special Inspection: See Section 01 45 20.
   1. Special inspection is required for all post-installed anchor installations.

END OF SECTION

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Structural steel framing and support members, tension rods and cables, sag rods which form part of structural framing, purlins, pipe or tube columns and struts, complete with required braces, hangers, connection plates, welds, washers, bolts, nuts, shims, anchor bolts and templates.
2. Bearing plates, base plates and column cap plates.
3. Composite beams with shear stud connectors.
4. Erecting, connecting, field welding, and adjusting for plumb and level.
5. Other structural steel components indicated on Drawings.

B. Related Requirements:
1. Post-Installed Concrete Anchors: Section 05 05 19.

1.02 REFERENCES

A. Definitions:
1. Structural Steel: For the purposes of this Section, structural steel is defined as loadbearing structural metal framing excluding structural steel studs, steel joists, metal decking, metal stairs, and loose steel angle lintels built into masonry.

B. Reference Standards:
1. American Institute of Steel Construction (AISC) Standards; www.aisc.org.
   a. Design, Detailing, Fabrication and Erection: ANSI/AISC 360-10 - Specification for Structural Steel Buildings.
   b. AISC 303-10 - Code of Standard Practice for Steel Buildings and Bridges, limited to the following:
      1) Fabrication, Delivery and Erection of Steel: Comply with Sections 5 through 8.
      2) Fabrication, Erection, and Dimensional Tolerances for Architecturally Exposed Steel Fabrications: Comply with Section 10.
2. American Welding Society (AWS) Standards:
   a. AWS D1.1/D1.1M:2015 – Structural Welding Code – Steel.
3. ASTM International Standard Specifications:
   a. ASTM A36/A36M-08 - Carbon Structural Steel.
   b. ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   c. ASTM A108-07 - Steel Bar, Carbon and Alloy, Cold-Finished.
   d. ASTM A307-10 - Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
   e. ASTM A325 - Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
   f. ASTM A490 - Heat-Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength.
   g. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
   h. ASTM A501-07 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
   i. ASTM A563-07a - Carbon and Alloy Steel Nuts.
   j. ASTM A572/A572M - High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
   k. ASTM A992/A992M-11 - Structural Steel Shapes.

l. ASTM F436-07a - Hardened Steel Washers.
m. ASTM F1136/F1136M-11 - Zinc/Aluminum Corrosion Protective Coatings for Fasteners.
n. ASTM F959-09 - Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners.
o. ASTM F1554-07a - Anchor Bolts, Steel, 36, 55, and 105 ksi Yield Strength.
p. ASTM F1852-08 - "Twist-Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
q. ASTM F2280-12 - "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 150 ksi Minimum Tensile Strength.
r. ASTM F2329-11 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.
s. All other ASTM International standard specifications referenced in ANSI/AISC 360.

4. Research Council on Structural Connections (RCSC) - Specification for Structural Joints Using High-Strength Bolts, 2009 edition.
5. Society for Protective Coatings SSPC-PA 1 - Shop, Field and Maintenance Painting of Steel.

PART 2 PRODUCTS

2.01 STRUCTURAL STEEL SHAPES

A. Wide Flange (W) Structural Steel Shapes: ASTM A992.

B. Channels (C and MC) and Angles (L): ASTM A36.

C. Bars and Plates: ASTM A36.

D. Welded and Seamless Steel Pipe: ASTM A53, Type E or S, Grade B.

E. Hollow Structural Sections (HSS): ASTM A500, Grade B.

F. Structural Tees Cut From Wide Flange Shapes (WT): ASTM A992 or ASTM A572, Grade 50.

2.02 FASTENERS, ANCHORS AND WELDING MATERIALS

A. Standard Bolts: Bolts for bearing-type connections, tension connections, and all bolts not noted to be high-strength or slip-critical on the Drawings shall conform to ASTM A325.
1. Type: Type N with bolt threads included in shear plane.

B. Nuts: ASTM A563.
1. Grade and Surface Finish: Nuts for use with A325 or A490 bolts shall comply with requirements of RCSC Specification for bolt type required.

C. Anchor Rods: F1554, Grade 36 unless otherwise noted. Size, type and length as shown on Drawings. Provide hex nuts and plain washers unless indicated otherwise.

D. Welding Materials for Steel:
1. Filler Metals for Welding: Meet requirements of AWS D1.1.
a. Strength Level: In accordance with AISC and AWS specifications for base metals joined, weld type, and direction of applied load to weld.
2. Welding Electrodes: AWS 5.1 or A 5.5.

E. Headed Anchor Stud Connectors and Composite Beam Shear Studs:
   1. Material: Conform to ASTM A108.

2.03 FABRICATION

A. General: Fabricate structural steel in accordance with AISC specifications.

2.04 SHOP FINISHES

A. General:
   1. Structural Steel Surfaces: Clean and shop coat all fabricated items with shop primer in accordance with SSPC-PA 1.

B. Shop Primer: Comply with OSHA Subpart R.

C. Shop Priming:
   1. Surface Preparation: After fabrication and shop assembly, clean off all loose rust, loose mill scale and weld spatter, slag or flux deposits in accordance with SSPC procedures as follows:
      a. Surfaces to be Concealed in the Completed Structure: SSPC-SP 3 Power Tool Cleaning or better.
      b. Surfaces to be Exposed in the Completed Structure: SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning.

PART 3 EXECUTION

3.01 INSTALLATION

A. General: Follow applicable provisions of AISC specifications.

END OF SECTION

SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Structural metal stud framing, vertical and horizontal.
2. New sister studs to reinforce existing studs as indicated.
3. Metal stud braces.
4. Deflection tracks.
5. Other structural metal stud framing as indicated.

1.02 REFERENCES

A. Reference Standards: See Section 01 42 00. Comply with following:
1. ANSI/AISI Standards:
a. AISI S100-2012 - North American Specification for the Design of Cold-Formed Steel Structural Members.
b. AISI S200-12 – North American Standard for Cold-Formed Steel Framing – General Provisions.
c. AISI S201-12 – North American Standard for Cold-Formed Steel Framing – Product Data.
2. American Welding Society (AWS) Standards:
a. AWS D1.3/D1.3M:2008 – Structural Welding Code - Sheet Steel.
3. ASTM C955 - Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.
4. Steel Stud Manufacturers Association (SSMA) – Product Technical Information.

1.03 ACTION SUBMITTALS

A. Procedures: Submit for review, action and return in accordance with Section 01 33 00.

B. Product Data: Submit two copies of manufacturer's current catalog literature and installation instructions for each product specified under this Section with all materials and accessories plainly identified.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers:
1. Allied Studco; www.studco.com.
2. California Expanded Metal Products Company (CEMCO); www.cemcosteel.com.
3. ClarkDietrich Building Systems LLC, www.clarkdietrich.com.
4. Marino\WARE; www.marinoware.com.
5. Angeles Metal Systems.

B. Substitution Requests: In accordance with Section 01 25 00.

2.02 MATERIALS

A. Steel Mechanical Properties: Conform to requirements of AISI Specification, Section A3.
   1. Minimum Yield Point for Material 16 Gage to 10 Gage in Thickness: 50,000 psi.
   2. Minimum Yield Point for Material 18 Gage and Less in Thickness: 33,000 psi.

B. Steel Sectional Properties and Design: Computed in accordance with AISI Specification.

C. Steel Studs, Tracks, Bracing, Bridging and Related Metal: ASTM C955.
   1. Sizes and locations as indicated on Drawings.

D. Blocking: 16 gage by 6-inch, 50 ksi sheet metal, unless heavier gage is indicated on Drawings.

E. Finish: Corrosion resistant galvanized coating conforming to ASTM A653, G60 minimum.

2.03 FASTENERS

A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: ASTM A90, hot-dip galvanized.

PART 3 EXECUTION

3.01 INSTALLATION

A. Connections: Screwed as indicated on the Structural Drawings.

END OF SECTION

SECTION 05 50 00

METAL FABRICATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. All miscellaneous angles, channels, tubes and plates as indicated and required, and not indicated and specified as structural steel.

B. Related Requirements:
1. Post-Installed Concrete Anchors: Section 05 05 19.
2. Field Painting: Section 09 91 23 Interior Painting.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Reference Standards: Comply with the following except as otherwise specified in this Project Manual.
1. American Institute of Steel Construction (AISC):
a. Design, Detailing, and Fabrication: ANSI/AISC 360-10 - Specification for Structural Steel Buildings.
b. AISC 303-10 - Code of Standard Practice for Steel Buildings and Bridges, limited to the following:
1) Fabrication, Delivery and Erection of Steel: Comply with Sections 5 through 8.
2) Fabrication, Erection, and Dimensional Tolerances for Exposed Steel Fabrications: Comply with Section 10.
2. American Welding Society (AWS) Standards:
a. AWS D1.1/D1.1M:2015 – Structural Welding Code – Steel.
3. Society for Protective Coatings (SSPC):
a. SSPC-PA 1 - Shop, Field and Maintenance Painting of Steel.

1.03 QUALITY ASSURANCE

A. Qualifications:
1. Welder Qualifications: Welding shall be performed only by certified welding operators currently qualified in accordance with the testing procedures of AWS D1.1 for the weld types and positions required for the fabrications and installations indicated.

PART 2 PRODUCTS

2.01 MATERIALS

A. Carbon Steel Shapes, Bars and Plates: ASTM A36.

B. Steel Pipe and Tubing: ASTM A53, Grade B, or A500, Grade B, minimum wall thickness 11 gage.

C. Threaded Rod: ASTM A36.

D. Steel Fasteners and Anchors:
   1. Bolts: ASTM A306.
   2. Nuts: ASTM A563.
   3. Washers: ASTM F436.

E. Welding Materials for Carbon Steel:
   1. Filler Metals for Welding: Meet requirements of AWS D1.1.
   2. Welding Electrodes: AWS 5.1 or A 5.5.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install items square and level, accurately fitted and free from distortion or defects.

END OF SECTION

SECTION 05 51 00

METAL STAIRS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Pan tread channel stringer stairs and ships ladders.
2. Grate tread channel stringer stairs and ships ladders.
3. Checker plate tread channel stringer stairs and ships ladders.
4. Pre-engineered steel stairs.
5. Manufactured steel ship's ladders.
6. Manufactured aluminum ships ladder with railing.
7. Steel ladders including elevator pit ladder.
8. Stair railings.

1.02 REFERENCES

A. Reference Standards: See Section 01 42 00. Comply with following:
1. Design, Detailing, and Fabrication: ANSI/AISC 360-10 - Specification for Structural Steel Buildings, June 22, 2010.
2. AISC 303-10 - Code of Standard Practice for Steel Buildings and Bridges, limited to the following:
   a. Fabrication, Delivery and Erection of Steel: Comply with Sections 5 through 8.
   b. Fabrication, Erection, and Dimensional Tolerances for Architecturally Exposed Steel Fabrications: Comply with Section 10.
3. Welding:
   a. ANSI/NAAMM MBG 533 – Welding Standards for Fabrication of Bar Grating.
   b. AWS D1.1/D1.1M:2015 – Structural Welding Code – Steel.
4. Stairways: Standard construction details of NAAMM Standard AMP 510-92 - "Metal Stairs Manual" of the National Association of Architectural Metal Manufacturers, fifth edition.
5. Railings: ANSI/NAMM AMP 521-01 (R2012) – Pipe Railing Systems Manual Including Round Tube, Fourth Edition.
6. Shop Painting: Society for Protective Coatings SSPC-PA 1 - Shop, Field and Maintenance Painting of Steel.

B. Guide References and Standard Practices:
1. ANSI/NAAMM MBG 531 – Metal Bar Grating Manual, Sixth Edition.

1.03 INFORMATIONAL SUBMITTALS

A. Certificates:
1. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
2. Welders Certificates: Certify welders and welding procedures employed on the Work, verifying AWS qualification within previous 12 months.

B. Fabricator-Designed Stair Assemblies:
1. Design Data: Signed and sealed by professional engineer in the state of California.
2. Submit calculations and analysis to support design.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. Welder Qualifications: Welding shall be performed only by certified welding operators currently qualified in accordance with the testing procedures of AWS D1.1 for the weld types and positions required for the fabrications and installations indicated or required.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Comply with Section 05 50 00.

2.02 CUSTOM FABRICATED STEEL STAIRS AND SHIPS LADDERS

A. Stair Fabricator: Responsible for structural design of members as required to carry live and dead loads. Design shall be by a California licensed professional engineer.

B. Structural Design Criteria: Capable of carrying all load conditions required by the California Building Code, but not less than the following.
   1. Stairs and Landing: Capable of carrying following live load conditions:
      a. Uniform: 100 psf.
      b. Concentrated: 300 lbs.
   2. Railing and Railing Attachments: Capable of resisting following load conditions:
      a. Continuous Force Applied to Top Rail in Any Direction: 50 pounds per lineal foot.
      b. Concentrated: 200 pound lateral force applied in any direction at any point on the rail.
   3. Connections:
      a. Capable of carrying full dead load and design live loads to supporting structure.
      b. Capable of resisting minimum lateral force equal to 6 percent of weight of stair applied at stair center of gravity.

2.03 FABRICATION

A. General: Fabricate as indicated in accordance with details on Drawings, accepted shop drawings, and specified reference standards.

B. Joints: Cut, miter and weld all joints. Fill and grind smooth.
   1. Make exposed joints flush butt-type, hairline joints where mechanically fastened.

C. Welding: AWS D1.1.
   1. Miter and cope intersections and weld all around.
   2. Weld Finishing: NOMMA Guideline 1.
      a. Railings, Handrails, and Ladders: Joint Finish 3, partially dressed weld with spatter removed.
      b. Other Components: Joint Finish 4, good quality undressed weld with minimal spatter.

END OF SECTION

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

SECTION 06 10 53

MISCELLANEOUS ROUGH CARPENTRY

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Roofing and flashing blocking.
2. Miscellaneous blocking and supports.
3. Miscellaneous wood sheathing.
4. Preservative treatment.
5. Fire-retardant treatment.

1.02 REFERENCES

A. Reference Standards. See Section 01 42 00. Comply with the following:
1. Wood Framing: Comply with requirements of the 2016 California Building Code and ANSI/AF&PA NDS-2012 National Design Specification for Wood Construction, as published by the American Wood Council of the American Forest and Paper Association.
2. Lumber: Grading Rules for Lumber, latest edition, as published by Western Wood Products Association.
3. Plywood: National Institute of Standards and Technology (NIST) – Voluntary Product Standard PS 1-09 - Structural Plywood.
4. Performance Rated Wood Sheathing Panels:
   a. APA PRP-108 - Performance Standards and Policies for Structural-Use Panels.
   b. National Institute of Standards and Technology (NIST) – Voluntary Product Standard PS 2-10 – Performance Standard for Wood-Based Structural-Use Panels.
5. Treatment:
   a. AWPA C2 – Lumber, Timber, Bridge Ties and Mine Ties – Preservative Treatment by Pressure Processes.
   b. AWPA C20 – Structural Lumber – Fire-Retardant Treatment by Pressure Process.
   c. AWPA C27- Plywood – Fire-Retardant Treatment by Pressure Process.
   d. AWPA P5 – Standard for Waterborne Preservatives.
   e. AWPA Standard P17 - Fire Retardant Formulations.
   f. AWPA Use Category System, Appendix H.

1.03 QUALITY ASSURANCE

A. Grade Stamps:
1. Lumber: Each piece shall be WWPA or WCLIB grade stamped.
2. Wood Sheathing: Each panel shall be identified with the grade trademark of the APA.
3. Lumber Specified to be Preservative Treated: Each piece shall be stamped to indicate compliance with AWPA pressure treatment standards.

B. Treatment Labels: Label each piece of treated lumber.
1. Fire Treated Lumber: UL labels.

PART 2 PRODUCTS

2.01 WOOD MATERIALS

A. General Requirements:
   1. Lumber: Sound, thoroughly seasoned, surfaced four sides, well manufactured and free from warp not correctable by bridging, blocking or nailing.
   2. Moisture Content: Provide dry lumber as defined by the American Softwood Lumber Standard PS 20, with moisture content limited to maximum 19 percent moisture content, graded S-DRY, KD or KD-HT, as documented by grade stamp.
   3. Dimension Lumber Noted on Drawings to be Non-Combustible: Fire retardant treated with chloride salts.

B. Blocking, Furring and Miscellaneous Dimension Lumber: Douglas Fir-Larch or Hem-Fir. Standard Grade or Better.
   1. Blocking in Contact with Roofing Membrane: Pressure treated with preservative.

C. Miscellaneous Panels for Interior Application: APA plywood BDX interior with exterior glue. 3/4-inch thickness unless otherwise indicated.
   1. Electrical Component Mounting: Fire retardant treated.

2.02 TREATMENT

A. Preservative Treatment of Dimension Lumber: All blocking in contact with roof membrane, exterior plates, posts embedded in concrete, and blocking and plates in contract with concrete or masonry shall be pressure preservative treated.
   1. Acceptable Products: Osmose NatureWood Preservative or accepted substitute.
   2. Type: Waterborne, alkaline copper quaternary preservative system with co-biocide, registered by EPA as a non-restricted use pesticide.
   3. Minimum Preservative Retention:
      a. Plates and Blocking: 0.40 lbs of preservative per cubic foot of wood.
   4. Water Repellent Additive: Required.
   5. Treated Wood: Kiln-dried after treatment.

B. Fire Retardant Treated Plywood: All sheathing required to be fire retardant-treated shall be pressure-treated in accordance with AWPA Standard C27 with an approved low hygroscopic, high temperature Interior Type A-HT fire retardant.
   1. Each panel shall be labeled or marked by an approved independent testing agency.
   2. After treatment, plywood shall be dried to an average moisture content of 15 percent or less.

END OF SECTION

SECTION 06 16 43

GYPSUM SHEATHING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Glass-mat faced gypsum sheathing on exterior walls.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevents exterior moisture from passing through completed exterior wall assembly.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Sheathing product shall have a current ICC-ES report finding product to be an acceptable alternative product to those specified in the 2012 (or later) International Building Code.

2.02 GLASS-MAT-FACED GYPSUM SHEATHING

A. Glass-Mat-Faced Gypsum Sheathing Panels: Gypsum sheathing shall be manufactured in accordance with ASTM C1177 with water-resistant glass mats both sides and long edges, over gypsum core treated for moisture and mold resistance.
   1. Classification: Sheathing in listed fire-rated assemblies shall be Type X when tested in accordance with ASTM E119.
   2. Flame Spread: ASTM E84: 0 maximum.
   3. Smoke Developed: ASTM E84: 0 maximum.

B. Thickness: 5/8 inch (15.9 mm) thick where indicated and as otherwise required to meet fire rating for specific element. 1/2 inch (12.7 mm) elsewhere.

C. Size: 48 by not less than 96 inches (1219 by not less than 2438 mm); longer lengths as available to reduce number of joints.

PART 3 EXECUTION

3.01 GYPSUM SHEATHING INSTALLATION

A. General: Install sheathing in accordance with manufacturer's instructions and applicable instructions in GA-253 and ASTM C1280. Comply with all conditions of use stipulations in ICC-ES report.

END OF SECTION

SECTION 06 41 00

ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Millwork.
2. New custom plastic-laminate-clad casework.
3. Cabinet hardware and accessories.

1.02 REFERENCES

A. Definitions: The following definitions apply to plastic-laminate-clad casework:
1. Exposed portions of casework include all surfaces visible when doors and drawers are closed and all visible members in open shelf cases.
2. Semi-exposed portions of casework includes those members behind doors, such as shelves, divisions, interior faces of ends, case back, drawer sides, backs and bottoms and the back face of doors. Tops of cases 6'-6" or more above floor shall be considered as semi-exposed. All visible members behind glass doors also shall be considered as semi-exposed portions.
3. Concealed portions of case work include sleepers, web frames, dust panels and other surfaces not usually visible after installation.

B. Reference Standards: See Section 01 42 00. Comply with following:
1. Woodwork Institute (WI) Standards:
a. North American Architectural Woodwork Standards – 3.0 (NAAWS), July 1, 2016.
1) Comply with Custom Grade if not otherwise specified.
2) Seismic Installation Requirements: Annex 10E.
2. American National Standards Institute (ANSI);
a. ANSI A135.4-2012 – Basic Hardboard.
b. ANSI/BHMA A156.9-2010 - American National Standard for Cabinet Hardware.
c. ANSI A208.2-2016 - Medium Density Fiberboard (MDF) for Interior Applications.
d. ANSI/NPA A208.1-2009 – Particleboard.

1.03 COORDINATION

A. Blocking and Backing Anchorage: Coordinate with work under other Sections to ensure proper blocking and backing is installed in walls where anchorage of casework must meet seismic requirements. Ensure minimum blocking as follows:
1. For Metal Stud Walls: 16 gage by 6-inch, 50 ksi sheet metal.

1.04 ACTION SUBMITTALS

A. Comply with NAAWS Section 1.

1.05 INFORMATIONAL SUBMITTALS

A. Certificates:
1. Particleboard and MDF: Submit third-party certification that formaldehyde emissions comply with standards of CARB Air Toxic Control Measure (ATCM) for Formaldehyde Emissions from Composite Wood Products, and with ANSI A208.1 or A208.2 as applicable, when tested in accordance with ASTM E1333.

1.06 QUALITY ASSURANCE

A. Qualifications:
   1. Casework Fabricator:
      a. Firm with no less than 5 years of production experience similar to this Project, whose qualifications indicate the ability to comply with the requirements of this Section.
      b. The fabricator must have at least one project in the past 5 years where the value of the woodwork was within 20 percent of the cost of woodwork for this Project.
      c. A licensee in good standing of the Woodwork Institute Certified Compliance Program.

B. Certifications:
   1. WI Certified Seismic Installation Program:
      a. Before walls are closed up, provide a written Woodwork Institute Certified Seismic Installation Program report confirming that backing is provided in all locations required for casework installation or identifying those locations where backing is missing or improperly located.
      b. On completion of installation, provide a Woodwork Institute Certified Seismic Installation Program Certificate identifying the work covered and certifying the installations meets the requirements of the WI CSIP attachment details and schedules.
      c. All fees charge by the Woodwork Institute for its Certified Seismic Installation Program are the responsibility of the millwork installer and shall be included in their bid.

PART 2 PRODUCTS

2.01 SOLID STOCK WOOD AND PLYWOOD PANEL MATERIALS

A. General Requirements for Interior Wood Materials:
   1. Solid Stock Lumber Grade: In accordance with AWI rules for Premium Grade construction with specified finish unless indicated otherwise.
   2. Moisture Content: Minimum 5 percent, maximum 10 percent at delivery.

B. Millwork Material: Hardwood, select, kiln-dried.
   1. Species and Grade:
      a. Paint Finish: Poplar, Birch or Maple. AWI Grade II. Clear.
   2. Millwork Patterns: As indicated on Drawings.

2.02 WOOD-BASED COMPOSITE PANELS

A. Plywood:
   1. Plywood to Receive Plastic-Laminate: Commercial Standard Good Grade, minimum 3/4-inch thick before lamination.
   2. Maximum Allowable Formaldehyde Emissions: 0.05 ppm.

B. Particleboard: ANSI A2.08.1, Grade M3 or better. Matte formed wood particleboard, 40-45# density industrial grade with sealer and lacquer finish.
   1. Required Emissions Classification:
      a. No-Added Formaldehyde (NAF) and/or Ultra-Low Emitting Formaldehyde (ULEF) as approved by CARB.

C. Medium-Density Fiberboard (MDF): ANSI A2.08.2.
   1. Grade: Grade 155 MR-50.
   2. Required Emissions Classification:
      a. No-Added Formaldehyde (NAF) and/or Ultra-Low Emitting Formaldehyde (ULEF) as approved by CARB.

D. Hardboard: ANSI A135.4. Tempered Grade.

2.03 HIGH PRESSURE LAMINATES (HPL)

A. High Pressure Decorative Laminate: NEMA LD3, Grade CLS.
   1. Horizontal Surfaces: General Purpose Grade 10/HGS.
   2. Vertical Surfaces: May be Vertical Grade 55VGS.

2.04 EDGEBAND

A. Edgeband: PVC matching the color and pattern of the exposed laminate.

2.05 HARDWARE AND ACCESSORY ITEMS

A. Slides.
   1. TCMC Facilities Management Standard Manufacturer and Products:
      a. Accuride International, Inc., www.accuride.com.
      b. 12-Inch to 28-Inch Drawer Slides: AC3017.
      c. 12-Inch to 28-Inch Lateral File Slides: AC4032.

B. Pull Handles:
   1. TCMC Facilities Management Standard Manufacturers and Products:
      a. 4-Inch Handle Pulls: Fenny - FE1484 CH.
      b. Flush Pulls: Knape and Vogt Manufacturing – KV819 Anochrome.

C. Door and Drawer Locks:
   1. TCMC Facilities Management Standard Manufacturer and Products:
      a. Drawers: National Cabinet Lock – N8178-26-KD – Keyed Different – 7/8-inch cylinder.
      b. Doors: National Cabinet Lock – N8178-26-KD – Keyed Different – 7/8-inch cylinder.
      c. Doors: National Cabinet Lock – N8179-26-KD – Keyed Different – 1-3/8 inch cylinder.
      d. Pin Tumbler Sliding Door Locks: National Cabinet Lock – N8142-26-KD – Keyed Different – Dull Chrome - 1-1/8 inch cylinder.

D. Wire Management Grommets:
   1. TCMC Facilities Management Standard Manufacturer and Product:
      a. ITW Plastiglide – P3RD+Color Code – 3"..

E. Door Catches:
   1. TCMC Facilities Management Standard Manufacturers and Products:
      a. Magnetic Catches: EPCO – EP1001.
      b. Elbow Catches: IVES – IV2AM Aluminum.

F. Connecting Screws:
   1. TCMC Facilities Management Standard Manufacturers and Products:
      a. Hettich International.
      b. Connector: HEVSH-B.
      c. Screw: HEVSH-C.

G. Adjustable Shelf Pilasters:
   1. TCMC Facilities Management Standard Manufacturer and Product:
      a. Knape and Vogt Manufacturing.
      b. KV256AMNAT Aluminum Natural.

H. Wood Shelf Standards:
   1. TCMC Facilities Management Standard Manufacturer and Products:
      a. Reeve Store Equipment Company.
      b. Single Slot: RVS40+Length.
      c. Double Slot: RVS44+Length.

I. Wood Shelf Supports with Angled Top:
   1. TCMC Facilities Management Standard Manufacturer and Products:
      a. Reeve Store Equipment Company.
      b. Left: RVS81-L.
      c. Center: RVS81-C.
      d. Right: RVS81-R.
   2. Description: Heavy duty, self-locking nylon or steel, designed for installation in pre drilled holes in cabinet ends and vertical partitions, designed to prevent the shelf support from rotating. No exceptions.

J. Hinges: 5 knuckle 2-1/4 inch, overlay type, hospital tip, 0.095-inch thick steel with dull chrome, finish.
   1. Acceptable Manufacturers:
      a. Blum, Inc.; www.blum.com.
      b. Grass America, Inc.
      c. Häfele America Co.
      d. Hettich America LP.
      e. Mepla, Inc.
      f. Accepted substitute in accordance with Section 01 25 00.
   2. Hinges shall have a minimum of eight (8) edge and leaf fastenings.
   3. Doors 48 inches and over in height shall have three (3) hinges per door. Doors 66 inches and over shall have four (4) per door.

K. Drawer Stops: All regular drawers shall be equipped with two drawer stops attached to the cabinet ends. The cabinet drawer stops shall be metal with attached rubber bumper and be installed to prevent the drawer face from touching the cabinet ends edges when the drawer is in a closed position.

L. Exposed Hardware Finish: Comply with BHMA A156.18.

M. Adhesives: Provide low VOC types as recommended by the manufacturer of the material being installed. Adhesives shall comply with SCAQMD Rule 1168 VOC limits.

2.06 FABRICATION

A. General: Fabricate plastic laminate faced casework to dimensions, profiles and details shown. Assemble units in the shop in as large of components as practicable to minimize field cutting and jointing. All joints to be doweled and glued. All edge banding called for in this Section shall be 3mm PVC hot melt glue applied. Top edges of interior drawer boxes may be 1/2mm hot melt glue applied.
   1. Plastic Laminate Faced Cabinets: Comply with Section 10 of NAAWS for Custom Grade.
   2. Provide and install hardware as indicated and specified.
   3. Cabinet Construction Type: Frameless.
   4. Door Interface Style: Flush overlay.

B. Additional Seismic Requirements for Casework Fabrication: Comply with NAAWS, 10.6.4E.
   1. Nailers shall be minimum 3/4-inch thickness, of veneer core plywood, Structural 1 grade, MDF Grade 150 or Douglas Fir with a specific gravity of 0.5 or higher.

2. Tall storage cabinets shall have a fixed shelf approximately mid-height securely attached to the cabinet back and nailer.

PART 3 EXECUTION

3.01 INSTALLATION

A. General: Install all work in conformance with the NAAWS, including Annex 10E seismic casework installation requirements.
   1. Installation shall conform to the Grade of the items being installed.
   2. All work shall be secured in place, square, plumb, and level. Provide connecting and attaching devices, closures and trim members as required.
      a. Fastener Placement: Comply with NAAWS 10.6.4.E.
   3. All work abutting other building components shall be properly scribed and closely fit casework to adjacent work.
   4. Mechanical fasteners used at exposed and semi-exposed surfaces, excluding installation attachment screws and those securing cabinets end to end, shall be countersunk.
   5. Equipment cutouts shown on plans shall be cut by the installer.

3.02 SITE QUALITY CONTROL

A. Provide Woodwork Institute Certified Seismic Installation Program inspection reports and certification as required in Part 1 of this Section.

END OF SECTION

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

SECTION 07 21 00

THERMAL INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Continuous rigid insulation at exterior walls.
   2. Fiberglass batt thermal Insulation.
   3. Mineral wool batt thermal Insulation.
   4. Sprayed polyurethane foam (SPF) insulation.
      a. Medium-density, closed cell polyurethane spray foam insulation and vapor retarder.
      b. Medium-density, closed cell polyurethane spray foam insulation and water-resistive barrier on the exterior side of sheathing, masonry, or other exterior wall substrates.

B. Related Requirements:
   1. Sound Insulation: Section 09 81 16 Acoustic Blanket Insulation.

1.02 INFORMATIONAL SUBMITTALS

A. Test and Evaluation Reports for SPF:
   1. Test Reports: Upon request, submit certified laboratory test reports confirming physical characteristics of materials used in the performance of the work of this Section.
      a. Include product test reports performed by a qualified third-party testing agency evidencing compliance of insulation products with specified requirements including those for thermal resistance, fire-test-response characteristics, water-vapor transmission, and other properties, based on comprehensive testing of current products.
   2. Evaluation Report: Evidence of compliance of foam-plastic insulation with International Building Code (IBC), International Residential Code (IRC), and International Energy Conservation Code (IECC).
      a. Submit current ICC-ES Evaluation Report (ESR) showing compliance with ICC-acceptance criteria.

PART 2 PRODUCTS

2.01 RIGID EXTRUDED POLYSTYRENE (XPS) INSULATION

A. Vertical Insulation: ASTM C578, Type IV Rigid Extruded Polystyrene Insulation:
   1. Edge Treatment: Square.
   2. Minimum Compressive Strength: 25 psi.

2.02 RIGID EXPANDED POLYSTYRENE (EPS) INSULATION

A. Vertical Insulation: ASTM C578, Type IX, molded, closed-cell, rigid expanded polystyrene insulation:
   1. Edge Treatment: Square.
   2. Minimum Compressive Strength: 25 psi.

2.03 RIGID POLYISOCYANURATE INSULATION

A. Rigid Insulation at Exterior Walls: ASTM C1289, Type 1, Class 1 or 2.

2.04 FIBERGLASS BATT AND BLANKET INSULATION

A. Unfaced Thermal Batt and Blanket Insulation: ASTM C665-12; Type I.
   1. Surface Burning Characteristics: ASTM E84.
      a. Flame Spread: Less than 25.
      b. Smoke Developed: Less than 50.
   2. Not allowed in exposed applications where there is a potential for skin contact and irritation.

B. Foil-Faced Thermal Batt Insulation: ASTM C665-12; Type III, Class B and C.
   1. Surface Burning Characteristics: ASTM E84.
      a. Flame Spread: Less than 75.
      b. Smoke Developed: Less than 150.
   2. Not allowed in exposed applications.
   3. Use in following assemblies:
      a. Exterior metal stud walls.
      b. Between furring channels at exterior walls.
      c. Ceilings.
      d. Attics and roof assemblies.
      e. Floor assemblies.

C. Foil-Scrim-Kraft-Faced (FSK) Thermal Batt Insulation: ASTM C665-12; Type III, Class A.
   1. Surface Burning Characteristics: ASTM E84.
      a. Flame Spread: Less than 25.
      b. Smoke Developed: Less than 50.
   2. Vapor Retarder Permeance: 0.02 perms maximum.
   3. Use in walls, ceilings and floors where the insulation is to be left exposed.
   4. Use in crawl space.
   5. Use below structural slabs.

D. Polypropylene-Scrim-Kraft-Faced (PSK) Thermal Batt Insulation: ASTM C665-12; Type II, Class A.
   1. Surface Burning Characteristics: ASTM E84.
      a. Flame Spread: Less than 25.
      b. Smoke Developed: Less than 50.
   2. Vapor Retarder Permeance: 0.02 perms maximum.
   3. Light Reflectance: 0.80.
   4. Facing Color: White.
   5. Use in walls, ceilings and floors where the insulation is to be left exposed.

E. Polypropylene-Faced Thermal Batt Insulation: ASTM C665; Type II, Class A.
   1. Surface Burning Characteristics: ASTM E84.
      a. Flame Spread: Less than 25.
      b. Smoke Developed: Less than 50.
   2. Vapor Retarder Permeance: 0.7 perms maximum.
   3. Light Reflectance: 0.80.
   4. Facing Color: White.
   5. Use in walls, ceilings and floors where the insulation is to be left exposed.

F. Insulation Material: Fibers manufactured from glass.
   1. Formaldehyde-free.

2.05 MINERAL WOOL BATT INSULATION

A. Insulation Type: Semi-rigid, unfaced, mineral wool batt insulation designed specifically for exterior wall steel stud applications, and to compress when inserted between studs and then to expand against the frame studs to provide a complete fill and sag-resistant tight fit.

B. Widths:
   1. Metal Frame Construction: 16 inches or 24 inches, to match framing spacings.
   2. Non-Standard Widths: Cut batts to fit framing.

C. Thermal Resistance: Insulation type and installed thickness shall provide the following minimum thermal resistance ratings for each indicated assembly.
   1. 2-1/2 inch Batts: R-9.5.
   2. 3-1/2 inch Batts: R-13.
   3. 6-inch Batts: R-22.5.

D. Surface Burning Characteristics: ASTM E84.
   1. Flame Spread: 0.
   2. Smoke Developed: Less than 5.

E. Mineral Wool Material: Stone fiber based material made from natural stone and recycled content.

2.06 SPRAY-APPLIED RIGID FOAM INSULATION

A. Sprayed Insulation Type: Medium-density, closed cell, spray-applied polyurethane foam.

B. Regulatory Requirements:
   1. Product shall have current published ICC-ES Evaluation Report finding that product to be provided under this section complies with or is a suitable alternate to those specified in the International Building Code, and indicating ICC approval as acceptable method of construction under the IBC.
      a. Installation shall comply with all conditions stipulated in report.
   2. SPF System: Passed the International Code Council Acceptance Criteria 377, for spray-applied polyurethane foam insulation, Appendix X for use without the use of the prescribed ignition barrier and without the need for additional fire resistant coating.
   3. Exterior Wall Assemblies Incorporating SPF: SPF product shall be listed as a component of NFPA 285 complying exterior wall assembly or assemblies in combination with other wall components specified and indicated on the Drawings.

C. Composition: Produced in the field by combining a polymeric aromatic diisocyanate with a polymeric resin blend which includes polyols, fire retarding materials, and additives.

D. Insulation to qualify as a Class II vapor retarder as defined by ICC and ASHRAE at a minimum thickness of 1-inch.

E. Physical Properties:
   1. Nominal Core Density: 2.0 lbs. per cubic foot, ASTM D1622.
   2. Thermal Resistance Rating: Minimum R-value at 90 days when tested in accordance with NFPA 259 or ASTM C518 at following thicknesses.
      a. 1-Inch: R-6.9.
      b. 2 Inches: R-14.
      c. 3 Inches: R-21.
      d. 4 Inches: R-28.
      e. 6 Inches: R-41.
      f. 8 Inches: R-55.

g. 12 Inches: R-83.
3. Moisture Vapor Permeance: 0.80 perm at 1-inch thickness.
4. Surface Burning Characteristics: At a maximum thickness of 4 inches.
a. UL Labeled with Flame Spread: 25 or less, ASTM E84.
b. Smoke Developed Index: Less than 450 under ASTM E84.
5. Compressive Strength: 25 psi, ASTM D1621.
6. Fungal Growth: ASTM C1338. No growth; no material deterioration.
7. Air Leakage Rate: ASTM E2178; Less than 0.02 L/s.m^2.

F. Toxicity/Hazardous Material Limitations:
1. Outgassing/Reactivity:
a. Formaldehyde: Products containing urea-formaldehyde will not be permitted.
b. Provide products that contain no PBDEs.
c. Provide products that are “Low-emitting.”

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Comply with Section 01 71 16:
1. Existing Conditions: Examine before beginning installation.
2. Notification: Notify General Contractor of unsatisfactory conditions in writing with copy to Architect.

B. Acceptance: Beginning of work means acceptance of existing conditions by installer.

3.02 INSTALLATION

A. Exterior Wall Rigid Insulation: Install insulation for a tight fit without holes or cracks.
1. Stagger vertical joints. Install butt joints over structural members.
2. Seal all joints between boards with manufacturer’s recommended flashing tape.

B. Batt and Blanket Insulation Installation, General: Install insulation according to manufacturer's recommendations. Fit tight to adjoining work and adjoining insulation so that completely tight enclosure free from open joints, holes, cracks and voids is achieved. Attach insulation in place in manner insuring stability and to eliminate sagging.

C. Unfaced Batts:
1. In Metal Stud Walls: Friction-fit in place until the interior finish is applied. Insulation shall fill the cavity.
a. Stud Cavity Heights Greater Than 8 Feet in Height: Use wire or metal straps to hold the insulation in place until the interior finish is applied.
b. Wire or metal straps shall be used to hold the insulation in place in applications without a cover material or where the stud depth is larger than the insulation thickness.

D. Sprayed Polyurethane Insulation: Apply in accordance with manufacturer's written application instructions, using manufacturer supplied equipment. Fill spaces as indicated.
1. Apply insulation to a reasonably uniform monolithic density without voids.
2. Thickness: Completely cover surfaces to indicated thicknesses.

END OF SECTION

SECTION 07 26 16

BELOW-GRADE VAPOR RETARDERS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Continuous vapor barrier under all interior slabs-on-grade.

1.02 REFERENCES

A. Definitions: Meaning of the following terms as used in this Specification.
   1. Perms: Grains/(ft^2-hr.-inHg).
   2. Vapor Barrier: A vapor retarder having a permeance no greater than 0.01 perms.

B. Reference Standards: Comply with the following except as otherwise specified in this Project Manual.
   1. ASTM International Standard Specifications and Test Methods:
      a. ASTM E154/E154M-08a(2013)e1 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
      b. ASTM E1745-11 – Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.

C. Guide References and Standard Practices: Comply with recommendations of the following except as otherwise specified in this Project Manual.
   1. American Concrete Institute (ACI) Committee Reports, Guides, Standard Practices, and Commentaries:
      a. ACI 302.1R-15 – Guide for Concrete Floor and Slab Construction.
      b. ACI 302.2R-06 – Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
   2. ASTM International Standard Practices:
      a. ASTM E1643-11 – Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

1.03 SCHEDULING

A. Schedule vapor barrier installation to occur immediately prior to installation of reinforcing steel and the placement of concrete.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer Qualifications:
      a. Manufacturer's Services: Include jobsite installation review verifying that installation meets referenced standards, manufacturer's requirements, and other specified requirements.

PART 2 PRODUCTS

2.01 DESCRIPTION

A. Classification: ASTM E1745, Class A.

B. Material: Plastic multi-layer extrusion of virgin polyolefin resins.

C. Sheet Thickness: 15 mil minimum thickness.

D. Tested Properties: Exceed ASTM E1745 Class A minimum properties as follows.
   1. Permeance After Conditioning: ASTM F1249, less than 0.01 Perms. Maintain permeance less than 0.01 Perms after mandatory conditioning tests in accordance with ASTM E154, Sections 8, 11, 12, and 13.
   2. Puncture Resistance: ASTM D1709, Method B, minimum 2300 grams.
   3. Tensile Strength: ASTM D882, minimum 75 lbf/in.

2.02 ACCESSORIES

A. Vapor Retarding Seam Tape:
   1. Water Vapor Transmission Rate: ASTM E96, 0.3 perms or lower.
   2. Color: Contrasting.

B. Vapor Proofing Mastic.
   1. Water Vapor Transmission Rate: ASTM E96, 0.3 perms or lower.

C. Pipe Boots: Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic in accordance with manufacturer’s instructions.

PART 3 EXECUTION

3.01 SITE QUALITY CONTROL

A. Contractor's Quality Control: The Contractor is responsible for quality control, including workmanship and materials furnished by his subcontractors and suppliers. Contractor shall strictly follow concrete floor slab system specifications, and shall take all other reasonable measures necessary to ensure that underslab moisture is controlled, vapor barrier is complete, intact and undamaged prior to concrete placement, water/cement ratio of slab concrete is not exceeded, fresh concrete contains no more water than required for proper placement and cement hydration, and floor slab concrete is properly cured.

B. Manufacturer's Site Services: Underslab vapor barrier manufacturer's representative shall inspect completed application for proper installation. In case of unsatisfactory installation, make modifications in accordance with Manufacturer's recommendations. Manufacturer's acceptance required before final acceptance of installation.

END OF SECTION

SECTION 07 84 00

FIRESTOPPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Penetration firestopping, fire-resistant joint sealants, fire safing, and smoke seals as indicated on the Drawings as well as the following areas:
      a. All openings in fire-rated floors and walls both empty and those accommodating penetrating items such as cables, cable trays, conduits, pipes, ducts, etc.
      b. Curtain wall openings between exterior walls and connecting floor assemblies.
      c. Expansion joints in fire-rated walls and floors.
      d. Openings at each floor level in shafts or stairwells.

B. Related Requirements:
   1. Joint Sealants: Section 07 92 00.
   2. Mechanical and Electrical Work: Divisions 21 through 28.

1.02 REFERENCES

A. Guide References and Standard Practices: Comply with recommendations of the following unless otherwise specified.
   1. ASTM E2174-14b – Standard Practice for On-Site Inspection of Installed Fire Stops.
   2. ASTM E2393-10a(2015) – Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.
   3. FCIA Firestop Manual of Practice.

PART 2 PRODUCTS

2.01 FIRESTOPPING SYSTEMS DESIGN

A. Types of firestop to be used for each condition shall be the responsibility of the installer and shall comply with all specified regulatory requirements.

B. Provide a Flame (F) and Temperature (T) rating of at least one (1) hour but not less than the fire resistance rating of assembly being penetrated, as tested per ASTM E814.

C. Firestop contractor shall immediately notify the Architect if the firestopping systems herein specified cannot meet the requirements of the specification.

2.02 MATERIALS

A. Regulatory Requirements: Firestopping materials proposed for use on this Project shall conform to both Flame (F) and Temperature (T) ratings as tested by nationally accepted test agencies per ASTM E814 or UL 1479 fire tests. The F rating and T rating must be a minimum of one (1) hour but not less than the fire resistance rating of the assembly being penetrated. The fire test shall be conducted with a minimum positive pressure differential of 0.03 inches of water column.

B. General Requirements for Firestopping Materials:
   1. Materials shall be free of asbestos.

2. Firestop materials in exposed areas shall be compatible with specified finishes.
3. Materials shall conform to all applicable governing codes.
4. All materials shall be compatible with the material penetrating the fire assembly.
5. Provide products that upon curing, do not re-emulsify, dissolve, leach, breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during and after construction.
6. Provide firestop sealants sufficiently flexible to accommodate motion such as pipe vibration, water hammer, thermal expansion and other normal building movement without damage to the seal.
7. Pipe insulation shall not be removed, cut away or otherwise interrupted through wall or floor openings. Provide products appropriately tested for the thickness and type of insulation utilized.
8. Use sealants that comply with the limits for VOC content according to SCAQMD Rule #1168:
    a. Sealants: 250 g/L.
    b. Sealant Primers for Nonporous Substrates: 250 g/L.
    c. Sealant Primers for Porous Substrates: 775 g/L.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in strict accordance with Manufacturer's printed instructions to provide a Flame (F) and Temperature (T) rating of at least one (1) hour but not less than the fire resistance rating of the assembly being penetrated.
    1. Equipment used shall be in accordance with firestop manufacturer's written installation instructions.

B. Ensure that all accessories such as anchoring devices, back-up materials, clips, sleeves, supports and other materials used in the actual fire test are installed.

C. Install firestops with sufficient pressure to properly fill and seal openings to ensure an effective smokeseal.

D. Tool or trowel exposed surfaces. Remove excess firestop material promptly as work progresses and upon completion.

E. Following each installation, apply a label on or adjacent to each penetration firestop and at regular intervals along each fire-resistive joint sealant application. Label shall identify and document firestopping system installed in accordance with FCIA Firestop Manual of Practice.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.01 SUMMARY

A. Work Results: Providing all caulking and sealant indicated on Drawings, specified herein, and not specified under other sections. In general, seal all openings indicated on Drawings and at other locations requiring sealant to seal visually and against infiltration from air and water, or to provide acoustical isolation, including but not limited to following:
   1. Expansion joints in concrete paving and sidewalks.
   2. Expansion joints and control joints in exposed interior concrete floor slabs.
   3. Flashing reglet and retainers.
   4. Exterior wall joints and all other joints requiring sealing for air barrier continuity.
   5. Masonry control joints.
   6. Isolation joints, between structure and other elements.
   7. Joints at penetrations of non-fire rated walls, decks and floors by piping and other service and equipment.
   8. Joints between items of equipment and other construction.
   9. Joints between door and window frames and adjacent materials, exterior and interior.
   10. Bedding for door thresholds.
   11. Open joints between similar or dissimilar materials as required to close and conceal jointing of the work.
   12. Construction and expansion joints, joints around windows, door frames, louvers, and other penetrations and openings in the exterior wall; interior walls as detailed or specified.
   13. Joints at sound-insulated partitions.
   14. Fire-resistant joint sealants and backing for fire-rated partitions where indicated on Drawings.
   15. Other joints as indicated.

1.02 QUALITY ASSURANCE

A. Certifications:
   1. Elastomeric Sealants: Listed by SWRI on SWR Institute Validation Program Validated Products List; www.swrionline.org.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

A. Low-Emitting Material Requirements: Use sealants that comply with the following limits for VOC content when calculated according to SCAQMD Rule #1168:
   1. Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

2.02 LATEX JOINT SEALANTS

A. Interior Caulk and Sealants for Under Thresholds and Non-Moving Joints: Acrylic latex, ASTM C834-10.

2.03 ELASTOMERIC JOINT SEALANTS

A. Sealant Materials and Applications:
   1. Exterior Vertical and Overhead Joints Not Specified Otherwise: Two-component polyurethane, ASTM C920, Type M, Grade NS, non-sag, Class 50, Use NT.
   2. Sealant at Lavatories, Tubs and Showers: Silicone tub sealant.

2.04 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.

B. Acoustical Sealant for Concealed Joints: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

PART 3 EXECUTION

3.01 APPLICATION

A. Workmanship: Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides.
   1. Except as otherwise indicated, fill sealant rabbet to slightly concave surface, slightly below adjoining surfaces.
   2. Where horizontal joints are between horizontal surface and vertical surface, fill joint to form slight cove, so that joint will not trap moisture and dirt.

END OF SECTION

SECTION 07 95 13

EXPANSION JOINT COVER ASSEMBLIES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Results:
   1. Expansion joint cover assemblies.

PART 2 - PRODUCTS

2.01 SYSTEMS

A. General: Provide expansion joint cover assemblies of design, basic profile, materials, and operation indicated. Provide units with capability to accommodate variations in adjacent surfaces.
   1. Furnish units in longest practicable lengths to minimize field splicing. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
   2. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.

2.02 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: Where indicated, provide expansion joint cover assemblies with fire barriers identical to those of systems tested for fire resistance per UL 2079 or ASTM E 1966 by a testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Hose Stream Test: Wall-to-wall and wall-to-ceiling systems shall be subjected to hose stream testing.

B. Seismic Performance: Expansion joint cover assemblies shall withstand the effects of earthquake motions determined according to the CBC for hospital occupancy.
   1. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified and the system will be fully operational after the seismic event."
   2. Component Importance Factor is 1.5.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.

B. Fire-Resistance-Rated Assemblies: Coordinate installation of expansion joint cover assembly materials and associated work so complete assemblies comply with assembly performance requirements.
   1. Fire Barriers: Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and field splices.

END OF SECTION

DIVISION 08 – OPENINGS

SECTION 08 12 13

HOLLOW METAL FRAMES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Hollow metal door frames.
   2. Hollow metal sidelight frames.
   3. Hollow metal window frames.

1.02 REFERENCES

A. General Requirements: Refer to Section 01 42 00.

B. Reference Standards: Comply with the following except as otherwise specified in this Project Manual.
   1. American National Standards Institute (ANSI):
      a. ANSI A115 - Specifications for Door and Frame Preparation for Hardware.
   2. National Fire Protection Association (NFPA):
      a. NFPA 80 - Standard for Fire Doors and Other Opening Protectives, 2016 Edition.

C. Guide References and Standard Practices: Comply with recommendations of the following except as otherwise specified in this Project Manual.
   1. Hollow Metal Manufacturers Association (HMMA), a division of the National Association of Architectural Metal Manufacturers (NAAMM):
      a. ANSI/HMMA 840-07 –Installation and Storage of Hollow Metal Doors and Frames.
      b. ANSI/NAAMM HMMA 861-14 – Guide Specifications for Commercial Hollow Metal Doors and Frames.

1.03 COORDINATION

A. Templates: Hardware templates for hardware mounted on hollow metal work shall be submitted under Section 08 71 00 directly to hollow metal manufacturer immediately after acceptance of hardware schedule. Report failure to receive templates with reasonable promptness to General Contractor.

1.04 CLOSEOUT SUBMITTALS

A. Submit the following in accordance with Section 01 77 00.
   1. Fire Door and Frame Assemblies: Submit documentation for Owner's records of initial inspection and approval of fire door assemblies by inspector for authority having jurisdiction.

1.05 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Fire Rating: Provide fire rating label acceptable to local building code authority on frames indicated on the door schedule. If any frame scheduled to be fire-rated cannot qualify for appropriate labeling because of its design, hardware or any other reason, advise Architect prior to submission of bids.

PART 2 PRODUCTS

2.01 HOLLOW METAL FRAMES

A. General: Frames for hollow metal and wood doors, entrances, windows and borrowed lights, etc. indicated to be hollow metal shall be of design sections as detailed and assembled as indicated.

B. Gages:
   1. Frames on Interior Walls: 16 gage steel.
   2. Loose Glazing Beads: Not less than 20 gage steel, corners butted.

C. Construction: Construct frames encompassing one or more doors with sidelights or transoms, and steel window walls, etc., in rigid units of as large size as practical to reduce to minimum number of job-fabricated joints.
   1. Joints and Connections Including Job-Fabricated Joints: Welded and ground and entire assembly reinforced and braced as required to ensure absolute rigidity.
   2. Provide expansion joints as indicated or required.
   3. Where so indicated or as required, provide channel stiffening within and securely welded to frame member.
   4. Do not used exposed screws except where specifically accepted.

D. Accessories:
   1. Reinforcement for Hardware: Machine frames for attachment of hardware, including mortising, reinforcing, drilling and tapping for hinges.
   2. Anchors: Furnish anchors of type and number required for anchoring frames to structure, partitions, etc. as follows:
      a. Three jamb anchors on seven foot high jamb.
      b. Four jamb anchors on jambs over seven feet.

      Wire anchors will not be allowed. Provide such installation instructions as are necessary to ensure proper installation of anchors.
   3. Silencers: Drill stop of lock jamb of each interior frame for installation of pneumatic rubber door silencers. Silencers shall be furnished under Section 08 71 00, numbers as indicated on schedule.
   4. Joints: Conceal welded joints in two-sided mullions or similar sections behind glazing stops. Continuous weld and grind smooth exposed joints.
   5. Glazing Stops: Provide removable metal stops, screwed to frame, at borrowed lights and window walls.

2.02 FINISH

A. Apply one coat of baked-on factory primer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Set steel frames accurately in accordance with details, straight and free of twist with head level and jambs plumb. Rigidly anchor to walls and partitions and securely brace until surrounding work is completed. Provide deflection clearances at frame heads where indicated.

B. Fire-Rated Door and Frame Assemblies: Install in compliance with NFPA 80.
   1. Make no field modifications to door assembly that void the label.

END OF SECTION

SECTION 08 14 16

FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. All labor, material, equipment, and related services necessary to furnish and install high impact resistant non-rated and fire-rated solid core wood doors (SCWD) with flush faces.

1.02 REFERENCES

A. Reference Standards: See Section 01 42 00. Comply with following:
1. ANSI/BHMA A156.115-W-2006 - American National Standard for Hardware Preparation in Wood Doors with Wood or Steel Frames.
2. ANSI/NPA A208.1-2009 – Particleboard.
3. ANSI/WDMA I.S.1-A-04 - Architectural Wood Flush Doors.
4. California Air Resources Board - CARB Emission Standards Section 93120.2 (a).
5. GGHC Title EP 4.1 PBT Elimination: Dioxins, Green Guide for Health Care Version 2.2 2007.
6. National Fire Protection Association Standards:
   a. NFPA 80 - Standard for Fire Doors and Other Opening Protectives, 2016 Edition.
   b. NFPA 101 - Life Safety Code, 2012 Edition.

B. Guide References and Standard Practices: Follow recommendations of the following.
1. WDMA - How To Store, Handle, Finish, Install and Maintain Wood Doors.

1.03 COORDINATION

A. Templates: Hardware templates for hardware mounted on wood doors will be submitted under Section 08 71 00 directly to wood door manufacturer immediately after acceptance of hardware schedule. Report failure to receive templates with reasonable promptness to General Contractor.

1.04 INFORMATIONAL SUBMITTALS

A. Certificates:
a. Fire-Rated Doors: Submit certification that doors and frames comply with UL10c, Positive Pressure Fire Door Test Method.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Fire-Rated Wood Doors: Comply with NFPA 80. Doors shall be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-ratings indicated, based on testing according to UL-10C Positive Pressure and NFPA 252.

B. Smoke and Draft Control Door Assemblies: Doors shall bear UL “S” label where scheduled on Drawings.

2.02 DESCRIPTION

A. Quality Standard: Comply with WDMA Industry Standard I.S. 1A-04.
   1. Doors shall meet performance attributes for Extra Heavy Duty.
   2. Tolerances for Warp, Telegraphing, Squareness and Prefitting Dimensions: In accordance with WDMA I.S.1A-04.

B. Door Construction:
   1. Thickness: 1-3/4 inches (plus-or-minus 1/16-inch).
   2. Non Fire Rated Doors and 20-Minute Interior Flush Doors: Conform to WDMA I.S.1A-04 and the following:
      a. Core: Solid. Interior stiles and rails bonded. Tops and bottoms factory sealed with an approved sealer to prevent moisture intrusion. One of the following:
         1) Particleboard grade LD-1, 32 lb/ft^3 density, ANSI A208.1, CARB Phase I compliant.
         2) FSC Certified Particleboard grade LD-1, 32 lb/ft^3 density, no added urea formaldehyde content (NAUF), ANSI A208.1, CARB Phase I compliant.
         3) Agrifiber Particleboard Grade LD-1, 26-28 lb/ft^3 density, rapidly renewable and no added urea formaldehyde content (NAUF), CARB Phase I compliant.
         4) Structural Composite Lumber, 39 lb/ft^3 density, no added urea formaldehyde content (NAUF).
      b. Crossbanding: FSC certified.
      c. Replaceable Door Stiles: 3/4-inch stiles, field replaceable if ever damaged by impact.
      d. Replaceable Door Edges: Fully wrapped and rounded impact resistant plastic matching door faces or stainless steel door edges, field replaceable if ever damaged by impact.
      e. Durability Performance: Cycle Slam WDMA TM-7, 1990 Extra Heavy Duty- 2,000,000 cycles to ensure durability of entire door construction.
   3. 45 and 60-Minute Interior Flush Fire Rated Doors: Conform to WDMA I.A. 1-A and the following:
      a. Cores: Solid. Interior stiles and rails bonded. Non-combustible mineral composite, 25-32 lb/ft^3 density- no added urea formaldehyde content. Tops and bottoms factory sealed with an approved sealer to prevent moisture intrusion.
      b. Crossbanding: FSC certified.
      c. Replaceable Door Stiles: 3/4-inch stiles, field replaceable if ever damaged by impact.
      d. Replaceable Door Edges: Fully wrapped and rounded impact resistant plastic matching door faces or stainless steel door edges, field replaceable if ever damaged by impact.
      e. Durability Performance: Cycle Slam WDMA TM-7, 1990 – 1,000,000 cycles to insure durability of entire door construction.
   4. Adhesives:
      a. Crossbanding to core adhesives shall be Type II, urea formaldehyde free I to improve structural integrity of door.
      b. Door faces are to be applied to the crossbanded core using Type I, urea formaldehyde free adhesives to eliminate delamination.

C. Door Faces:
   1. Material: PVC-free high impact resistant engineered plastic containing no persistent bio-accumulative toxicants (PBTs).
   2. Face Veneer Wear Index - Abrasion Resistance Testing - ASTM D4060: 28,000 cycles to prove out resistant to scuffing and scratching.
   3. Face Veneer Impact Resistance - ASTM D4226: 86 in/lb. to confirm impact resistance of face finish.

D. Door Stiles: To meet or exceed the following performance testing to ensure hardware fastener holding strength:
   1. WDMA TM-8 - Hinge Loading Resistance Extra Heavy Duty.
   2. WDMA TM-10 - Screw Holding Capacity Extra Heavy Duty.

2.04 FABRICATION

A. Doors shall be prefit and beveled at the factory to fit the openings. Prefit tolerances shall be in accordance with the requirements of WDMA I.S.1A-04.

B. Fire Rated Doors: Comply with clearance requirements of referenced quality standard for fitting in accordance with requirements listed in NFPA 80.

PART 3 EXECUTION

3.03 INSTALLATION

A. General: Install doors to comply with manufacturer's instructions, referenced quality standard and as indicated.

B. Fire Rated Doors: Install fire rated doors in corresponding fire-rated frames according to NFPA-80 and Intertek Testing Services - Warnock Hersey (ITS-WH) requirements.
   1. In the Field Trimming:
      a. Trim door height by cutting door bottom edges to a maximum of 3/4-inch in accordance with NFPA 80.
      b. Trimming of fire rated doors in width may only be done by the manufacturer or a certified machining distributor under special guidance of the manufacturer.

END OF SECTION

SECTION 08 31 00

ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Access doors into ceiling spaces.
2. Access doors into pipe and utility spaces.

B. Related Requirements:
1. Furnishing Access Doors as Specified in This Section for Plumbing Equipment: Division 22 Plumbing.
2. Furnishing Access Doors as Specified in This Section for Mechanical Equipment: Division 23 Heating, Ventilating, and Air Conditioning (HVAC).
3. Furnishing Access Doors as Specified in This Section for Electrical Equipment: Division 26 Electrical.
4. Openings for Access Doors and Finishing After Installation: Applicable sections.

PART 2 PRODUCTS

2.01 FLUSH-MOUNTED, NON-RATED ACCESS DOORS

A. Material: Stainless steel.

B. Finish:
1. Stainless Steel: No. 4 satin finish.

C. Locking Devices: Screwdriver operated cam latch.

2.02 RECESSED ACCESS DOORS

A. Material: Stainless steel.

B. Finish:
1. Stainless Steel: No. 4 satin finish.

C. Locking Devices: Key operated cam locks.

2.03 FIRE-RATED ACCESS DOORS

A. Fire Rating:
1. Provide fire rating label acceptable to local building code authority on access doors to be installed in fire rated walls and ceilings.
2. Walls: 1-1/2 hour UL “B” label.
3. Ceilings: Approved by Warnock Hersey International for 3 hours.

B. Sizes: As indicated on Drawings or as required to properly service mechanical or electrical equipment, but not larger than limit for required fire rating.

C. Material: Stainless steel.

D. Finish:
   1. Stainless Steel: No. 4 satin finish.

E. Locking Devices: Key operated cam locks.

PART 3 EXECUTION

3.01 INSTALLATION

A. Access Doors:
   1. Mechanical or Electrical Access: Access doors required for access to mechanical or electrical equipment shall be provided under Division 22, Division 23, or Division 26 and installed by the trade responsible for the material in which door is located.
   2. General Access: Furnish access door indicated on Drawings for general access to be installed by trade responsible for material in which door is located.
   3. Type:
      a. Installation in Non-Rated Walls and Ceilings:
         1) In Janitor Rooms, Mechanical and Electrical Rooms, and Other Rooms Generally Accessible to Staff Personnel Only: Flush-mounted, non-rated.
         2) Areas and Rooms Accessible to Public: Recessed type, unless flush-mounted is specifically approved by Architect.
      b. Installation in Fire-Rated Walls and Ceilings: Fire-rated type.
         1) Fire Rated Floor/Ceiling Assemblies: Fire-resistive access door with double layer of gypsum board acceptable provided finished door retains fire rating of floor/ceiling assembly.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Mechanical and electrified door hardware for:
      a. Swinging doors.
   2. Keying.

1.02 REFERENCES

A. Reference Standards:
   1. American National Standards Institute (ANSI) Standards; www.ansi.org.
      a. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
   2. DHI - Door and Hardware Institute:
      a. Sequence and Format for the Hardware Schedule
      b. Recommended Locations for Builders Hardware
      c. Key Systems and Nomenclature
   3. UL - Underwriters Laboratories:
      a. UL 10B - Fire Test of Door Assemblies
      b. UL 10C - Positive Pressure Test of Fire Door Assemblies
      c. UL 1784 - Air Leakage Tests of Door Assemblies
      d. UL 305 - Panic Hardware

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Division 03.
   2. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
   3. Security: Coordinate installation of door hardware, keying, and access control with Tri-City Medical Center's security consultant.
   4. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
   5. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

B. Keying Conference: Conduct conference at Project site.
   1. Attendees: Tri-City Medical Center, Contractor, Architect, Installer, and Supplier’s Architectural Hardware Consultant.
   2. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
      a. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.

b. Preliminary key system schematic diagram.
c. Requirements for key control system.
d. Requirements for access control.
e. Address for delivery of keys.

C. Pre-installation Conference: Conduct conference at Project site.
1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Inspect and discuss preparatory work performed by other trades.
3. Inspect and discuss electrical roughing-in for electrified door hardware.
4. Review sequence of operation for each type of electrified door hardware.
5. Review required testing, inspecting, and certifying procedures.

D. Coordination Conferences:
1. Installation Coordination Conference: Prior to hardware installation, schedule and hold meeting to review questions or concerns related to proper installation and adjustment of door hardware.
a. Attendees: Door hardware supplier, door hardware installer, Contractor.
b. After meeting, provide letter of compliance to Architect, indicating when meeting was held and who was in attendance.
2. Electrified Hardware Coordination Conference: Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.
a. Attendees: electrified door hardware supplier, doors and frames supplier, electrified door hardware installer, electrical subcontractor, Tri-City Medical Center, Architect and Contractor.
b. After meeting, provide letter of compliance to Architect, indicating when coordination conference was held and who was in attendance.

1.04 ACTION SUBMITTALS

A. Door Hardware Schedule: Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:
1. Door Index; include door number, heading number, and Architects hardware set number.
2. Opening Lock Function Spreadsheet: List locking device and function for each opening.
3. Type, style, function, size, and finish of each hardware item.
4. Name and manufacturer of each item.
5. Fastenings and other pertinent information.
6. Location of each hardware set cross-referenced to indications on Drawings.
7. Explanation of all abbreviations, symbols, and codes contained in schedule.
8. Mounting locations for hardware.
9. Door and frame sizes and materials.
10. Name and phone number for local manufacturer's representative for each product.
11. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include how door will operate on egress, ingress, and fire and smoke alarm connection.

B. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work that is critical in Project construction schedule.

C. Key Schedule:
   1. After Keying Conference, provide keying schedule listing levels of keying as well as explanation of key system's function, key symbols used and door numbers controlled.
   2. Use ANSI/BHMA A156.28 “Recommended Practices for Keying Systems” as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
   3. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
   4. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
   5. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion.
      a. Forward bitting list, key cuts and key system schematic directly to Tri-City Medical Center, by means as directed by Tri-City Medical Center.
   6. Prepare key schedule by or under supervision of supplier, detailing Tri-City Medical Center’s final keying instructions for locks.

D. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory prepared for door hardware installation.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.

B. Product Certificates for electrified door hardware, signed by manufacturer:
   1. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

C. Certificates of Compliance:
   1. Certificates of compliance for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.
   2. Installer Training Meeting Certification: Letter of compliance, signed by Contractor, attesting to completion of installer training meeting specified in “QUALITY ASSURANCE” article, herein.
   3. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference.

D. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by qualified testing agency, for door hardware on doors located in accessible routes.

1.06 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Include following information:
   1. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
   2. Catalog pages for each product.
   3. Name, address, and phone number of local representative for each manufacturer.
   4. Parts list for each product.
   5. Final approved hardware schedule, edited to reflect conditions as-installed.
   6. Final keying schedule
   7. Copies of floor plans with keying nomenclature
   8. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

9. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
   1. Deliver each article of hardware in manufacturer's original packaging.

C. Storage:
   1. Provide secure lock-up for door hardware delivered to Project, but not yet installed. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

D. Deliver keys to manufacturer of key control system for subsequent delivery to Tri-City Medical Center.

E. Deliver keys and permanent cores to Tri-City Medical Center as directed.

1.08 WARRANTIES

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Years from date of Substantial Completion, for durations indicated.
      a. Closers:
         1) Mechanical: 30 years.
      b. Automatic Operators: 2 years.
      c. Exit Devices:
         1) Mechanical: 3 years.
         2) Electrified: 1 year.
      d. Locksets:
         1) Mechanical: 3 years.
         2) Electrified: 1 year.
      e. Continuous Hinges: Lifetime warranty
      f. Key Blanks: Lifetime
   2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. The Tri-City Medical Center requires use of certain products for their unique characteristics and particular project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."
   1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.

2.02 PERFORMANCE

A. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
   1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

D. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release latch. Locks do not require use of key, tool, or special knowledge for operation.

E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in “REFERENCES” article, herein.
   1. Provide operating devices that do not require tight grasping, pinching, or twisting of wrist and that operate with force of not more than 5 lbf (22.2 N).
   2. Maximum opening-force requirements:
      a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
      b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
      c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
   3. Bevel raised thresholds with slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
   4. Adjust door closer sweep periods so that, from open position of 70 degrees, door will take at least 3 seconds to move to 3 inches (75 mm) from latch, measured to leading edge of door.

2.03 HINGES

A. Provide three-knuckle, concealed bearing hinges.

B. Requirements:
   1. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
      a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
      b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
   2. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
      a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
      b. Interior: Heavy weight, steel, 5 inches (127 mm) high
   3. 2 inches or thicker doors:
      a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
      b. Interior: Heavy weight, steel, 5 inches (127 mm) high
   4. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
   5. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.
   6. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
      a. Steel Hinges: Steel pins

b. Non-Ferrous Hinges: Stainless steel pins
c. Out-Swinging Exterior Doors: Non-removable pins
d. Out-Swinging Interior Lockable Doors: Non-removable pins
e. Interior Non-lockable Doors: Non-rising pins

7. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.
8. Doors 36 inches (914 mm) wide or less furnish hinges 4-1/2 inches (114 mm) high; doors greater than 36 inches (914 mm) wide furnish hinges 5 inches (127 mm) high, heavy weight or standard weight as specified.
9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component.
10. Provide mortar guard for each electrified hinge specified.
11. Provide spring hinges where specified. Provide two spring hinges and one bearing hinge per door leaf for doors 90 inches (2286 mm) or less in height. Provide one additional bearing hinge for each 30 inches (762 mm) of additional door height.

2.04 CONTINUOUS HINGES

A. Provide pin and barrel continuous hinges conforming to ANSI/BHMA A156.26, Grade 2.

B. Provide pin and barrel continuous hinges fabricated from 14 gauge, type 304 stainless steel.

C. Provide twin self-lubricated nylon bearings at each hinge knuckle, with 0.25-inch (6 mm) diameter stainless steel pin.

D. Provide hinges capable of supporting door weights up to 600 pounds, and successfully tested for 1,500,000 cycles.

E. On fire-rated doors, provide pin and barrel continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.

2.05 MORTISE LOCKS

A. Manufacturer and Product: Corbin-Russwin ML2000 series, no substitutes.

B. Lever Design: Corbin-Russwin LWA.

2.06 EXIT DEVICES

A. Manufacturer and Product: Von Duprin 98 series, no substitutes.

B. Lever Style: Match lever style of locksets.

C. Provide UL labeled fire exit hardware for fire rated openings.

2.07 CYLINDERS

A. Match existing key system.

B. Provide cylinders/cores, from the same manufacturer of locksets, compliant with ANSI/BHMA A156.5; latest revision, Section 12, Grade 1; permanent cylinders; cylinder face finished to match lockset, manufacturer’s series as indicated. Refer to “KEYING” article, herein.

C. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
   1. Conventional cylinder with permanent core with open keyway.
   2. Keying: Manufacturer-keyed permanent cylinders/cores, configured into keying system per "KEYING" article herein.
   3. Features: Cylinders/cores shall incorporate the following features.

D. Nickel silver bottom pins.

E. Replaceable Construction Cores.
   1. Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
      a. 12 construction change (day) keys.
   2. Tri-City Medical Center or Tri-City Medical Center's Representative will replace temporary construction cores with permanent cores.

2.08 KEYING

A. Match existing key system.

B. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

2.09 DOOR CLOSERS

A. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. Stamp units with date of manufacture code.

B. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI/BHMA Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).

2.10 ELECTRO-MECHANICAL AUTOMATIC OPERATORS

A. Provide low energy automatic operator units that are electro-mechanical design complying with ANSI/BHMA A156.19.

2.11 FINISHES

A. Finish: BHMA 626/652 (US26D); except:
   1. Hinges at Exterior Doors: BHMA 630 (US32D)
   2. Continuous Hinges: BHMA 630 (US32D)
   3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
   4. Protection Plates: BHMA 630 (US32D)
   5. Overhead Stops and Holders: BHMA 630 (US32D)
   6. Door Closers: Powder Coat to Match
   7. Wall Stops: BHMA 630 (US32D)
   8. Latch Protectors: BHMA 630 (US32D)
   9. Weatherstripping: Clear Anodized Aluminum
   10. Thresholds: Mill Finish Aluminum

PART 3 EXECUTION

3.01 DEMONSTRATION

A. Provide training for Tri-City Medical Center's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

END OF SECTION

SECTION 08 80 00

GLAZING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Glass and Glazing For:
      a. Hollow Metal Doors and Frames: Section 08 11 13.
      b. Flush Wood Doors: Section 08 14 16.
      d. Aluminum-Framed Entrances and Storefronts.
      e. Glazed Aluminum Curtain Wall.
   2. Glazing sealants.

1.02 REFERENCES

A. Reference Standards:
   1. American National Standards Institute (ANSI) Standards; www.ansi.org.
      a. ANSI Z97.1-2015 – Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
   2. ASTM International Standards; www.astm.org:
      a. ASTM C1036-11e1 - Standard Specification for Flat Glass.
      b. ASTM C1172-14 - Standard Specification for Laminated Architectural Flat Glass.
      c. ASTM C1376-15 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass.
      d. ASTM C1048-12e1 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
   3. Glazing Association of North America (GANA); www.glasswebsite.com:
      a. GANA Glazing Manual, 50th Anniversary Edition.
      b. GANA Tempering Division Engineering Standards Manual, 2008 edition.

B. Guide References and Standard Practices: Comply with recommendations of the following except as otherwise specified.
   1. ASTM International; www.astm.org:
      a. ASTM E1300-16 - Standard Practice for Determining Load Resistance of Glass in Buildings.
   2. Glazing Association of North America (GANA); www.glasswebsite.com:
      a. GANA Sealant Manual, 2008 edition.
      b. GANA Laminated Glazing Reference Manual, 2009 edition.
   3. Insulating Glass Manufacturers Alliance (IGMA); www.igmaonline.org:
      a. IGMA Technical Publication TM-3000-90 (04) North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use.
      b. IGMA TR-3401-96 - Preventing Glass Breakage During IG Design, Manufacture, Transport, Installation and Use.

1.03 QUALITY ASSURANCE

A. Certifications:
   1. Insulating Glass: IGCC certified.
   2. Each Individual Piece of Glass: Bear label designating type, thickness and quality. Do not remove labels until reviewed by Architect.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Fire-Rated Glass: UL approved.

B. Safety Glass and Glazing: Comply with State Statutes, IBC and ANSI Z97.1.

2.02 PERFORMANCE

A. General: Provide glazing systems that are produced, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading (where applicable), without failure including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; and other defects in construction.

B. Glass Design: Glass thicknesses indicated in Contract Documents are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites for the various size openings in the thicknesses and strengths (annealed or heat-treated) to meet or exceed the following criteria:
   1. Minimum glass thickness, nominally, of lites in exterior walls is 6.0 mm (0.23 inch).
   2. Tinted and heat-absorbing glass thicknesses for each tint indicated are the same throughout Project.
   3. Minimum glass thicknesses of lites, whether composed of annealed or heat-treated glass, to be selected so the worst-case probability of failure does not exceed the following:
      a. 8 lites per 1000 for lites set vertically or not over 15 degrees off vertical and under wind action. Determine minimum thickness of monolithic annealed glass according to ASTM E1300. For other than monolithic annealed glass, determine thickness per glass manufacturer's standard method of analysis including applying adjustment factors to ASTM E1300 based on type of glass.

C. Normal thermal movement results from the following maximum change (range) in ambient and surface temperatures acting on glass-framing members and glazing components. Base engineering calculation on materials' actual surface temperatures due to both solar heat gain and nighttime sky heat loss.
   1. Temperature Change (Range): 120 deg F (67 deg. C), ambient; 180 deg. F (100 deg. C), material surfaces.

2.03 GLASS

A. General: Glass shall be annealed, heat strengthened or tempered as specified and as required by codes or as required to meet thermal stress and wind loads.

B. Annealed Float Glass: ASTM C1036, Type 1, Class 1, clear, Quality q3.

C. Fully Tempered Glass: ASTM C1048, Type 1, Class 1, clear, Quality q3, Kind FT.

D. Laminated Glass: Laminated glass shall consist of two layers of Type I transparent float glass, Class 1-clear Quality q3 - glazing select, conforming to ASTM C1036. Glass shall be bonded together with 0.060 inch thick PVB interlayer under pressure, or alternatives such as resin laminates, conforming to requirements of 16 CFR 1201 and ASTM C1172. Color shall be clear.

E. Fire- and Safety-Rated Laminated Ceramic Glazing: Laminated glass made from two plies of clear, ceramic glass and complying with 16 CFR 1201, Category II.
   1. Total Thickness: 5/16-inch.

2. Fire-rating: 20 minutes to 3 hours for doors; 20 minutes to 90 minutes for other applications.
3. Surface Finish: Premium Grade-Ground and polished on both sides.

F. Insulating Glass: One inch nominal thickness double sealed insulating glass to match existing building glazing. Tinted or clear outer lites as required to match. Clear inner lites.
1. Safety Locations: Fully tempered inner and outer lites.
2. Other Locations: Heat strengthened outer lite; clear float inner lite.
3. Low E Coating: On surface no. 2 or no. 3.

PART 3 EXECUTION

3.01 GLAZING

A. Glazing in Wood or Metal Frames:
1. Tape entire opening to prevent glass from touching frame in any direction.
2. Center glass in glazing rabbet to maintain recommended clearances at all four, inside and out.
3. Rest glass on setting blocks as recommended by the glass manufacturer.
4. Install shims or use shim tape as recommended to maintain clearance between stops and face of glass.
5. Install glazing tape and stop in with specified stops.
a. Fire Rated Glazing: Apply tape to both sides of glass.
6. Cover top of tape with silicone sealant on both sides of frame.
7. Cut all glass with smooth, straight edges of full size required by the openings. Edge clearances shall comply with GANA standards.
8. Leave sealant smooth and clean. Remove sealant from adjoining surfaces without damaging the finish.

B. Glazing in Aluminum Windows and Doors: Install glass on setting blocks as recommended by the window or door manufacturer. Dry glaze using glass retainers providing resilient clamping grip on glass or glaze with elastic glazing compound as required.

C. Glazing Tolerances: Maintain glazing tolerances between glass and frame or stops as recommended by GANA.
1. 1/4 Inch Thickness Glass: Maintain 1/8 inch clearance between glass face and metal stops.

END OF SECTION

SECTION 08 83 00

MIRRORS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Wall mounted mirrors over lavatory counters.

1.02 REFERENCES

A. Reference Standards: See Section 01 42 00. Comply with following:
1. FGMA Glazing Manual. Latest edition.

PART 2 PRODUCTS

2.01 MIRRORS

A. Material: ¼-inch thickness polished plate, mirror glazing quality.
1. Silvered Mirrored Glass: ASTM C1503, Select Quality.

B. Sizes: As indicated on Drawings.

C. Edges: Beveled, polished and factory sealed.

2.02 ADHESIVE

A. Mounting Adhesive: Palmer Qwik-Set Mirro-Mastic or approved substitute.

PART 3 EXECUTION

3.01 INSTALLATION

A. Mirrors: Install mirrors with adhesive applied according to manufacturer's instructions. Supports bottom of mirror until adhesive is set.

END OF SECTION

DIVISION 09 – FINISHES

SECTION 09 05 61

COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SUMMARY

A. Work Results:
   1. Preparation of concrete slabs to receive finish flooring under flooring sections of Division 09, and testing procedures to verify conditions of concrete subfloor are suitable to receive finish flooring.
      a. Types of Concrete Slabs Included, Where They Occur:
         1) Slabs-on-ground (SOG).
         2) Slabs on metal decking.
         3) Cast-in-place suspended floor slabs.
         4) Slabs with removable forms.
         5) Existing cast-in-place structural floor slabs to receive new flooring.
         6) Existing concrete slab-on-grade floor slabs to receive new flooring.
      b. Concrete slabs to receive finish flooring of the following types are included, where they occur:
         1) Porcelain Tile Over Waterproofing or Crack Isolation Membrane.
         2) Resilient Flooring: Section 09 65 00.
         3) Tile Carpeting: Section 09 68 13.
      c. Concrete slabs to receive the following finishes are excluded, where they occur:
         1) Sealed concrete, without other finish.
         2) Ceramic, porcelain, glass, and quarry tile installed over cementitious or epoxy-based setting materials directly to concrete.
      d. Testing Included:
         1) Moisture vapor emission.
         2) Relative humidity.
         3) Alkalinity.
         4) Bond testing for all interior floor slabs to receive adhered floor finish materials.
   2. Concrete slab leveling.
   3. Concrete slab cleaning.
   4. Vapor emission control treatment, if required.

B. Related Requirements:
   1. Quality Control and Testing: Section 01 45 20 Quality Control.

1.02 REFERENCES

A. Reference Standards: Comply with following except as modified by supplementary requirements of this Project Specification.
   1. American National Standards Institute (ANSI) Standards:
      a. ANSI A108 - American National Standard Specifications for Installation of Ceramic Tile:
         1) A108.01 – General Requirements: Subsurfaces and Preparations by Other Trades – 2013 (Revised).
   2. ASTM International Standard Specifications and Test Methods:
      a. ASTM F1869-11 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
      b. ASTM F2170-11 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

B. Guide References and Standard Practices: Comply with recommendations of the following except as otherwise specified in this Project Manual.
   1. ASTM International Standard Practices:
      a. ASTM F710-11 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
      b. ASTM F2678-10 – Standard Practice for Preparing Panel Underlayments, Thick Poured Gypsum Concrete Underlayments, Thick Poured Lightweight Cellular Concrete Underlayments, and Concrete Subfloors with Underlayment Patching Compounds to Receive Resilient Flooring.

1.04 SCHEDULING

A. Comply with other requirements specific to each flooring type as specified in Division 09 finish flooring specification sections, and with each finish flooring manufacturer's written instructions regarding scheduling limitations, coordination with other trades, and conditions necessary before flooring may be installed.

1.05 WARRANTY

A. Finish Flooring Manufacturers' Warranties: In addition to flooring preparation and testing specified under this Section, comply with additional requirements, if any, specified by finish flooring manufacturers as warranty conditions.

B. Vapor Emission Treatment Performance and Workmanship Warranty: If vapor emission treatment of floor slabs is required to comply with performance requirements of this section, Manufacturer shall provide an installation workmanship and material performance warranty for a period of ten (10) full years from date of application. In the event of treatment system failure by concrete moisture and alkalinity over slab surfaces, joints or cracks, Manufacturer shall provide materials and installation labor for repair or replacement of damaged flooring system at no charge to the Owner. Warranty shall cover repair or replacement of the flooring system, adhesives, patching compounds, and treatment system.
   1. Underwriter Coverage of Manufacturer's Warranty: Provide Owner with a warranty underwritten by a product liability insurance carrier, with a maximum "A" rating from Best or equivalent rating system, in the amount of $5 million per occurrence, and naming Owner, Architect and General Contractor as co-insured.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. All vapor emission control treatment products shall be certified to be VOC compliant with all applicable federal, state and local regulations.

2.02 VAPOR EMISSION CONTROL TREATMENT SYSTEMS

A. Acceptable Manufacturers and Systems:
   1. Ardex Engineered Cements; www.ardex.com. – MC Moisture Control System.
      a. Primer: Ardex P-MC.
      b. Sealer: Ardex S-MC.
   2. Floor Seal Technology, Inc.; www.floorseal.com – MES 100 vapor emission control system utilizing all of the following components, unless otherwise recommended by system manufacturer based on Project conditions encountered:
      a. MES Penetrant water-based modified resinous epoxy.
      b. MES Coating water-based modified resinous epoxy.

c. MES Membrane water-based modified resinous epoxy.

3. Koester American Corporation, 757/425-1206; www.koesterusa.com. - VAP I 2000 System, utilizing all of the following components, unless otherwise recommended by system manufacturer based on Project conditions encountered:
   a. VAP I Primer, water-based primer/curing agent containing epoxy resins.
   b. VAP I 2000, 100 percent solids modified resinous epoxy.
4. Synthetics International, 866/646-0356; www.syntheticsintl.com - Synthetic30, utilizing the following materials:
   a. Non-porous primer
   b. Synthetic30 penetrating waterborne polymer.

B. Performance Requirements:
   1. Application of vapor emission treatment system to concrete floor slabs that initially fail to meet vapor emission performance requirements specified in Article 2.02 “Performance” shall reduce vapor emission to within specified limits.
   2. Treatment system shall be certified by independent testing agency to meet the following:
      a. Water Vapor Transmission Rate: Application shall yield a maximum emission rate of 2.0 lbs/ 24 hours/ 1000 ft² when tested in accordance with ASTM E96.
      b. Alkali Resistance: Insensitive for long term to pH exposures up to 14 when tested in accordance with ASTM D1308.
      c. Pull-Off Concrete Adhesion: Exceeding 500 psi or reaching concrete cohesive failure when tested in accordance with ASTM D4541.

C. Vapor Emission Control Treatment Materials:
   1. VOC Content: Not greater than 65 g/liter in accordance with EPA Method 24 or SCAQMD 1168.

D. Cementitious Underlayment: Required over treated slab.
   1. Acceptable Manufacturers and Products: Ardex K-15 Self-Leveling Underlayment Concrete or alternate product recommended by treatment system manufacturer and compatible with treatment system materials.
   2. System Unit Price: Material, delivery, and installation cost of cementitious underlayment shall be included in unit price of vapor emission control treatment system reported in accordance with Section 01 22 00.

2.03 ALKALINITY NEUTRALIZER

A. Neutralizer for Treating Concrete Floor Slabs with Measured pH Higher Than That Acceptable to Flooring Manufacturer: Use only materials accepted by flooring manufacturer to treat floors to receive flooring manufacturer’s products. Obtain manufacturer’s written acceptance of proposed treatments.

B. Prohibited Materials: Acids that, if applied, are detrimental to cement and strength of concrete and/or to flooring adhesives or flooring materials shall not be used.
   1. Vinegar shall not be used.
   2. Muriatic acid shall not be used.

PART 3 EXECUTION

3.01 TESTING, GENERAL

A. Contractor's Quality Control: The Contractor is responsible for quality control, including workmanship and materials furnished by his subcontractors and suppliers. Contractor shall strictly follow concrete floor slab specifications, and shall take all other reasonable measures

necessary to ensure that moisture is controlled and floor slabs are properly prepared to receive specified finish flooring systems.

1. Inspection or testing by the Owner does not relieve Contractor of his responsibility to perform the Work in accordance with the Contract Documents.

B. Testing Agency: Vapor emission and alkalinity testing will be conducted by an approved testing agency in accordance with ASTM F710 and Section 01 45 20.
   1. Cooperate fully with those making tests.
   2. Test Reports:
      a. Distribution: Reports of tests shall be distributed by independent testing laboratory in accordance with Section 01 45 20. The General Contractor shall make copies and distribute moisture and bond test reports to each flooring contractor.
      b. Include testing agency name and primary contact of test performer.
      c. Include type of testing equipment employed.
      d. Include floor plan with clearly marked test locations.
      e. Include written description of test placement quality control practices.
      f. Vapor Emission Tests:
         1). Include estimated building temperature at test location.
         2) Include test location, starting date, starting time, beginning weight, stopping date, time and ending weight.
         3) Indicate computed pounds of emission, including equations.
      g. Alkalinity Tests: Indicate measured pH test results.
      h. Relative Humidity Tests: Report testing results in accordance with ASTM F2170.

C. Testing by Flooring Contractors: If testing by flooring contractor is required by flooring manufacturer as a condition precedent to providing flooring warranty, such testing shall be performed as required by manufacturer, and shall be in addition to testing by the Owner's agency as specified herein.

3.02 SLAB MOISTURE TESTING

A. General: Before beginning installation of finish flooring materials and floor coatings, concrete floor slabs to receive adhesive-applied floor finish materials, fluid-applied flooring, floor coatings, wood flooring, or that will be in contact with moisture-sensitive equipment or products, shall be tested to measure their moisture vapor emission rate (MVER) and internal relative humidity in order to evaluate the slabs' suitability to receive the proposed flooring installation.

B. Calcium Chloride Tests: Surfaces of concrete floor slabs shall be tested to measure their moisture vapor emission rate (MVER) using the anhydrous calcium chloride testing procedure in accordance with ASTM F1869.
   1. Acceptable Test Results: Vapor emission tests will be considered satisfactory if measured moisture emission does not exceed 3 pounds per 1000 square feet over 24 hours.
      a. Resilient Flooring: Vapor emission tests will be considered satisfactory if measured moisture emission does not exceed 3 pounds per 1000 square feet over 24 hours.
      b. Wood Flooring, Fluid-Applied Flooring, and Floor Coatings: Vapor emission tests will be considered satisfactory if measured moisture emission does not exceed 3 pounds per 1000 square feet over 24 hours.
      c. If flooring manufacturer's warranty stipulates a stricter standard, vapor emission test results will be required to meet manufacturer's standard before that flooring may be installed in the failing area of slab.
      d. Areas to Receive Finish Flooring Materials Warranted for Vapor Emission Greater Than That Specified: Upon submission of sample warranty documenting flooring manufacturer's higher allowable vapor emission limit, such higher limit may be substituted for specified 3 pound limit, subject to Architect's approval.

2. Slabs failing moisture emission test shall receive additional drying time, or, at Owner's option, may be required to receive vapor emission control treatment as specified herein, until further testing demonstrates slab achieves specified moisture vapor emission rate limit.
3. If, at any given test location, slab passes calcium chloride test, but fails alkalinity (pH) test, and no reasonable explanation is evident for pH test failure other than slab moisture, calcium chloride test shall be repeated at that location to verify original test was not a false positive.

C. Relative Humidity Tests: Interiors of concrete floor slabs shall be tested using the in situ relative humidity testing procedure specified by ASTM F2170.
1. Acceptable Test Results: Relative humidity shall be measured at 75 percent or less. .
a. If flooring manufacturer's warranty stipulates a stricter standard, relative humidity test results will be required to meet manufacturer's standard before that flooring may be installed in the failing area of slab.
b. Areas to Receive Finish Flooring Materials Warranted for Relative Humidity Greater Than 75 Percent: Upon submission of sample warranty documenting flooring manufacturer's higher allowable relative humidity limit, such higher limit may be substituted for specified 75 percent limit, subject to Architect's approval.
2. Slabs failing relative humidity test shall receive additional drying time, or, at Owner's option, may be required to receive vapor emission control treatment as specified herein, until further testing demonstrates slab achieves specified moisture vapor emission rate limit.

D. Test Scheduling: No later than two weeks prior to scheduled finish flooring installation, perform final moisture testing, both calcium chloride and relative humidity tests. Testing shall be a minimum of 3 tests for the first 1,000 square feet of floor area, and one test for each additional 1,000 square feet. Include moisture tests around room perimeter, at columns and where moisture may be evident.

3.03 SLAB ALKALINITY TESTING

A. General: Before beginning installation of finish flooring materials and floor coatings, concrete floor slabs to receive adhesive-applied floor finish materials, fluid-applied flooring, floor coatings, wood flooring, or that will be in contact with moisture-sensitive equipment or products, shall be tested to measure their surface pH in accordance with ASTM F710.

B. Testing Methods:
1. pH Paper Method: Use wide range pH paper, its associated pH chart, and distilled or deionized water. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch (25 mm) in diameter. Allow the puddle to set for 60 plus-or-minus 5 seconds, then dip the pH paper into the water. Remove immediately, and compare to chart to determine pH reading.
2. Other pH testing methods such as pH pencils or pH meters, or both, are available and may be used to measure pH.

C. Testing Scheduling and Locations: Test at same time, rate and near locations of calcium chloride tests, except as follows.
1. Do not test slabs for pH that have been recently bead blasted or otherwise abraded to remove near surface layer. Allow such slabs to remain exposed to air at least 14 days before testing surface for pH.

D. Acceptable Test Results: Slab alkalinity will be acceptable if measured pH is less than 9.0.

E. Slabs failing alkalinity test shall receive additional drying time, or, at Owner's option, may be required to receive vapor emission control treatment or pH neutralization treatment as specified herein until further testing demonstrates slab meets this alkalinity limitation.