

Construction / Design Standards

General

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Jones Lang LaSalle @ Beaumont Health System, LLC.

DESIGN / CONSTRUCTION GUIDELINES & STANDARDS

GENERAL

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SECTION 00 00 00 - INTRODUCTION

1.01 Mission Statement

- To identify specific materials, systems and/or construction methods that are required for consistent facility value.
- To ensure that the Beaumont **Health System** facilities are designed, engineered and constructed with materials and systems that provide optimum value thru a combination of first cost, long-term cost and quality.
- To provide a forum for the introduction of new building materials and systems, and a forum to change building materials and systems.
 - Introduction may be made by:
 - **Jones Lang LaSalle @ Beaumont Health System** Staff
 - Design Professionals
 - Construction Professionals
 - Suppliers/Vendors
- To publish the agreed upon standards and guidelines in a form easily understood by architects, engineers, contractors and **JLL@BHS** staff.

1.02 Introduction

Set forth in these documents are standards and guidelines intended to serve as design and construction criteria for the Beaumont **Health System** facilities. As such, they reflect the planning, design, construction, and maintenance expertise of **JLL@BHS** personnel and consultants

This information is to be applied to all renovation and new construction from the very first planning and design stages through actual construction and facilities maintenance and management. The information included within each section contains procedures to be followed, materials to be used, or design guidelines which we have found to be appropriate to assure the quality desired now and through our future maintenance of these facilities. Facilities personnel, as well as outside architects, consultants, and contractors, should become familiar with these standards and guidelines.

SECTION 00 00 00 - INTRODUCTION

1.03 Scope of the Standards

The standards included herein shall serve as a code of quality for all design, construction, and maintenance procedures and projects. The level of quality deemed by any one standard is determined on the basis of reliability, serviceability, safety, and cost (including design, construction, inventory, operating, and maintenance costs). The information contained in these standards is not specific to any one project, but common to all.

1.04 A Dynamic Document

Standards from all areas of design, construction and maintenance are continually being developed. This document is a "living" document keeping abreast of new and better procedures or materials as we become aware of them. To this end, **JLL@BHS Policy 204, Maintenance of Design & Construction Guidelines**, has been established to provide a mechanism by which the document can be update as the need arises.

1.05 Standards Versus Specifications

These standards and guidelines shall form the basis from which to create drawings and specifications. All of the concepts and procedures included are for the use of **Jones Lang LaSalle @ Beaumont Health System** contracted designers, consultants and contractors. The use and inclusion of these standards in bid documents does not relieve the consultant or architect of the responsibility and legal liability for any bid documents created from these standards.

1.06 Availability

These standards are developed and maintained by the *Facilities Engineering Section of Jones Lang LaSalle @ Beaumont Health Systems, L. L. C, 30963 Woodward Avenue, Royal Oak, Michigan 48073, Julia Herschelman, telephone 248-551-3632.*

We appreciate any feedback you would like to give on the content or format of the standards.

SECTION 01 41 00 – REGULATORY REQUIREMENTS

1.01 General

- A. All codes, rules, regulations, guidelines, requirements, etc. which are used or referenced in the preparation of documents, and/or are required to be complied with by the Agencies Having Jurisdiction, shall be listed on the drawings or in the specifications of the project documents. The years and editions of these shall be accurately noted in reference to the respective time frame of the project.
- B. Included on the drawings or in the specifications of the project documents will also be the following information:
 - 1. Building Occupancy Classification
 - 2. Building Construction Type
 - 3. Building Elements Listings including the hour ratings and assembly designation
 - 4. Building Seismic Criteria and Classification
 - 5. Finish Material Ratings
- C. Also included, for record and future reference, on the drawings or in the specifications of the project documents, shall be any granted variances or exceptions from any of the Authorities Having Jurisdiction. Inclusion of these in the record documents will ensure that they can be easily found, when the need arises, after the project is completed.
- D. All projects, in health care occupancies, will be designed to the 2000 NFPA 101 Life Safety Code to meet JCAHO and CMS requirements. **These occupancies will include health care, ambulatory health care and business as defined by Joint Commission, CMS and NFPA.**
- E. **All Projects in occupancies that will provide patient care, and fall under the jurisdiction of Joint Commission, will be designed to the 2010 FGI Guidelines for Design and Construction of Health Care Facilities. These occupancies will include health care, ambulatory health care and business as defined by Joint Commission, CMS and NFPA.**
- F. **The Design Kick-Off Checklist that is issued with each project lists all of the usual rules and regulations that should be followed.** This is not to be construed as a complete listing nor does it release the professional preparing and/or sealing the documents from complying with regulatory requirements not noted **in this checklist.**

SECTION 01 42 00 – DESIGN DOCUMENTS INFORMATION REQUIREMENTS

1.01 Schematic Design Minimum Requirements

- A. The purpose of the Schematic Design is to interpret the program data provided and produce a design that will satisfy all program requirements. It also must clarify the program, identify program oversights or excesses, and generally verify that the proposed program is functionally and fiscally feasible from an overall **Building** and Campus perspective. By the end of the Schematic Design all program issues should not have, or show, any unassigned spaces (other than shell space not being built out as part of the project). Any such spaces shown in the original program are anticipated to have been designated and resolved by the completion of Schematic Design. In addition, Schematic Design must resolve all break-through, phasing and renovation issues associated with the work.

- B. It should be noted that space allocations for infrastructure are a required basic part of the program. These spaces require vertical walk in shafts for mechanical and electrical distribution in the facility. In the past, there has been a proclivity with maximizing net assignable square footage for end users versus maintaining infrastructure allowances within the overall gross square footage. This ultimately has had a detrimental effect on the long-term functioning and future flexibility of some facilities. **Health Care Facilities** require generous provisions, with built-in allowances for future growth, for mechanical and electrical systems and equipment. Design philosophy must recognize this and adjust accordingly in the schematic development stages of a structure so as to maintain the minimum shaft and mechanical/electrical spaces programmed for this facility. Any proposed encroachment of User program square footage, into these infrastructure spaces must have JLL@BHS approval before proceeding.

- C. The following represents the minimum deliverables required for Schematic Design review and approval. Submittals that do not meet these requirements will not be reviewed or approved:
 - 1. Program Reconciliation must be provided in a tabular format (Excel Format). This document will list each individual space, including circulation and shafts, indicating original program square footage, schematic design square footage, any variance square footage and a brief narrative description explaining the need for the variance. A detailed operational narrative with room-by-room descriptions is also required as an output of Schematic Design.

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2. Specifications in outline format including a narrative and descriptions of materials, finishes and proposed MEP systems. Note that the use of variable air volume systems will require a detailed economic cost evaluation by the A/E. These specifications shall also include a detailed listing of all applicable codes and any seismic requirements. Narratives shall include how design will provide accessibility to utility systems for service, maintenance and future remodeling.
3. CADD Requirements: All drawings and electronic files delivered to JLL@BHS shall follow JLL@BHS CADD Standards.
4. Integrated Systems Study: Show through various key building sections how structural, plumbing, fire protection, mechanical and electrical systems are to be coordinated and layered for physical fit, installation and accessibility for maintenance.
5. Site Requirements:
 - a) Existing Conditions Civil Survey,
 - b) Parking locations,
 - c) Site entrance,
 - d) New building entrance,
 - e) Temporary entrances and site circulation, fencing, roadways, parking, lighting, signs,
 - f) Building foot print,
 - g) Demolition,
 - h) Existing site utilities,
 - i) New site utility requirements,
 - j) Walkway locations,
 - k) Any future expansion capabilities,
 - l) Landscaping demolition,
 - m) Roadways and drive,
 - n) Storm Water Management criteria,
 - o) Proposed location of any new underground utilities.
6. Building Exterior Envelope:
 - a) Elevations of each side of the building addition including partial elevation of the existing building
 - b) Building cross sections
 - c) Exterior proposed wall details and sections
 - d) Detailed wall sections at each type of window
 - e) Roof layout
 - f) Elevations and sections of proposed atriums, garden courts, etc.

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7. Structural:
 - a) Structural scheme,
 - b) Building frame and sizing of major components,
 - c) Description of seismic analysis and methods to be employed,
 - d) Canopy entrance framing,
 - e) Shoring requirements,
 - f) Stair details,
 - g) Special requirements to protect existing structure,
 - h) Typical floor framing requirements.

8. Building Floor Plans:
 - a) Floor plans of each floor with column grid designations drawn at 1/8" or 1/4" scale,
 - b) Indicate area use and square footage
 - c) Locations of vertical infrastructure shafts
 - d) Layouts of all spaces including room names
 - e) Circulation paths
 - f) Layouts of surgical rooms at a larger scale with major items of equipment shown
 - g) Show flexibility for building expansion
 - h) All floor plans show at least the two most adjacent bays of the adjacent building
 - i) Full floor plans showing project location and a minimum of any required building separations, and smoke barriers, existing and new
 - j) Show all service support spaces such as janitors closets, electrical closets, mechanical shafts, soiled and clean utility rooms, public and staff toilet rooms
 - k) Elevators and elevator equipment rooms
 - l) Pneumatic tube station location(s)
 - m) Interior partition types
 - n) Include major pieces of equipment
 - o) Legend of symbols and abbreviations
 - p) Indicate what Barrier Free provisions are being provided.
 - q) **Locate required fire extinguishers. Verify travel distances are compliant with code.**

9. Plumbing Plans:
 - a) Location of all plumbing systems risers,
 - b) Using the **Facilities** CADD one line diagram of all medical gases systems determine and show proposed points of new connections to these systems. Provide calculations indicating the adequacy or inadequacy of existing risers,

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- c) All fixtures and their location,
 - d) Show suggested routing of all piping mains vertically and horizontally.
 - e) Routing of roof drainage systems.
 - f) Location of storm and sanitary pumps.
 - g) **Location of roof overflow outlets at grade. Specific care should be taken to locate these so that they do not flow across pedestrian walks and paths.**
10. HVAC Plans:
- a) Mechanical Room plans showing major pieces of equipment such as air handlers, converters, pumps, condensate lift stations, etc.
 - b) Block Load calculations including dew point calculations for all window types
 - c) Main duct risers & proposed routing of duct mains on the floor,
 - d) One line flow diagrams all systems such as ventilation air, chilled water, heating hot water, steam and condensate,
 - e) Air intake and discharge locations.
 - f) Perimeter heating systems indicating where radiant panels and finned tube will be used.
 - g) Preliminary sections in mechanical rooms,
 - h) Mechanical legend of symbols and abbreviations,
 - i) Statement of design intent including winter and summer design conditions.
 - j) Investigation of diesel exhaust plume and air intakes (existing and new)
11. Electrical Plans:
- a) Tabulation of lighting source proposed, and required foot-candles, per type of area
 - b) Fixture types per established JLL@BHS Standard
 - c) Electrical equipment room plans showing location of all major pieces of equipment
 - d) Investigation of existing normal and emergency power system to determine spare capacity
 - e) One line diagrams of normal and emergency power distribution systems and how the new work will integrate with the existing Campus and building distribution systems
 - f) Electrical closet locations
 - g) Electrical legend of symbols and abbreviations, coordinated with JLL@BHS CADD Standards, Data/Communications-determine, and indicate point of origin

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- h) Estimated load calculations for normal and emergency power
- i) Details of emergency generator location
- j) Fire Command Center location
- k) Plan for redundant emergency supply to OR's
- l) Identification of special electrical components and their location: UPS, TVSS, harmonic filters, power factor correction capacitors.
- m) Interview users for specific UPS, data, communication and emergency power requirements.

1.02 Design Development Minimum Requirements

- A. Design Development should not proceed until the JLL@BHS Project manager has provided formal approval. This approval will not be given until all Schematic Design review comments have been responded to by the A/E. At the completion of Schematic Design all program space relationships, adjacencies, and square footage requirements are viewed as fixed and only minor programmatic revisions will be allowed. The JLL@BHS Project Manager must approve, in writing, any requested revisions that have a cost/budget or schedule impact before proceeding.
- B. A properly prepared set of Design Development documents should resolve all major conflicts and interference's between disciplines and various trades work. To this end it is anticipated that the documents submitted for review in Design Development will represent approximately 60% completed Construction Documents. Plans and specifications for sitework, foundation, structure, and shell will be 100% complete at this time for early bid packages. Specifications for major long lead equipment such as elevators, air handling units, emergency generators, electrical substations, switch gear and paralleling gear will be 100% complete for a possible early bid package.
- C. The following represents the minimum deliverables required for Design Development review and approval. It is the Architect/Engineer's responsibility to meet these requirements within the time frames published in the project's schedule. Submittals that do not meet these requirements will not be reviewed or approved and will be required to be re-submitted with all required information within the project scheduled time frames. Schedule extensions for incomplete submittals will not be granted.

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1. Program Reconciliation must be provided in a tabular format (Excel Format). This document will list each individual space or room (including circulation and shafts) indicating original program square footage, schematic design, square footage, any variance square footage with a brief narrative description explaining the need for the variance that occurred in Design Development. A revised operational narrative should also be included.
2. Specifications shall be representative of the final construction specification to the extent that they shall relay full design intent establishing levels of materials quality, criteria for installation of material and systems. Equipment specifications shall be reasonably complete.
3. Clarifications: Submit a written narrative indicating areas or details that the A/E would like to receive clarification or direction on how to proceed.
4. Equipment Planning: All equipment planning shall be complete with detailed room by room descriptions listing all
5. CADD Requirements: All drawings and electronic files delivered to JLL@BHS shall follow JLL@BHS CADD Standards.
6. Site and Civil Work: 100% complete for early bid packages. It should be understood that if early bid packages for this work are to be issued before Design Development then the requirements that follow are to be submitted with the Schematic Design Review Package.
 - a) Completed survey of the existing site showing all existing conditions, underground utilities and easements.
 - b) All site drawings shall be drawn at a scale of 1"=30'-0"
 - c) Site Drawing showing demolition
 - d) Site Drawing showing all new utility work with all utilities that are to be demolished removed from this drawing. Only those existing utilities that are to remain and new utility work are to be shown
 - e) Site Drawings with all new grading requirements, roadways, and drives, walkways etc.
 - f) Temporary entrances and canopies
 - g) Site storm water drainage requirements with calculations
 - h) Building foot print
 - i) In process Landscaping plans showing planting layout, landscape lighting and proposed irrigation plan

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7. Building Exterior Envelope
 - a) Fully detailed and dimensioned elevations of each side of the building. These drawings shall indicate all future expansion capabilities.
 - b) Completed Building Sections
 - c) Full Details and sections of all window types
 - d) Large scale canopy entrance plan and associated details
 - e) Fully detailed exterior wall sections, particular attention should be given to waterproofing, vapor barriers, and insulation
 - f) Roof plan showing all roof mounted equipment and roof penetrations.

8. Structural
 - a) Fully detailed plans of building frame and structure
 - b) Clear description of seismic requirements
 - c) Shoring requirements full detailed.
 - d) Canopy entrance framing
 - e) Floor framing requirements
 - f) Structural details at all breakthroughs into the existing buildings.
 - g) Foundations drainage requirements
 - h) Completed stair details
 - i) All miscellaneous steel requirements
 - j) Design Loads
 - k) Special framing requirements for infrastructure shafts and grating
 - l) Show all detailing with respect to future expansion capabilities
 - m) Column grid designations

9. Building Floor Plans
 - a) Cover Sheet
 - b) Drawing List
 - c) Composite of Fire and Smoke zones complete with locations of all rated walls
 - d) ¼" scale plans of each floor with column grid designations
 - e) Include all room names and **Facilitech** System Room numbers
 - f) Interior room dimensions
 - g) Large scale plans and details including special finishes in public areas

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- h) Large scale detailed plans of operating rooms, patient rooms and support spaces
 - i) Equipment and furniture layouts.
 - j) Show millwork
 - k) Interior wall elevations showing placement of medical gas and electrical outlets
 - l) Millwork elevations and details
 - m) Door Schedule
 - n) Door frame types and details
 - o) Room Finish schedule
 - p) Reflected ceiling plans with all devices such as sprinkler heads, lighting, exit signs, and fire alarm devices.
 - q) Partition types and details
 - r) Fire ratings of walls and smoke zones
 - s) Elevator details and finishes
 - t) Plans and details of areas to be remodeled in the existing building
 - u) Access to roofs
 - v) Expansion joint details and locations
 - w) Miscellaneous supports systems for ceiling mounted equipment
 - x) **Show locations of fire extinguishers.**
10. Plumbing Plans
- a) Revised and updated one line diagrams of medical gas systems including revised final calculations
 - b) Riser diagrams of domestic hot and cold water
 - c) Riser diagrams of waste and vent systems with fixture counts
 - d) Floor plans with all plumbing systems laid out
 - e) Completed roof and under ground drainage systems
 - f) All fixtures and their locations
 - g) Domestic hot water heating equipment
 - h) Piping schematic diagrams
 - i) Storm and Sanitary Sump Pump Details
 - j) Location of medical gas alarms and zone valves.
 - k) **Location of roof overflow outlets at grade**
11. HVAC Plans
- a) Mechanical Room Plans with all equipment and piping shown
 - b) Updated and revised load calculations including finalized dew point calculations

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- c) Air handling unit duct riser diagrams with all required dampers and cfm requirements at each floor branch main takeoff
 - d) Floor plans with duct layouts and terminal devices. Indicate on plans with screen symbolism areas beneath ductwork that are to be kept free of all other utilities in order to maintain access to fire/smoke dampers, valves, etc.
 - e) HVAC piping plans
 - f) Pneumatic tube system piping plans
 - g) Perimeter heating plans with piping for radiant ceiling panels and finned tube radiation
 - h) Updated statement of design intent
 - i) Detailed sections of mechanical room
 - j) Large scale plans of mechanical shafts at each floor
 - k) One line flow diagrams of chilled water, heating hot water, steam and condensate
 - l) Temperature control diagrams with sequence of operation and detailed points listing
 - m) Duct details
 - n) Fire/smoke/combination damper details
 - o) Equipment schedules with clear delineation of present and future capacity requirements
 - p) Steam PRV location and details
 - q) All equipment details
 - r) Demonstrate with composite sections that HVAC, plumbing, fire protection and electrical disciplines are coordinated for physical fit, service and accessibility for maintenance.
 - s) Show location of all duct-balancing dampers on plans. Standard details or notes will not be acceptable
 - t) Show on plans the location of all required piping balancing valves for all HVAC piping diagrams
 - u) Show locations of temperature control panels and VFD's
 - v) **Show wall ratings on base plans for HVAC to verify fire and smoke damper locations.**
12. Fire Protection
- a) Floor plans with layouts of all sprinkler piping and head locations with preliminary hydraulic calculations
13. Electrical Plans
- a) Lighting plan of all floors
 - b) Light level calculations
 - c) Fixture switching/layout
 - d) Electrical equipment plans and details

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- e) All distribution, lighting and receptacle panel locations with designations as determined by JLL@BHS Facilities Management
- f) Power and signal floor plans showing locations of receptacle and data/communications outlets
- g) Site electrical plans-underground conduit/ducts, lighting, signs, security, gates and illuminated signs
- h) Communication riser diagrams
- i) Normal and Emergency power riser diagrams
- j) Normal and Emergency power one line diagrams
- k) Panelboard schedules, including present and future load capacities
- l) Fire alarm floor plans showing locations of required devices
- m) MCC locations and details of equipment served
- n) Fire alarm riser diagram
- o) Nurse call system layout
- p) Paging and music systems
- q) Control Diagrams
- r) Show main conduit runs for all conduits 2” and larger
- s) Lighting fixture schedule
- t) Show wall ratings on fire alarm plans
- u) Show special electrical components and their location: UPS, TVSS, harmonic filters, power factor correction capacitors.
- v) Verify users specific UPS, data, communication and emergency power requirements and show the system locations.

1.03 Minimum Construction Drawings and Specification Requirements:

- A. Jones Lang LaSalle @ Beaumont Health System sets high standards and goals not only for itself but also for the consultants and contractors it employs. Our Client, Beaumont Health System, is a Health Industry Leader in providing the highest possible quality Health Care Services to its patients. One of the many ways this is accomplished is by constructing high quality facilities. The Essence of the Jones Lang LaSalle @ Beaumont Health System is to provide “Excellence in Environments that Help to Heal” and with this in mind JLL@BHS sets high standards of quality, goals and expectations. One of these expectations is that final construction documents prepared by the A/E of Record are to be well executed, highly detailed and complete in every way. A goal that follows from this expectation is a difficult one. We as a team need to strive to produce a set of construction documents that will reduce, if not eliminate, the issuance of any bulletins to correct errors and omissions after bids are received and contracts have been awarded. It is further recognized that

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we are all human and that errors will occur, but our goal, as a team is to strive and extend our collective abilities to reduce the number of bulletins to zero. Bulletins are expensive and make budget management extremely difficult. The budget for this project is fixed and it is the project team's responsibility to meet this budget without sacrificing the quality of the facility to be constructed.

- B. In preparing the construction documents the A/E needs to consider the above and what internal quality control changes will be required. When submitting final construction documents for review the A/E must consider that they are to be 100% complete (bid Ready) in all respects. Completeness and thoroughness of the documents are critical to the success of this project. Construction documents will be critically reviewed by JLL@BHS. Documents that are incomplete, or poorly coordinated, will be returned to the A/E until they are deemed ready for review and bidding. There will be no schedule extensions given for submittal of documents that are incomplete or poorly coordinated bid documents.

- C. The following represents the minimum deliverables required for Final Construction Documents:
 - 1. Previous review Comment Response; the A/E shall include a complete written response to all JLL@BHS Design Development review comments. The A/E shall include and indicate any areas or details that vary from Design Development and may require further clarification.

 - 2. Program Reconciliation must be provided in a tabular format (Excel Format). This document will list each individual space or room (including circulation and shafts) indicating original program square footage, Schematic Design, square footage, Design Development Square footage, any variance square footage with a brief narrative description explaining the need for the variance that occurred in preparation of Final Construction Documents. A revised and final operational narrative should also be included.

 - 3. Specifications; .all specifications are to be 100% complete and shall include (for reference & coordination) all specification sections that were issued with earlier bid packages. Equipment, manufactures and model number shall not vary or be changed from those approved in Design Development.

 - 4. Equipment Planning; include all complete room data sheets.

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5. CADD requirements; include a CD of all drawing files of bid documents including specifications.
6. Site and Civil Work: 100% complete. It is understood that if early bid packages for this work are to be issued before Final CD Review then the requirements that follow are to be submitted with the Design Development Review Package.
 - a) Completed survey of the existing site showing all existing conditions, underground utilities and easements.
 - b) All site drawings shall be drawn at a scale of 1"=30'-0"
 - c) Site Drawing showing all necessary demolition
 - d) Site Drawing showing all new utility work with all utilities that are to be demolished removed from this drawing. Only those existing utilities that are to remain and new utility work are to be shown. All underground utilities are to be clearly labeled complete with sizes of piping and conduits.
 - e) Site Drawings with all new grading requirements, roadways, and drives, walkways etc.
 - f) Site drawings are to be clearly defined showing details of curbing, expansion joints in roadways & sidewalks, manhole details, piping details, etc.
 - g) Site storm water drainage requirements complete with calculations and drawings
 - h) Building foot print
 - i) 100% complete Landscaping plans showing planting layout, landscape lighting, irrigation plan, guying details, existing tree protection, planting details and soil preparation specifications.
 - j) Coordinated site signage plan and any special requirements.
7. Building Exterior Envelope
 - a) Fully detailed and dimensioned elevations of each side of the building. These drawings shall indicate all future expansion capabilities.
 - b) Completed Building Sections
 - c) Full Details and sections of all window types detailing flashing, waterproofing, insulation and caulking requirements at sills heads and jambs
 - d) Large scale canopy entrance plan and associated details of all building entrances
 - e) Fully detailed exterior wall sections, particular attention should be given to waterproofing, vapor barriers, and insulation

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- f) Roof plan showing all roof mounted equipment and roof penetrations.
 - g) Roofing installation details including curbs, flashing requirements, etc.
 - h) Exterior door details
 - i) Typical exterior wall sections with clear indication installation of insulation and vapor barriers
 - j) Building Elevations should show any planned exterior signage to be mounted on the building.
8. Structural
- a) Fully detailed plans of building frame and structure
 - b) Clear description of seismic requirements
 - c) Shoring requirements full detailed on drawings
 - d) Canopy entrance framing
 - e) Floor framing requirements
 - f) Structural details at all breakthroughs into the existing buildings.
 - g) Beam and Column schedules
 - h) Foundation details
 - i) Floor loading design load requirements clearly defined
 - j) Foundations drainage requirements and lower level, under slab drainage
 - k) Completed stair details
 - l) All miscellaneous steel requirements
 - m) Design Loads
 - n) Special framing requirements for infrastructure shafts and grating
 - o) Show all detailing with respect to future expansion capabilities
 - p) Column grid designations
 - q) If concrete structural systems are used show on plan, and fully detail, all embedded items such as Unistrut to facilitate installation of MEP systems and other equipment
9. Building Floor Plans
- a) Cover Sheet
 - b) Drawing List
 - c) Composite of Fire and Smoke zones complete with locations of all rated walls
 - d) ¼" scale plans of each floor with column grid designations
 - e) Include all room names and **Facilitech** System Room numbers
 - f) Interior room dimensions

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- g) Large scale plans and details including special finishes in public areas
 - h) Large scale detailed plans of operating rooms, patient rooms and support spaces
 - i) Equipment and furniture layouts.
 - j) Show millwork
 - k) Interior wall elevations showing placement of medical gas and electrical outlets
 - l) Millwork elevations and details
 - m) Door and hardware schedules
 - n) Door frame types and details
 - o) Room Finish schedules
 - p) Reflected ceiling plans **showing and coordinating** all devices such as sprinkler heads, lighting, exit signs, and fire alarm devices.
 - q) Partition types and details
 - r) Fire ratings of walls and smoke zones
 - s) Fire stopping details both typical and special**
 - t) Elevator details, finishes and lighting
 - u) Plans and details of areas to be remodeled in the existing building
 - v) Access to roofs and associated details
 - w) Expansion joint details and locations
 - x) Miscellaneous supports systems for ceiling mounted equipment
 - y) Detailed large scale plans with elevations and construction details of all public spaces such as waiting rooms and lobbies with special interior design detail is used.
 - z) Show fire extinguisher locations. Do a final verification that the travel distances are compliant with code.**
10. Plumbing Plans
- a) Revised and updated one line diagrams of medical gas systems including revised final calculations and cfm requirements shown on riser diagram
 - b) Riser diagrams of domestic hot and cold water
 - c) Riser diagrams of waste and vent systems with fixture counts
 - d) Floor plans with all plumbing systems laid out
 - e) Completed roof and under ground drainage systems
 - f) All fixtures and their locations
 - g) Domestic hot water heating equipment
 - h) Piping schematic diagrams and equipment connection details

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- i) Storm and Sanitary Sump Pump Details
 - j) Medical gas piping floor plans
 - k) Location of medical gas alarms and zone valves.
 - l) **Location of roof overflow outlets at grade.**
11. HVAC Plans
- a) Mechanical Room Plans with all equipment, ductwork and piping shown. Plans shall include all permanent scaffolding/platforms that may be required to meet OSHA & **MiOSHA** safety maintenance accessibility for equipment mounted in inaccessible locations. Plans shall demonstrate those service isles are maintained for service and equipment replacement. In this regard particular attention shall be given to smoke detectors. Access to mechanical rooms for equipment replacement through exterior louvers shall be maintained.
 - b) Provide detailed coordinated sections through mechanical rooms showing equipment, ductwork, HVAC piping, plumbing piping and all conduit to demonstrate a fully coordinated design.
 - c) Updated and revised HVAC load calculations including finalized dew point calculations
 - d) Air handling unit duct riser diagrams with all required dampers and cfm requirements (both present and future cfm are to be shown) at each floor branch to main takeoff. Riser diagrams shall indicate AHU designation.
 - e) Floor plans with duct layouts and terminal devices. Indicate on plans with screen symbolism areas beneath ductwork that are to be kept free of all other utilities in order to maintain access to fire/smoke dampers, valves, etc.
 - f) HVAC piping plans with all piping clearly labeled, all pipe sizes shown and with flow direction indicated. Plan shall clearly indicate the location of all service balancing and isolation valves. Show isolation/balancing valves at all riser to floor branch mains indicating floor design gpm requirements. Show isolation valve at all branch main takeoffs. Standard details for reheat coils will be acceptable.
 - g) Include HVAC piping riser diagrams chilled water, heating hot water, steam and condensate indicating gpm flow and/or lbs. per hour of steam requirements at each floor branch takeoff.
 - h) Perimeter heating plans with piping for radiant ceiling panels and finned tube radiation. Indicate all required valves on plan.

SECTION 01 42 00 – DESIGN DOCUMENTS INFORMATION REQUIREMENTS

- i) Updated statement of design intent
 - j) Large scale plans of mechanical shafts at each floor showing all ductwork and piping
 - k) Detailed temperature control diagrams with sequence of operation and detailed points listing all shown on the drawings. Sequences of operation in specifications will not be acceptable
 - l) Smoke purge control strategy
 - m) Mechanical piping details and diagrams of all equipment
 - n) Duct details
 - o) Fire/smoke/combination damper installation details
 - p) Equipment schedules with clear delineation of present and future capacity requirements
 - q) Steam PRV location and details
 - r) All equipment details
 - s) Demonstrate with composite sections that HVAC, plumbing, fire protection and electrical disciplines are coordinated for physical fit, service and accessibility for maintenance.
 - t) Show location of all duct-balancing dampers on plans. Standard details or notes will not be acceptable
 - u) Show on plans the location of all required piping balancing valves for all HVAC piping diagrams
 - v) Converter equipment details and piping schematic diagrams
 - w) Show locations of temperature control panels and VFD's
 - x) Show all required seismic bracing requirements for Mechanical Systems.
 - y) **Show wall ratings on HVAC plans to verify locations of smoke and fire dampers**
12. Fire Protection
- a) Floor plans with layouts of all sprinkler piping and head locations with design hydraulic calculations.
 - b) Show all pipe hangers and required seismic bracing requirements
 - c) Show all hydraulic calculation nodes
 - d) Provide details and sequence of operation for pre-action system
 - e) Include a plan of the **Building's** existing fire pump loop and points of new connection
 - f) Plans shall indicate the type, model number and quantity of each sprinkler head
 - g) Fire protection drawing shall show all fire rated walls and smoke partitions

SECTION 01 42 00 – DESIGN DOCUMENTS INFORMATION REQUIREMENTS

- h) All drain down solutions for the system shall show a location to the outside of the building that does not impact pedestrian and vehicular traffic or to a hard piped drain location.
 - i) See JLL@BHS Standard Section 21 10 00 for additional requirements.
13. Electrical Plans
- a) Lighting plan of all floors
 - b) Light level calculations
 - c) Fixture switching/layout
 - d) Electrical equipment plans and details
 - e) All distribution, lighting and receptacle panel locations with designations as determined by JLL@BHs TIG
 - f) Power and signal floor plans showing locations of receptacle and data/communications outlets
 - g) Site electrical plans-underground conduit/ducts, lighting, signs, security, gates and illuminated signs
 - h) Communication riser diagrams
 - i) Normal and Emergency power riser diagrams
 - j) Normal and Emergency power one line diagrams
 - k) Panelboard schedules, including present and future load capacities
 - l) Fire alarm floor plans showing locations of required devices
 - m) MCC locations and details of equipment served
 - n) Fire alarm riser diagram
 - o) Nurse call system layout
 - p) Paging and music systems
 - q) Control Diagrams
 - r) Show main conduit runs for all conduits 2" and larger
 - s) Emergency generator details
 - t) Lighting fixture schedule
 - u) Show wall ratings on the fire alarm plans for reference.
 - v) Special electrical components and their locations: UPS, TVSS, harmonic filters, power factor correction capacitors.
 - w) Show users specific UPS, data, communication and emergency power requirements and the system locations.

SECTION 01 42 00 – DESIGN DOCUMENTS INFORMATION REQUIREMENTS

1.04 Final Design Documents:

- A. At project completion and occupancy, the Architect/Engineer will provide the final design documents (project specifications and drawings) in both electronic (PDF & AutoCAD) and bond paper copy (1 each). These final design documents will include all addendum's, responses to RFI's and any bulletins that resulted in a drawing or specification change that occurred from the issue of the construction documents for bids through to the completion and occupancy of the project.

- B. At project completion and occupancy, the General Contractor will provide the as-builts in both electronic (AutoCAD) and bond paper copy (1 each). In addition one copy of all closeout documentation including guarantees, MSDS, permits & Certificates of Occupancy from all Authorities Having Jurisdiction (Building, Bureau of Fire Services, Health Facilities Engineering Section, etc.), testing reports, shop drawings & submittals, O&M, etc. will be provided as applicable to each project.

1.05 Construction Document Information

- A. Information
 - 1. Cover Sheet:
 - a) Building Name / Site Location
 - b) Floor and Tower
 - c) Department or Suite Name
 - d) Project name
 - e) JLL@BHS Project Number
 - f) JLL@BHS Project Manager
 - g) Bureau of Fire Services Project Number
 - h) Health Facilities Engineering Section Project Number
 - i) Certificate of Need Number (C of N No.) if required.
 - j) Site Plan locating project.
 - k) A/E Consultant's Company Name and Address
 - l) Sub-Consultant's Company Names and Addresses
 - m) Construction Management Company Name and Address
 - n) Sheet Index
 - o) Package Name (Program, Schematic, Design Development, Construction, Addendum, Bulletin, etc.)
 - p) Issue Date

SECTION 01 42 00 – DESIGN DOCUMENTS INFORMATION REQUIREMENTS

- B. Full Floor Locator Plan / Life Safety Floor Plan
 - 1. For Hospital Projects:
 - a) This can be a combined plan showing the project location and, at the minimum, the floor's smoke barriers and the 2-hour building separations for the floor. Included on this plan, the general department/suite locations should be identified for the related agencies for the project.

- C. For Non-Hospital Projects:
 - 1. A full Floor Locator Plan can be used as a Key Plan on each sheet or as a Floor Locator Plan on the Cover Sheet. Department / Suite locations are only required if they add clarity to the location of the project.

- D. Floor Plans
 - 1. All floor plans, existing/demolition, remodeled, architectural, mechanical, plumbing, electrical, interiors, equipment, etc., must have room names and room numbers shown. This can be either the room name and number shown in each room, or the room number in the room with a corresponding room name listing on each sheet.

 - 2. The room numbers will be from Beaumont's established room numbering system as provided by JLL@BHS' **Planning and Technical Information Services**. The door and opening numbers will be established from the room numbers so that we can tie them back to our database as used by our **Facilities Management groups** for reference.

 - 3. All floor and equipment plans shall be 1/4" scale and show column numbers and column lines for locational reference.

 - 4. Locations of temporary, construction partitions and temporary system support should be shown on the documents.

- E. Ceiling Plans
 - 1. Show all wall rating information, new and existing. JLL@BHS should provide the required wall rating symbol designations.

 - 2. Show a completely integrated ceiling system. Including all systems, i.e. lights, sprinklers, speakers, diffuses, grilles returns, exit signs, smoke detectors, etc.

SECTION 01 42 00 – DESIGN DOCUMENTS INFORMATION REQUIREMENTS

- F. Demolition Plans
 - 1. The type of systems and their construction should be identified and noted on the demolition plans.

- G. Regulatory Requirements:
 - 1. All codes, rules, regulations, guidelines, requirements, etc., which are used or referenced in the preparation of documents, and/or are required to be complied with by the Agencies Having Jurisdiction, shall be listed on or in the project documents. The years and editions of these shall be accurately noted in reference to the time frame of the project.

- H. Included in this section will also be the following information:
 - 1. Building Occupancy Classification
 - 2. Building Construction Type
 - 3. Building Elements Lists including the hour ratings and assembly designation
 - 4. Building Seismic Criteria and Classification
 - 5. Finish Material Ratings

- I. Also included within this section, for record and future reference, should be any granted **Federal, State and/or City** variances.

- J. **All health care projects that fall under the jurisdiction of The Centers for Medicare and Medicaid Services (CMS) and/or The Joint Commission shall be designed to the 2000 Edition of the National Fire Protection Association 101 Life Safety Code.**

- K. **All health care projects that fall under the jurisdiction of The Joint Commission Shall be designed to the 2010 Edition of the Facility Guidelines Institute (FGI) Guidelines for the Design and Construction of Health Care Facilities**

SECTION 01 91 00 - GENERAL COMMISSIONING REQUIREMENTS

1.01 Description

- A. Commissioning is a systematic process of ensuring that all building systems perform interactively according to the design intent and the owner's operational needs. This is achieved by beginning in the design phase and documenting design intent and continuing through construction, acceptance and the warranty period with actual verification of performance.
- B. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training.
- C. Commissioning during the construction phase is intended to achieve the following specific objectives according to the Contract Documents:
 - 1) Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and to industry accepted minimum standards and that they receive adequate operational checkout by installing contractors.
 - 2) Verify and document proper performance of equipment and systems.
 - 3) Verify that O&M documentation left on site is complete.
 - 4) Verify that the Owner's operating personnel have received the required training.
- D. The commissioning process does not take away from or reduce the responsibility of the system designers or installing contractors to provide a finished and fully functioning system.
- E. The JLL@BHS Commissioning Steps process will be used as a guide for developing a commissioning plan.

1.02 Coordination

- A. The Construction Commissioning Team will include Contractors, Subcontractors, and Equipment Manufacturers Representatives along with the System Designer, Engineer of Record, JLL@BHS Resident Engineer, JLL@BHS Facility Operations Staff, JLL@BHS Project Manager, Beaumont Fire Safety, and JLL@BHS Consultants. The entire team will participate in the development of a plan and schedule

SECTION 01 91 00 - GENERAL COMMISSIONING REQUIREMENTS

for the testing, start-up, and training for all new equipment building systems and infrastructure. This plan will be specific to the project.

- B. All requirements for warranties, testing, start-up, and training will be in the contract documents. The Commissioning Team in Step 2 of the JLL@BHS Commissioning Steps Process determined these requirements.
- C. The general contractor, construction manager or design/builder will integrate all commissioning activities into the master schedule. All Commissioning Team members will address any scheduling problems and make the necessary notifications in a timely manner to the general contractor, construction manager or design/builder in order to expedite the commissioning.

1.03 Commissioning Process

- A. The commissioning plan provides guidance in the execution of the commissioning process. Just after the initial commissioning team meetings the JLL@BHS Project Manager will distribute to all the team members an updated plan which includes all their input. This will be considered the project's "final" plan, though it will continue to evolve and expand as the project progresses.
- B. The following narrative provides a brief overview of the typical commissioning tasks as the project proceeds and the general order in which they occur.
 - 1) Commissioning during construction begins with an initial meeting conducted by the JLL@BHS Project Manager where the commissioning process is reviewed with the commissioning team members.
 - 2) Additional meetings will be required throughout construction. See project schedule.
 - 3) Equipment documentation is submitted during normal submittals, including detailed start-up procedures.
 - 4) The JLL@BHS Commissioning Team works with the contractors in developing startup plans and startup documentation formats.
 - 5) In general, the checkout and performance verification proceeds from simple to complex; from component level to equipment to systems and intersystem levels with pre-functional checklists being completed before functional testing.

SECTION 01 91 00 - GENERAL COMMISSIONING REQUIREMENTS

- 6) The contractors will execute and document the pre-functional checklists and performs startup and initial checkout. The JLL@BHS Commissioning Team documents that the checklists and startup were completed according to the approved plans. This may include the JLL@BHS Commissioning Team witnessing start-up of selected equipment.
 - 7) The contractor develops specific equipment and system functional performance test procedures that are approved by the Commissioning Team.
 - 8) The procedures are executed by the contractor, under the direction of, and documented by the JLL@BHS Commissioning Team.
 - 9) Items of non-compliance in material, installation or setup are corrected at the contractor's expense and the system re-tested.
 - 10) The JLL@BHS Commissioning Team reviews the O&M documentation for completeness.
 - 11) Commissioning is completed before Substantial Completion.
 - 12) The JLL@BHS Commissioning Team reviews, pre-approves and coordinates the training provided by the contractor and verifies that it was completed.
 - 13) Deferred testing is conducted, as specified or required.
- C. The cost of all testing, start-up, and training will be the responsibility of the contractors. This will include any testing equipment and re-testing necessary. The cost of the manufacturer's representation for testing and training will be the responsibility of the contractor. The number of hours along with the cost will be a separate line item in the bid. The cost of re-testing plus any costs incurred by other contractors for delays caused by the re-testing will be the responsibility of the contractor if the deficiency is theirs. If the contractor is not responsible the re-testing costs shall be negotiated with the JLL@BHS Project Manager.
- D. In addition to all required submittal data for approval of the equipment, O & M Manuals, and warrantee information, the contractor will be required to provide documentation on all testing, start-up, and training activities. This documentation will include but is not limited to:

SECTION 01 91 00 - GENERAL COMMISSIONING REQUIREMENTS

- 1) Installation, Start-up, and Check-out materials shipped with the equipment
 - 2) Factory or Field Check-out forms used by factory or field technicians
 - 3) Pre-functional and Functional Test Procedures and Check Lists
 - 4) Start-up and System Operational Procedures and Check Lists
 - 5) Sequences of Operation, Control Drawings, Annotated PLC Ladder Logic printouts, or other equipment documentation.
 - 6) Training Manuals
 - 7) Re-testing of all deficiencies or non-conformance issues
- E. All forms and checklists will be developed by the contractor or subcontractor and will be specific to the equipment on this project. The JLL@BHS Commissioning Team will approve forms and checklists.
- F. Contractors will also be required to provide equipment data such as product numbers, make, model, location, serial numbers, and warranty information that is needed for the JLL@BHS equipment management system and warranty administration. The form used to document this information is included with this specification. This information will need to be provided before testing and training begins.
- G. All testing, start-up, and training will be scheduled in the Contractor's Master CPM Schedule. Seasonal testing and deferred testing will also become part of this contract. Seasonal tests will be delayed until weather conditions are closest to the system's design. Deferred tests due to the building structure, required occupancy phasing, or other deficiencies will be completed as soon as possible. Seasonal and deferred testing will follow the same procedures, be witnessed by the same personnel, and require the same documentation. A portion of Construction, Manager, Design/Builder, General or Subcontractor fees can be withheld until all testing is complete.
- H. Functional performance testing and verification may be achieved by manual testing or monitoring the performance and analyzing the results using the control system's trend log capabilities. Simulating conditions may be allowed, though timing the testing to experience actual conditions is encouraged wherever practical. Each function and test shall be performed under conditions that simulate actual conditions as close, as is practically possible. The contractor executing the test shall provide all necessary materials, system modifications, etc. to

SECTION 01 91 00 - GENERAL COMMISSIONING REQUIREMENTS

produce the necessary flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions. At completion of the test the contractor shall return all affected building equipment and systems to their pre-test condition.

- I. The Engineer of Record, JLL@BHS Resident Engineer, and JLL@BHS Facility Operations Staff will be present at all Functional Tests and Start-up activities. The JLL@BHS Facility Operations Staff will designate the personnel to be present at the training sessions. All pre-functional and pre-start-up activities will be documented by the mechanical / electrical contractor and given to the JLL@BHS Project Manager before arrangements are made for the functional tests and start-up. At least 7 working days notice is needed.
- J. The contractor will submit at project closeout with the as-built drawings, a document verifying the following:
 - 1) Systems were tested and function per design intent
 - 2) Systems were installed per manufacturers recommendations and to industry accepted minimum standards
 - 3) Systems received adequate operational check-out by installing contractors
 - 4) Proper performance of equipment and systems was documented and given to the Owner.
 - 5) O & M Manuals and as-built drawings are complete and accurate.
 - 6) Training has been provided or funding for training has been provided for Owner's operating personnel.
- K. The Engineer of Record, JLL@BHS Resident Engineer, and JLL@BHS Facility Management Staff will review and approve this document.

SECTION 01 91 01 - COMMISSIONING STEPS

1.1 COMMISSIONING STEPS

Commissioning at Jones Lang LaSalle @ Beaumont Health System is a joint effort between Real Estate Development & Planning, Operations, and Engineering Support. Its purpose is to ensure that all hospital infrastructure, building systems and equipment are designed, installed, and operated correctly with proper operation and maintenance training, documentation, and quality control. Commissioning is a life cycle activity that starts at the beginning of design and carries on through the life of the project and, ultimately, the equipment.

The Commissioning Team Leader is the Project Manager. They are ultimately responsible for completing the commissioning activities during design, construction/installation, and project closeout. They also brings the proper resources to the project at the appropriate time and act as a resource to Operations after the Project is complete.

The Core Team Members are the Project Manager, Operations, the Resident Architect, the Resident Mechanical Engineer, the Resident Electrical Engineer, the Construction Manager, and the Technical Information Group. Team members listed below are in addition to the Core Team Members.

| Step No. | Commissioning Activity | Project Phase | Additional Team Members | Deliverables/Expectations |
|-----------------|--|----------------------|--|---|
| 1 | Develop Project Commissioning Goals and Objectives: <ul style="list-style-type: none"> ▪ Review Project Scope ▪ Review Design Intent ▪ Review User Expectations ▪ Review Maintainer Expectations | Planning/Programming | A/E, CM, Planner, Programmer, Infection Control, Beaumont Safety, Beaumont Fire Safety | <ol style="list-style-type: none"> 1. Project Scope Delivered to Client and Commissioning Team 2. Commissioning Goals & Objective Statement |
| 2 | Develop Commissioning Scope <ul style="list-style-type: none"> ▪ Establish levels of Review ▪ Determine Agency Reviews & Submissions ▪ Determine Systems Testing Coordination Requirements ▪ Determine Warrantee Requirements and | Planning/Programming | A/E, CM, Beaumont Fire Safety, Infection Control | <ol style="list-style-type: none"> 1. Commissioning Responsibility Matrix 2. Commissioning Scope Statement |

SECTION 01 91 01 - COMMISSIONING STEPS

| Administration | | | | |
|----------------|--|----------------------|-------------------------|--|
| Step No. | Commissioning Activity | Project Phase | Additional Team Members | Deliverables/Expectations |
| 3 | Review Commissioning Scope as Applicable to Standards <ul style="list-style-type: none"> ▪ Determines which AMEP systems and equipment need to be commissioned ▪ Value Engineering ▪ Life Cycle Cost Analysis ▪ Lessons Learned Review | Planning/Programming | A/E, CM | <ol style="list-style-type: none"> 1. Commissioning Specification 2. Testing and Training Requirements defined. |
| 4 | Incorporate Commissioning Concerns during drawing and specification development <ul style="list-style-type: none"> ▪ Confirm system goals are being incorporated into drawings and specs ▪ Develop consensus on systems design ▪ Review standards and possible change ▪ Define shop drawing and as-built requirements ▪ Determine required testing ▪ Determines levels of testing: manufacturer, contractor, testing agency ▪ Define testing and forms ▪ Determine required submittals ▪ Define submittals and forms ▪ Determine required training ▪ Define training and forms ▪ Determine required operations manuals ▪ Determine required documentation ▪ Assign responsibilities | Design | A/E, CM | <ol style="list-style-type: none"> 1. Commissioning Check List Completed by Facility Services & Tech Services 2. Responsibility Matrix |

SECTION 01 91 01 - COMMISSIONING STEPS

| Step No. | Commissioning Activity | Project Phase | Additional Team Members | Deliverables/Expectations |
|-----------------|--|-------------------------------|--|---|
| 5 | <p>Develop Commissioning Schedule in conjunction with Construction Schedule</p> <ul style="list-style-type: none"> ▪ Utility tie-ins ▪ Rough wall inspections ▪ Documentation & Photos ▪ Systems and equipment accessibility meetings ▪ Quality control meetings ▪ Pre-functional tests ▪ Functional Tests ▪ Project Close-out ▪ AHJ inspections | Pre-Construction | A/E, CM, Beaumont Fire Safety, JLL@BHS Safety, Infection Control, Subcontractors | <ol style="list-style-type: none"> 1. Commissioning Schedule developed from Commissioning Check List 2. Construction Schedule that includes time for inspections, testing, training, close-out 3. Facility Services Schedule for Construction Walk-thrus |
| 6 | <p>Project Commissioning Close Out Development</p> <ul style="list-style-type: none"> ▪ Edit Project Close-Out Check List to meet needs of Project ▪ Develop pre-functional and functional test forms specific to project ▪ Develop training forms specific to project ▪ Confirm as-built drawing requirements | Pre-Construction Construction | A/E, CM, Contractors, Vendors | <ol style="list-style-type: none"> 1. Check Lists for inspection and testing 2. Training Schedule 3. As-built Drawing Monitoring |
| 7 | <p>MEP System Change Validation</p> <ul style="list-style-type: none"> ▪ Joint consultation and decision by all team members ▪ All changes to Standards reviewed and approved by Standards Committee ▪ All Changes Documented ▪ Bulletins/RFI's issued and distributed ▪ Record Drawings Received | Construction | A/E, CM, Contractors, Beaumont Safety, JLL@BHS Safety, Infection Control | <ol style="list-style-type: none"> 1. Minutes for Team Meetings to resolve issues 2. Dispute Resolution Documented 3. Bulletins Issued and Distributed for all changes |

SECTION 01 91 01 - COMMISSIONING STEPS

| Step No. | Commissioning Activity | Project Phase | Additional Team Members | Deliverables/Expectations |
|-----------------|---|----------------------|---|---|
| 8 | Commissioning Acceptance <ul style="list-style-type: none"> ▪ Start-Up ▪ Testing completed and documented ▪ Maintenance training completed and documented ▪ User In-service completed ▪ Transfer of Warrantee Information to Facilities Services ▪ Operations and Maintenance Manuals given to Facilities Services | Pre-Occupancy | Beaumont Fire Safety, JLL@BHS Safety, Infection Control | <ol style="list-style-type: none"> 1. Signed Acceptance Documents 2. Warrantee Information Given to FS 3. IEI completed 4. Equipment Tagged 5. O & M Manuals delivered to Tech Library |
| 9 | Post-Occupancy Evaluation <ul style="list-style-type: none"> ▪ Final Payment Sign-off ▪ Standards revisions/modifications ▪ Life cycle cost analysis verification ▪ Update “Lessons Learned” List | Post Occupancy | Beaumont Fire Safety, JLL@BJS Safety, Infection | <ol style="list-style-type: none"> 1. Written Post-Occupancy Evaluation of Project 2. Updated Lessons Learned List 3. Standards Modification Submittals 4. Life Cycle Cost Analysis Review |

Jones Lang LaSalle @ Beaumont Health System, LLC.
DESIGN/CONSTRUCTION GUIDELINES AND STANDARDS

SECTION 01 91 02 ASSET TAGGING LIST (Equipment Requiring Product Data Information)

| Mechanical | |
|---|---|
| • Air Handlers | • Domestic Water Booster Pump |
| • Humidifiers | • Sump Pump |
| • Cabinet Unit Heaters | • Sterilizers |
| • Domestic Water Heaters | • Condensate Receiver & Pump |
| • Medical Vacuum Pumps | • Unit Heater (Water) |
| • Medical Air Compressors | • Unit Heater (Steam) |
| • Refrigeration Machine (Chiller) | • Steam to water Heat Exchanger |
| • Forced Draft Steam Boilers | • Lab Air Compressor |
| • Boiler Feed Pumps | • Lab Air Desiccant Dryer |
| • Condensate Pumps | • Fan Coil Unit |
| • Medical Gas Alarm Panels | • Duplex Instrument Air Compressor |
| • Chilled Water Pumps | • Instrument Air Dryer |
| • Heating Hot Water Pumps | • Air Conditioning Units |
| • Heat Recovery Unit | • Cooling Tower |
| • Back Flow Preventers | • Tanks (fuel, condensate, water, etc.) |
| • Hot Water Recirculating Pump | • Fuel Oil Pumps |
| • Hoods (lab, exhaust, vent, etc.) | • Dampers (Fire, Smoke, Combination) |
| • Fans (Exhaust, Return, Roof Exhaust, Etc) | • Variable Frequency Drives |

| Electrical | |
|---------------------------------------|-------------------------------|
| • Sub Stations | • Distribution Panels |
| • Switchgear | • Lighting Panels |
| • Motor Control Centers | • Isolation Panels |
| • Paralleling Switchgear | • Receptacle Panels |
| • Emergency Generator | • Transformers |
| • Emergency Generator Remote Radiator | • Nurse Call Control Cabinets |
| • Meters | • Closed Circuit TV System |
| • Master Clock System | • Alarm Panels |
| • Automatic Transfer Switches | • Fire Alarm Panels |
| • Telemetry | • Control Panels |
| • Power Panels | • UPS |

| Architectural | |
|------------------------------|--------------------------|
| • Rated Doors | • Revolving Door |
| • Automatic Door Operators | • Automatic Sliding Door |
| • Platform Lift (Wheelchair) | • Fire Extinguishers |

| Conveying Systems | |
|---------------------------|----------------------------|
| • Elevators | • Pneumatic Tube Blowers |
| • Dumbwaiters | • Pneumatic Tube Diverters |
| • Pneumatic Tube Stations | • Trash/Linen Chutes |

This list is not meant to be all-inclusive. All equipment that will need preventative or corrective maintenance should be included.

Construction / Design Standards

Architectural

| Standard No. | Standard Name | Current Revision Date | Previous Revision Date | Revision Summary | Author |
|--------------|--------------------------------|-----------------------|------------------------|--|---------------|
| 01 41 19 | Fire Apparatus Access | 10/17/11 | 6/30/04 | Updated Standard No. | J Herschelman |
| 07 84 00 | Fire Stopping | 10/17/11 | 7/13/10 | 1.02 B. D-F 4.01 B&C 1&2, Updated Standard No. | J Herschelman |
| 08 10 00 | Hollow Metal Doors and Frames | 10/17/11 | 6/30/04 | Updated Standard No. | J Herschelman |
| 08 71 00 | Door Hardware | 10/17/11 | 7/11/11 | 1.07.1 added GP Standard, 1.18.A added Astragals, Updated Standard No. | J Herschelman |
| 09 30 00 | Ceramic Tile | 10/17/11 | 7/11/11 | 2.01.D.1 deleted, 2.07.D.3 added, Updated Standard No. | J Herschelman |
| 09 51 00 | Acoustic Ceilings | 10/17/11 | 6/14/11 | New Section, Updated Standard No. | J Herschelman |
| 10 21 13.13 | Metal Toilet Compartments | 10/17/11 | 7/17/10 | New Section, Updated Standard No. | J Herschelman |
| 10 28 00 | Toilet and Bath Accessories | 10/17/11 | 6/30/04 | Updated Standard No. | J Herschelman |
| 10 44 13 | Fire Extinguisher Cabinets | 10/17/11 | 6/30/04 | Updated Standard No. | J Herschelman |
| 10 51 13 | Metal Lockers | 10/17/11 | 6/30/04 | Updated Standard No. | J Herschelman |
| 11 24 00 | Building Maintenance Equipment | 10/17/11 | 6/30/04 | Updated Standard No. | J Herschelman |
| 12 10 00 | Artwork | 10/17/11 | 6/30/04 | Updated Standard No. | J Herschelman |

Jones Lang LaSalle @ Beaumont Health System, LLC.

**DESIGN / CONSTRUCTION
GUIDELINES & STANDARDS**

ARCHITECTURAL

Jones Lang LaSalle @ Beaumont Health System, LLC.

DESIGN / CONSTRUCTION GUIDELINES & STANDARDS

ARCHITECTURAL

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Jones Lang LaSalle @ Beaumont Health System, LLC.
DESIGN/CONSTRUCTION GUIDELINES AND STANDARDS

SECTION 01 41 19 - FIRE APPARATUS ACCESS

1.01 GENERAL

A. PURPOSE

1. This defines how buildings, structures, and property are to be provided with unobstructed access for fire fighting and emergency service personnel, apparatus, and equipment.

B. GENERAL

1. Designers shall be aware of the local Fire Department requirements that deal with fire access to facilities. Plans for new facilities and/or alterations to existing facilities that effect the existing envelop of the building will be subject to review by the Building Department and the Fire Departments of the respective jurisdiction that the building is located in. The Fire Department will be reviewing site and building plans for compliance with their rules and standards for fire apparatus access. Designers will be required to meet with the Fire and Building Departments during the design process to assure compliance with their rules and standards.

C. REFERENCE

1. Each principality shall be contacted to verify their respective requirements. At the very minimum, the current edition of the International Fire Code will be used as the base of reference.

D. AUTHORITY

1. The authority having jurisdiction will be the local principality's Fire and Building Departments where the facility is located.

E. APPLICABILITY

1. This standard is intended to apply to all buildings, structures, and property owned or managed by the Beaumont Health System.

DESIGN/CONSTRUCTION GUIDELINES AND STANDARDS

SECTION 07 84 00 - FIRE STOPPING

1.01 GENERAL

- A. Where required, labeled and approved fire stopping systems are to be used on all floor and wall penetrations.

1.02 QUALITY ASSURANCE

- A. Fire stopping shall be performed by an installer trained or approved by the Manufacturer.
- B. **The Installer shall provide documentation of their registration and certification as fire stopping installers to the BSC Construction Compliance Manager before they start the work.**
- C. All those who will be installing fire stopping assemblies will be required to attend a fire stopping training session, and provide proof of training, before they will be allowed to perform the work on BSC projects.
- D. **All those who have gone thru the training session shall be supervised by a registered and certified fire stopping firm, installer or manager who shall also provide documentation that the work has been properly and correctly installed.**
- E. **Training MUST be current within 18 months.**
- F. **The installer shall have in their possession a valid Hilti certification card**

1.03 SUBMITTALS

- A. Shop Drawings for all systems used are to be submitted for shop drawing approval during construction. This is to ensure that the contractors understand what is required of them in the construction.
- B. Upon request, copies of these shop drawings are to be provided to the local authorities having jurisdiction.
- C. Provide a letter of certification for each material and system stating compliance with specified requirements.

1.04 WARRANTY

- A. Warrant that fire stopping systems used meet the requirements for their intended use.

2.01 MANUFACTURERS

- A. As of March of 2005, Beaumont Services Company has entered into an agreement with HILTI to provide all of the fire stopping materials and engineering support required for all of the current and future projects for Beaumont Services Company construction and maintenance projects through the end of 2009.
- B. Any contractor doing fire stopping work for the Beaumont facilities will need to call Hilti @ 800-879-8000 and open a new account specific to Beaumont Hospital using the Beaumont name. This will ensure that they receive the special pricing and not pay sales tax.
- C. Hilti products will be used on all current and future projects during the

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SECTION 07 84 00 - FIRE STOPPING

duration of this agreement with Beaumont Services Company. This includes projects that have already had the construction contract awarded with a different fire stopping vendor. Compliance with this standard will be strictly enforced.

- D. Acceptable manufacturer:
 - 1. Hilti, Inc.
- E. If Hilti is unable to provide a code compliant solution to a particular fire stopping issue and another manufacturer has one, then we will allow the use of that product for that situation only. The substitution will have to be approved by all responsible parties involved including: the A/E, BSC Resident Architect and the Fire Protection Work Group.

3.01 MATERIALS

- A. Materials shall be 100% free of asbestos.
- B. Materials shall be UL classified as providing the fire resistance rating of the assembly being penetrated.

3.02 FIRESTOP SEALANT

- A. All caulking materials will be red in color even those used for smoke tight walls.

4.01 INSTALLATION

- A. The Hilti Firestop Systems Guide will be used as the detail reference for all fire stopping systems.
- B. **All fire stopping products shall be tooled smoothly in a professional workmanship manner**
- C. Install fire stopping and smoke sealing materials in strict accordance with manufacturer's printed instructions to provide UL classified assembly for the fire resistance rating of the assembly being penetrated.
- C. Labeling:
 - 1. Standard **fire stopping** assemblies will not be required to be labeled. Accepted standard assemblies are as follows:
 - a. Conduit
 - b. Cable Tray
 - c. Floor Penetrations
 - d. Plumbing Piping
 - e. Ductwork, Insulated and non-insulated
 - 2. The following **fire stopping** assemblies are required to be labeled on the adjacent wall:
 - a. All systems not listed in 1.
 - b. All engineering judgments.

4.02 FIELD QUALITY CONTROL

- A. All areas of work will be kept accessible until inspection or release by the applicable Code authorities.

SECTION 07 84 00 - FIRE STOPPING

- B. All existing conditions within the project scope will need to be inspected and verified as being compliant. Non-compliant conditions will need to be reported to the BSC Fire Prevention Manager and a plan of action will need to be developed to address these during the course of the project.
- C. Non-compliant conditions that are discovered during the course of the work will be brought to the attention of the BSC Fire Prevention Manager immediately so that they can be resolved and brought into compliance before the conclusion of the project.

SECTION 08 10 00 – HOLLOW METAL DOORS AND FRAMES

1.01 General

- A. All doors shall have a sound deadening liner.
- B. All doors and frames shall be shop fabricated.
- C. Frame corners shall be fully mitered and continuously welded. All exposed welded joints shall be ground flush and smooth.
- D. Concealed reinforcement of sheet and bar steel shall be provided for all hardware, including automatic devices and other attached work.
- E. Doors and frames which require UL construction will not be accepted without the label.
- F. All interior door frames shall receive molded rubber type door silencers. Three (3) at single door strike jamb, two (2) at head of pair doors.
- G. Standard door frame height for new construction shall be 7'-0". However, as door frame heights vary from 6'-8" to 7'-10" thru different portions of the facilities, each project should be evaluated for the appropriate door frame height specification based on scope of work and area design impact.

1.02 Submittals

- A. Submit Product Data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.
- B. Submit Shop Drawings showing fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
- C. Door Schedule:
 - 1. Submit schedule of doors and frames using same reference numbers for details and openings as those on Drawings.
 - 2. Indicate coordination of glazing frames and stops with glass and glazing requirements.

1.03 Quality Assurance

- A. Provide doors and frames complying with ANSI/SDI 100 "Recommended Specifications for Standard Steel Doors and Frames" and as specified.
- B. Fire-Rated Door Assemblies that comply with NFPA 80, shall be identical to door and frame assemblies tested for fire-test-response characteristics per ASTM E 152, and shall be labeled and listed by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction.
- C. At stairwell enclosures, provide doors which have Temperature Rise Rating of 250 deg F (121 deg C) maximum in 30 minutes of fire exposure.

2.01 Products

- A. Acceptable Manufacturers:
 - 1. Steel Doors and Frames
 - 2. Amweld Building Products
 - 3. Ceco Door Products

SECTION 08 10 00 – HOLLOW METAL DOORS AND FRAMES

4. Curries Co.
5. Mesker Door, Inc.
6. Pioneer Detroit, Div. of SOS Consolidated, Inc.
7. Republic Builders Products.
8. Steelcraft.

2.02 Materials

- A. Hot-Rolled Steel Sheets and Strip:
 1. Commercial-quality carbon steel, pickled and oiled, complying with ASTM A 569 (ASTM A 569M).
- B. Cold-Rolled Steel Sheets:
 1. Carbon steel complying with ASTM A 366 (ASTM A 366M), commercial quality, or ASTM A 620 (ASTM A 620M), drawing quality, special killed.
- C. Galvanized Steel Sheets:
 1. Zinc-coated carbon steel complying with ASTM A 526 (ASTM A 526M), commercial quality, or ASTM A 642 (ASTM A 642M), drawing quality, hot-dip galvanized according to ASTM A 525.
 - a) Fabricated items for use on building exterior shall be provided with A 60 or G 60 (ASTM A 525M, with Z 180 or ZF 180) coating designation, mill phosphatized.
 - b) Fabricated items for use in general building interior areas where prime painted steel is specified, at Contractor's option, may be provided with A 25 coating designation, mill phosphatized.
- D. Supports and Anchors:
 1. Fabricate from not less than 18 gage, minimum 0.0478-inch- (1.2-mm-) thickness, steel sheet where used with prime painted steel frames.
 2. Fabricate from not less than 18 gage, minimum 0.0516-inch- (1.3-mm-) thickness, galvanized steel where used with galvanized steel frames.
- E. Inserts, Bolts, and Fasteners:
 1. Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize complying with ASTM A 153, Class C or D as applicable.

2.03 Doors

- A. Steel Doors:
 1. Provide 1-3/4-inch- (44-mm-) thick doors of materials and ANSI/SDI 100 grades and models specified below:
- B. Interior Doors:
 1. Grade II, heavy-duty, Model 2, seamless design, fabricated from 18 gage, minimum 0.0478-inch- (1.2-mm-) thickness, cold-rolled steel sheet or A25 designation galvanized steel sheet faces.
- C. Exterior Doors:
 1. Grade III, extra heavy-duty, Model 2, seamless design, fabricated from 16 gage, minimum 0.0635-inch- (1.6-mm-) thickness, A60 or G60 galvanized steel sheet faces.

SECTION 08 10 00 – HOLLOW METAL DOORS AND FRAMES

2.04 Frames

A. General:

1. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings as shown, according to ANSI/SDI 100. Conceal fastenings, unless otherwise indicated.
2. Fabricate frames for interior openings from 16 gage, minimum 0.0598-inch- (1.5-mm-) thickness, cold-rolled steel sheet, or A25 coating designation galvanized steel sheet.
3. Fabricate exterior frames from 14 gage, minimum 0.0785-inch- (2.0-mm-) thickness, A60 or G60 coating designation galvanized steel sheet.

B. Frame Corner Fabrication:

1. Fabricate frames with mitered or coped and continuously welded corners for all locations.

C. Frame Anchors:

1. Comply with applicable requirements of SDI 111-A.

D. Door Silencers:

1. Except on weather-stripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.

E. Plaster Guards:

1. Provide 26 gage, minimum 0.0179-inch- (0.45-mm-) thickness, steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

2.05 Fabrication

A. General:

1. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Comply with ANSI/SDI 100 requirements.
2. Weld exposed joints continuously, grind, dress and make smooth, flush and invisible. Weld edges and ends, fill and grind flush.
3. Close top and bottom edges of exterior doors as integral part of door construction or by addition of minimum 16 gage, minimum 0.0635-inch- (1.6-mm-) thickness, galvanized steel sheet channels. Channel legs shall face downward to provide a flush surface.
4. Reinforce and close exposed bottom edge of transom panels with 16 gage, minimum 0.0598-inch- (1.5-mm-) thickness, steel channel. Channel legs shall face downward to provide a flush surface.
5. Fabricate exposed faces of doors and panels from only cold-rolled steel sheet.
6. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
7. Provide raceways for signal and power wiring.

SECTION 08 10 00 – HOLLOW METAL DOORS AND FRAMES

- B. Internal Construction:
 - 1. Provide any one of the following manufacturer's standard core materials according to SDI standards and additionally as required for thermal rated doors:
 - a) Resin-impregnated paper honeycomb.
 - b) Rigid polyurethane conforming to ASTM C 591.
 - c) Rigid polystyrene conforming to ASTM C 578.
 - d) Rigid mineral fiber with internal sound deadener on inside of face sheets.
- C. Clearances:
 - 1. Not more than 1/8 inch (3.2 mm) at jambs and heads, except not more than 1/4 inch (6.4 mm) between non-fire-rated pairs of doors. Not more than 3/4 inch (19 mm) at bottom.
 - 2. Fire Doors:
 - a) Provide clearances according to NFPA 80.
- D. Tolerances:
 - 1. Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- E. Galvanized Steel Doors, Panels, and Frames:
 - 1. At exterior locations, fabricate doors, panels, and frames from Galvanized steel sheet according to SDI 112.
 - 2. Seal joints in top edges of doors against water penetration.
- F. Exposed Fasteners:
 - 1. Provide countersunk flat or oval head screws and bolts for locations that require exposed fasteners.
- G. Thermal-Rated (Insulating) Assemblies:
 - 1. At exterior locations, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies.
 - 2. Provide thermal-rated assemblies with U-value rating of 0.41 Btu/sq. ft. x h x deg F (2.33 W/sq. m x K) or better.
- H. Hardware Preparation:
 - 1. Comply with applicable requirements of SDI 107 and ANSI A115 Series specifications for door and frame preparation for hardware.
 - 2. Reinforce doors and frames to receive surface-applied hardware.
 - 3. if not indicated otherwise, locate hardware according to the Door and Hardware Institute (DHI) Publication "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
- I. Glazing Stops:
 - 1. Glazing stops shall be minimum 20 gage, minimum 0.0359-inch- (0.9-mm-) thickness, steel or 0.040-inch- (1-mm-) thick aluminum.
 - 2. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass and other panels in doors.
 - 3. Provide screw-applied, removable, glazing beads on inside of glass and other panels in doors.
- J. Astragals:
 - 1. Fabricate from not less than 14 gage, minimum 0.0747 thickness, cold-rolled steel sheet at doors fabricated from steel sheet to receive factory prime paint finish or A25 designation galvanized steel sheet at doors fabricated from A25 designation galvanized steel sheet.

SECTION 08 10 00 – HOLLOW METAL DOORS AND FRAMES

2.06 Finishes, General

- A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- B. Use of lead or chromate based paints are not acceptable.
- C. Apply primers to doors and frames after fabrication.

2.07 Galvanized Steel Sheet Finishes

A. Surface Preparation:

- 1. Clean surfaces of A60 and G60 galvanized items with nonpetroleum solvent so that surfaces are free of oil or other contaminants.
- 2. After cleaning, apply a conversion coating of the type suited to the coating applied over it.
- 3. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
- 4. Galvanizing Repair Paint:
 - a) High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.

B. Factory Priming for Field-Painted Finish:

- 1. Apply air-dried or baked on shop primer immediately after cleaning and pretreatment providing a smooth nontextured base for final finish.
- 2. Shop Primer:
 - a) Zinc-dust, zinc-oxide primer paint complying with performance requirements of FS TT-P-641, Type II.

C. Asphalt Coating:

- 1. Apply asphalt coating on inside face of exterior door frames from base to 30" height.

2.08 Surface Preparation:

- A. Solvent-clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).

B. Pretreatment:

- 1. Immediately after surface preparation, apply a conversion coating of type suited to coating applied over it.

C. Factory Priming for Field-Painted Finish:

- 1. Apply air-dried or baked-on shop primer providing a smooth nontextured base for final finish that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a proper foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.

3.01 Execution

A. General:

- 1. Install steel doors, frames, and accessories according to approved Shop Drawings, manufacturer's data, and as specified.

SECTION 08 10 00 – HOLLOW METAL DOORS AND FRAMES

B. Placing Frames:

1. Comply with provisions of SDI 105, unless otherwise indicated.
2. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
3. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
4. Except for frames located in existing concrete, masonry, or gypsum board assembly construction, place frames before constructing enclosing walls and ceilings.
5. Provide not less than 3 wall anchors per vertical frame side for frames up to 7'-6" high and an additional anchor for each additional 30" of frame height. Anchors shall be equally spaced.
6. Anchors at door jambs shall be located adjacent to hinge location on hinge jamb and at the corresponding location on the strike side of jamb.
7. In masonry construction, acceptable anchors include masonry wire anchors and masonry T-shaped anchors.
8. At existing concrete or masonry construction, set frames and secure to adjacent construction with bolts and frame anchorage devices.
9. In metal-stud partitions, attach wall anchors to studs with screws.
10. Install fire-rated frames according to NFPA 80.

C. Grout:

1. When frames are in masonry construction, as specified in Division 4 Section "Unit Masonry Assemblies."
2. When frames are in gypsum board construction, as specified in Division 9 Section "Gypsum Board Assemblies" and "Gypsum Board Shaft-Wall Assemblies", as applicable.

D. Door Installation:

1. Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI 100.
2. Install Fire-Rated Doors with clearances specified in NFPA 80.
3. Smoke-Control Doors shall comply with NFPA 105.

E. Astragals:

1. Provide an overlapping astragal on pairs of doors having a fire protection rating and as noted.
2. Attach astragals on one leaf so as to protect approximately 3/4 in. of the opposite door or as may be otherwise required by authorities having jurisdiction.
3. Do not provide astragals that inhibit the free use of either leaf on doors when located on doors within a means of egress.

3.02 Adjusting and Cleaning

- A.** Immediately after erection, sand smooth any rusted or damaged areas of prime coat or galvanized finish and apply touchup of compatible air-drying primer suitable for field applied finish paint.

SECTION 08 71 00 – DOOR HARDWARE

1.01 Hinges

- A. General:
Planished and plated contract grade material, fabricated to template for use with metal doors or frames, with flat button tips, non-rising loose steel pins, and beveled or non-beveled inner edge.
1. Non-removable loose pin hinges for exterior out-swing doors.
 2. Non-ferrous base metal for exterior doors.
 3. Ball bearing hinges for labeled and label constructed doors.
- B. Sizes:
Door Thickness: 1-3/4"
Hinge Size 4-1/2" x 4-1/2"
1. Width of hinges shall be sufficient to clear trim.
- C. Quantities:
1. One pair on doors 60 inches high or less, one half pair for every additional 30 inches or fraction thereof.
 2. One half pair additional for public and staff entrance and exit doors 36 inches wide and over with brass or bronze material.
 3. Two pair for dutch doors.
- D. Hinge Types:
- Type 1 Hinge: Plain bearing, steel.
1. Interior Doors less than 37 inches wide without closers.
- Type 2 Hinge: Standard weight, BB steel.
1. Interior doors 37 inches to 41 inches wide without closers.
 2. Interior doors less than 41 inches wide with closers.
- Type 3 Hinge: Extra Heavy, 4-BB, steel.
1. Interior doors wider than 41 inches.
 2. Doors higher than 96 inches.
 3. Vestibule doors.
 4. In-swing exterior doors.
- Type 4 Hinge: Extra heavy, 4-BB, brass, bronze or stainless steel.
1. Out-swing exterior doors
 2. When specified in group or suffix.
- Type 5 Hinge: Plain bearing, brass bronze or stainless steel.
1. When specified in group or suffix.
- Type 6 Hinge: Standard weight, BB brass, bronze or stainless steel.
1. When specified in group or suffix.

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SECTION 08 71 00 – DOOR HARDWARE

Acceptable manufacturers:

| | <u>Stanley</u> | <u>Hager</u> | <u>McKinney</u> |
|---------------|----------------|--------------|-----------------|
| Type 1 Hinge: | F179 | 1279 | T2714 |
| Type 2 Hinge: | FBB179 | BB1279 | TB2714 |
| Type 3 Hinge: | FBB168 | BB1168 | T4B3786 |
| Type 4 Hinge: | FBB1199 | BB1199 | T3B3386 |
| Type 5 Hinge: | F191 | 1191 | T2314 |
| Type 6 Hinge: | FBB191 | BB1191 | TB2314 |

1.02 Pivot Hinges:

- A. All Lead Lined doors shall be set on floor mounted pivot hinges.
- B. Hinge Types
 - P1 Center hung, double acting, pivot hinge.
 - 1. General use is for patient toilet with emergency release hardware.
 - 2. Also for door weights up to 150 pounds.

Acceptable manufacturers:

Rixson 127-3/4,
Stanley DAP2,
Hager 396P,
Lawrence CHP1

- P2 For lead lined and extra heavy doors up to 1500 pounds

Acceptable Manufacturers:

Rixson L117 w/ ML 19 side jamb pivot or equivalent hinge
from Stanley, Hager, or Lawrence

1.03 Electrical Hinges

- A. Electric hinges are specified by electrical function only.
- B. Provide same class and size as other hinges in the same set.
- C. Coordinate voltage requirements with Electrical Drawings and Specifications.
- D. Provide switch hinges having three wires and current hinges having four wires.

1.04 Continuous Hinges

- A. Are to be use at the approval of the owner only.
- B. Acceptable Manufacturers:
Hager Roton, Markar, McKinney, Stanley

SECTION 08 71 00 – DOOR HARDWARE

1.05 Flush Bolts:

- A. Manual Flush Bolts
 1. On inactive door of pairs, with locks and latches, use two 12-inch bolts. One at top and one at bottom
 2. For doors over 84 inches in height use 24 inch top bolt.
 3. Use dust proof strikes for bottom bolts.
 4. Acceptable Manufacturers:
Glynn Johnson, Baldwin, BBW, DCI, Ives, Trimco, Quality

- B. Automatic Flush Bolts:
 1. Rods for automatic bolts shall be concealed within the body of the door.
 2. Where concealed rods are not possible or feasible, ram guard covers shall be provided to protect the vertical control rod from damage from the impact of carts and stretchers.
 3. On labeled pairs of doors, in required exit locations, use automatic devices.
 4. On the inactive leaf of pairs of doors, in non-exit locations, use self-latching top and bottom bolts or two point latches.
 5. Use dust proof strikes for bottom latches.
 6. Acceptable Manufacturers:
Glynn Johnson, DCI, Ives, Trimco

1.06 Coordinators:

- A. These can be surface mounted.
- B. Fillers and brackets can be provided in prime coated finish.
- C. Acceptable Manufacturers:
Glynn Johnson, Baldwin, BBW, DCI, Ives, Trimco, Quality

1.07 Locksets and Latchsets - Cylindrical Type:

- A. Provide 7-Pin tumbler cylinder cores. (Best - No Substitute @Royal Oak).
- B. Provide 2-3/4 inch backset.
- C. At lead lined doors supply lead lined knobs and roses and lead sleeves for latch bolts.
- D. Provide strikes with extended lips where required to protect trim from being marred by latch bolt.
- E. Provide strike lips, which do not project more than 1/8" beyond door-frame trim at single doors and have 7/8" lip to center at pairs of 1-3/4" doors.
- F. Provide wrought box strikes on all locks and latches.
- G. Provide latch with 3/4 inch throw on pairs and guarded latchbolts for all locksets.
- H. Provide rescue doorstop and two-way strike at patient toilet and bath double acting doors. Lawrence 7108-7109 or equal.

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SECTION 08 71 00 – DOOR HARDWARE

- I. Locksets and Latchsets:
 - Best 93K with trim 14D is the standard at Royal Oak
 - Schlage with the Best key core is the standard in the South Addition.
 - At Troy Schlage with the Schlage key core is the standard.
 - **At Grosse Pointe Sargent with Sargent key core is the standard**

- 1.08 Hospital Push Pull Latches:
 - A. Provide five-inch backset.
 - B. At lead lined doors, provide with lead wrapped latch bolts and lead lined trim.
 - C. Acceptable Manufacturers:
 - D. Glynn Johnson, Sargent, Hager, McKinney

- 1.09 Exit Devices:
 - A. Function designations are Von Duprin.
 - B. Provide sex bolts at all wood label doors.
 - C. Von Duprin - 98 x Breakaway Lever Trim 994L.

- 1.10 Electric Strikes:
 - A. Function numbers are Von Duprin.
 - B. Coordinate voltage requirements with Electrical Drawings and Electrical Specifications.
 - C. Provide transformer as required.
 - D. Electric strikes shall provide remote release of latchbolts.
 - E. They shall be designed for use with the type locks shown at each opening where required.
 - F. They shall be UL listed as Burglary-Resistant Electric Door Strikes and where required shall be UL listed as electric strikes for Fire Doors or Frames.
 - G. Faceplates shall be stainless steel with finish as specified for each opening.
 - H. The locking components shall be stainless steel to resist damage and abuse. Solenoids shall be of the continuous duty type for the voltage specified.
 - I. Plug connectors will be furnished.
 - J. Strikes shall have an adjustable backbox to compensate for misalignment of door and frame.
 - K. Provide transformer as required.
 - L. Acceptable Manufacturers:
 - Folger Adam - Series 300.
 - Von Duprin - Series 6000.

- 1.11 Closers:
 - A. LCN - 4011/4111 LCN shall be figured as base bid on all projects.
 - B. Comparable exit devices by the following manufacturers are acceptable:
 - Corbin, Precision, Russwin, Sargent, and Yale.

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- 1.12 Stops, Holders and Bumpers:
- A. Provide a stop for every door which will prevent damage to the door, hardware and surrounding surfaces
 - B. Wall bumpers must be wall mounted.
 - C. Use floor stops only where specified
 - D. Use overhead type stops for all doors that are capable of swinging more than 145 degrees before striking a wall and are equipped with a regular arm surface mounted closer, and where a door strikes a fixed object like a sink, cabinet.
 - E. Acceptable manufacturers:
Glynn Johnson, Builders Brass, Ives, Trimco, Quality, Baldwin,
Comparable overhead stops and stop/holders by Rixson Checkmate
- 1.13 Bumpers
- A. B.H.M.A. L02101. Wrought, forged, or cast, approximately 2-1/2 inch diameter, convex or concave rubber center, concealed fasteners.
- 1.14 Floor Stops:
- A. B.H.M.A. L02141. Provide height to suit undercut.
- 1.15 Electromagnetic Wall Holders:
- A. Coordinate voltage requirements with Electrical Drawings and Specifications.
 - B. Acceptable Manufacturers
LCN - 7840 x Transformer 4040SED-3210.
Rixson Firemark is also an acceptable manufacturer.
- 1.16 Magnetic Monitoring Switches:
- A. Coordinate voltage requirements with electrical drawings and specifications.
 - B. Acceptable Manufacturers
Sentrol 1117T-W at aluminum and hollow metal frames.
Sentrol 1-76-W at steel channel and tube steel frames.
- 1,17 Stop Seals, Automatic Door Bottoms, Weather-stripping:
- A. Sight seals shall be provided at all double acting patient toilet/bath doors.
 - B. Sight Seal Reese #86 with pile, or equal, mortised into both vertical door edges.
 - C. Acceptable Manufacturers:
Hager, National Guard, Pemko, Reese
- 1.18 Flat Goods:
- A. **Astragals shall be provided on all pairs or fire rated and smoke zone barrier doors**
 - B. Acceptable manufacturers:

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Hiawatha, Baldwin, Builders Brass, Cipco, Quality, Rockwood, Trimco.
Hiawatha numbers listed.

- C. Push Plates:
Hiawatha No. 200J X 7-1/2 in. x15 in.
Hiawatha No. 200J X 3-1/2 in. x15 in. for limited applications
- D. Door Pulls:
Hiawatha No. 580
- E. Push/Pull Bars:
Hiawatha No. 1175
 - 1. Mount back to back.
 - 2. Engrave "Push" and "Pull"

1.19 Key Cabinet:

- A. TelKee WC Series with key loan record system, pre-indexed by Factory or Best Representative, who shall instruct OWNER in usage and maintenance of key records.
- B. Accommodate all keys under this contract, plus 25% future expansion.

1.20 Finishes:

- A. Generally, Satin Chrome, US26D.
- B. Continuous Hinges:
 - 1. Hinge caps painted to match color of doors and frames, and balance of hinges in Satin Aluminum, Clear Anodized, US28.
- C. Exit device touchpads, push and pull hardware, trim protector bars, kick plates, armor plates, door edgings; and wrought bumpers,
 - 1. Satin Stainless Steel US32D.
- D. Astragals, stop seals automatic door bottoms, bottom seals, and weather-stripping:
 - 1. Satin Aluminum, Clear Anodized, US28.
- E. Cast or forged bumpers and all other:
 - 1. Satin Chrome, US26D.
- F. Thresholds,
 - 1. Mill Finish Aluminum.
- G. Closers:
 - 1. Powder Coated Finish Aluminum;
 - a. At exterior doors, protect all closer cylinders, arms, drop, finish, and adapter plates with Special Rust Inhibiting (SRI) finish prior to final Powder Coated Finish Aluminum; also, wherever SRI is specified.

SECTION 09 30 00 – CERAMIC TILE

1.01 General

- A. Tile and grout shall be as specified in the JLL@BHS Interiors Finish Standards.
- B. All standard ceramic tile installation shall be thin set type.
- C. Standard bath and toilet room wall tile shall be glazed interior ceramic tile, cushion edged, matte glazed.
- D. Ceramic tile base shall be of the same material and size as the ceramic wall tile.
- E. Ceramic tile base shall be flush-type cove.
- F. Bull-nose tile shall be used at the following locations:
 - 1. External corners.
 - 2. At the butt edge of cove base of seamless floor in rooms that have ceramic tiled walls
 - 3. At the top edge of wainscoted ceramic tile walls.
- G. Standard bath and toilet room floor tile shall be ceramic mosaic tile, unglazed, impervious body, cushioned edged, 1/4 inches thick and 2 inch by 2 inch nominal size.
- H. Floor tile for shower rooms shall be non-slip, containing a minimum 7 percent abrasive mixture.
- I. The mosaic floor tile shall be installed to butt up against the toe of the coved wall tile base.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Unglazed ceramic mosaic floor tile.
 - 2. Porcelain paver tile.
 - 3. Glazed wall tile.
 - 4. Quarry Tile.

1.03 SUBMITTALS

- A. Product Data: Submit product data for each type of product specified.
- B. Samples:
 - 1. Submit samples for verification purposes of each item listed below, prepared on samples of size and construction indicated, products involve color and texture variations, in sets showing full range of variations expected.
 - a) Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on plywood or hardboard backing and grouted.
 - b) Full-size units of each type of trim and accessory for each color required.

Jones Lang LaSalle @ Beaumont Health System, LLC.
DESIGN/CONSTRUCTION GUIDELINES AND STANDARDS

SECTION 09 30 00 – CERAMIC TILE

1.04 EXTRA MATERIALS

- A. Furnish quantity of full-size units equal to 3 percent of amount installed, for each type of tile and trim unit, composition, color, pattern, and size.
- B. Deliver extra materials to Owner and place in Owner's storage as directed.
- C. Furnish extra materials that match products installed, packaged with protective covering for storage and identified with labels clearly describing contents.

2.01 PRODUCTS, GENERAL

- A. ANSI Standard for Ceramic Tile:
 - 1. Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
 - 2. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- B. ANSI Standard for Tile Installation Materials:
 - 1. Comply with ANSI standard referenced with products and materials indicated for setting and grouting.
- C. Colors, Textures, and Patterns:
 - 1. Provide products as indicated in the JLL@BHS Interiors Finish Standards
- D. Manufacturer/Supplier – Deleted
 - 1. Deleted

2.02 TILE PRODUCTS

- A. Unglazed Ceramic Mosaic Floor Tile: Provide factory-mounted flat tile complying with the following requirements:
 - 1. Composition: Natural clay.
 - 2. Nominal Thickness: 1/4 inch.
 - 3. Face: Plain with cushion edges.
 - a) Tile for shower area shall be non-slip, containing 7-1/2 percent abrasive mixture.
- B. Glazed Wall Tile: Provide flat tile complying with the following requirements:
 - 1. Nominal Thickness: 5/16 inch.
 - 2. Face: Plain with cushion edge.

SECTION 09 30 00 – CERAMIC TILE

- C. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
 - 1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
 - 2. Shapes: Select from manufacturer's standard shapes:
 - a) Base : Flush type cove.
 - b) Wainscot Cap: Surface bullnose.
 - c) External Corners: Surface bullnose.
 - d) Internal Corners: Field-buttet square corners.
- D. Quarry floor tile shall be standard grade, extruded tile, with edges ground after firing. Surface shall be abrasive. The size of tile shall be 6 inches by 6 inches square.

2.03 WATERPROOFING FOR THINSET TILE INSTALLATIONS

- A. Latex Rubber/Glass Fiber Fabric Waterproofing:
 - 1. Manufacturer's standard factory-prepackaged, cold-applied liquid rubber for trowel application and glass fiber fabric reinforcing.
- B. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Latex Rubber/Glass Fiber Fabric Waterproofing:
 - a) "Laticrete 9235 Waterproof Membrane"; Laticrete International Inc.

2.04 SETTING MATERIALS

- A. Dry-Set Portland Cement Mortar:
 - 1. ANSI A118.1.

2.05 GROUTING MATERIALS

- A. Grout materials shall be as indicated in the JLL@BHS Interiors Finnish Standards.
- B. Grout for the glazed wall tile shall be white.
- C. Grout for the quarry floor tile shall be a full epoxy grout and match the color of the floor tile as closely as possible.
- D. Grout for the unglazed mosaic floor tile shall be of a dark color to match the floor tile, and shall have a epoxy additive to resist stain and moisture absorption.
 - 1. Acceptable Product: Hydroment 1900 - Epoxy Modified Grout and Mortar Admixture. A two part epoxy emulsion additive to be used with Ceramic Tile Grout / Joint Filler

SECTION 09 30 00 – CERAMIC TILE

2.06 ELASTOMERIC SEALANTS

- A. Sealant for control joints shall match grout color.
- B. Colors:
 - 1. Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.
- C. One-Part Mildew-Resistant Silicone Sealant:
 - 1. Type S; Grade NS; Class 25; Uses NT, G, A, and as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and temperature extremes.
- D. Multipart Pourable Urethane Sealant for Use T:
 - 1. Type M; Grade P; Class 25; Uses T, M, A, and as applicable to joint substrates indicated, O.
- E. Products: Subject to compliance with requirements, provide one of the following:
 - 1. One-Part Mildew-Resistant Silicone Sealant:
 - a) "Dow Corning 786"; Dow Corning Corp.
 - b) "SCS 1702"; General Electric Co.
 - c) "863 #345 White"; Pecora Corp.
 - d) "Rhodorsil 6B White"; Rhone-Poulenc Inc.
 - e) "Proglaze White"; Tremco Corp.
 - 2. Multipart Pourable Urethane Sealant:
 - a) "Chem-Calk 550"; Bostik Construction Products Div.
 - b) "Vulkem 245"; Mameco International, Inc.
 - c) "Urexpan NR-200"; Pecora Corp.
 - d) "THC-900"; Tremco Corp.

2.07 MISCELLANEOUS MATERIALS

- A. Metal Edge Strips:
 - 1. Stainless steel strips, 1/8-inch wide at top edge with integral provision for concealed anchorage to mortar bed or substrate unless otherwise indicated.
 - 2. Provide units of maximum available length to minimize joints.
 - 3. Provide edge strips at juncture of ceramic tile floors and other floor materials where stone thresholds are not required.
- B. Penetrating Sealer: Sealer shall be Ceramaseal Silox by Bostik.
- C. Stone Thresholds
 - 1. Stone thresholds shall be placed only at locations approved by JLL@BHS.
 - 2. Provide stone thresholds, at door openings for patient showers, where migration of water on the floor can become a potential hazard to adjacent traffic areas and recessing of the shower floor is not an option.

SECTION 09 30 00 – CERAMIC TILE

D. Soap Holders

1. When soap holders are installed in showers, they shall be recessed and match wall tile.
2. A soap dish or holder shall be installed for each showerhead.
3. Surface mounted soap holders shall not be allowed.

2.08 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

1. Grout for floor tile shall have epoxy additive. Epoxy additive shall be proportioned, and mixed in grout in accordance with the manufacturer's printed instructions.

3.01 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard:

1. Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.

B. TCA Installation Guidelines:

1. TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.

C. General:

1. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
2. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, and/or covers overlap tile.

D. Jointing Pattern:

1. Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.

SECTION 09 30 00 – CERAMIC TILE

2. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.
- E. Wainscots:
 1. Lay out tile wainscots to next full tile beyond dimensions indicated.
- F. Expansion Joints:
 1. Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
 2. Locate joints in tile surfaces directly above joints in concrete substrates.
 3. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealers".
- G. Grouting:
 1. Grout tile to comply with the requirements of the following installation standards:
 - a) For ceramic tile grouts, comply with ANSI A108.10.
 2. Use epoxy modified grout for floor tile.

3.02 WATERPROOFING FOR THINSET TILE INSTALLATIONS

- A. Install waterproofing in compliance with waterproofing manufacturer's instructions to produce a waterproof membrane of uniform thickness bonded securely to substrate.
- B. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.03 FLOOR INSTALLATION METHODS

- A. Ceramic Mosaic Tile:
 1. General: Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction, and grout types.
 2. Dry-Set Portland Cement Mortar: ANSI A108.5.
 - a) Concrete Subfloors, Interior: TCA F113.
 - b) Grout: Sand-portland cement with epoxy additive.
- B. Metal Edge Strips:
 1. Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.
- C. Penetrating Sealer: All unglazed ceramic floor tile shall receive penetrating sealer.
- D. Unglazed, mosaic floor tile, in patient bath and toilet rooms, and high traffic and abuse areas, shall receive a penetrating sealer to resist staining.
 1. Acceptable Product: Ceramaseal Silox 8 by Bostik.

SECTION 09 30 00 – CERAMIC TILE

2. Maintenance: Manufacturer recommends sealer be replenished every five (5) years.

3.04 WALL TILE INSTALLATION METHODS

- A. Install types of tile designated for wall application to comply with requirements indicated below for setting-bed methods, TCA installation methods related to subsurface wall conditions, and grout types:
 1. Dry-Set Portland Cement Mortar: ANSI A108.5.
 - a) Cementitious Backer Units, Interior: TCA W244.

3.05 CLEANING AND PROTECTION

- A. Cleaning:
 1. Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- B. Finished Tile Work:
 1. Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
 2. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
 - a) When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
 - b) Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.
 3. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

Section **09 51 00** – Acoustic Ceilings

1.01 General

- A. Extent of acoustical panel ceilings shall be shown and scheduled on Drawings and "Material Finish Legend".
- B. Mechanical rooms, substations, penthouses, pump rooms and areas of similar use shall not have ceilings.
- C. Rooms and closets for electrical, data, communications, and biomedical equipment shall not have ceilings.
- D. Toilet rooms, that do not have bathing or shower facilities, shall be allowed to have lay-in ceiling systems.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's product specifications and installation instructions shall be submitted for each acoustical ceiling material required, and for each suspension system, including certified laboratory test reports and other data as required to show compliance with these specifications.
- B. Samples: Submit a set of 12" square samples for each acoustical unit required, showing full range of exposed color and texture to be expected in completed work.

2.01 ACOUSTICAL PANELS

- A. Provide acoustical panel products as indicated on the drawings, and "Master Finish Legend".
- B. Quality Assurance: Comply with governing regulations, ASTM C 636 and E 580, and to resist required seismic loading per local building code.
- C. Products:
 - 1. Acoustical Panels: Armstrong, USG or equal; see "Master Finish Legend" for product information.
 - 2. Suspension System: Direct hung, fully exposed grid extruded aluminum, 15/16" grid face ASTM C 635, Intermediate Duty. Color: White.
 - 3. Edge Molding: Metal angle type, with hemmed edges, and matte white finish.

2.2 CEILING SUSPENSION MATERIALS - GENERAL

- A. General: Comply with ASTM C 635, as applicable to type of suspension system required for type of ceiling units indicated. Coordinate with other work supported by or penetrating through ceilings, including light fixtures, HVAC equipment, and partition system.

Section **09 51 00** – Acoustic Ceilings

- B. Structural Class: Intermediate-duty system.
- C. Finishes and Colors: Provide manufacturer's standard finish for type of system indicated, unless otherwise required. For exposed suspension members and accessories with painted finish, provide low luster white color.
- D. Anchors shall be post-in-installed anchors for concrete structure.
 - 1. Post-installed Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials, with holes or loops for attaching hanger wires; and with capability to sustain, without failure, a load equal to 5 times that imposed by ceiling construction, as determined by testing according to ASTM E 488 conducted by a qualified independent testing agency.
 - a. Expansion anchor.
- E. Hanger Wire: Galvanized carbon steel wire, ASTM A641, soft temper, pre-stretched, Class 1 coating, sized so that stress at 3-times hanger design load (ASTM C635, Table 1, Direct Hung), will be less than yield stress of wire, but provide not less than 12 gage.
- F. Edge Moldings and Trim: Metal or extruded plastic of types and profiles indicated or, if not indicated, provide manufacturer's standard molding for edges and penetrations or ceiling which fits with type of edge detail and suspension system indicated.
- G. For lay-in panels with reveal edge details, provide angle edge molding which forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
- H. Type of System: Direct-hung suspension system.

3.1 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Use not less than 4" units at borders, and comply with reflected ceiling plans for oversize units where required.

3.2 INSTALLATION

- A. General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and industry standards applicable to work.

Section **09 51 00** – Acoustic Ceilings

- B. Arrange acoustical units and orient directionally-patterned units with pattern running in one direction.
- C. Suspension System Installation:
 - 1. Comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers near each end and spaced 4'-0" along each carrying channel or direct-hung runner, unless otherwise indicated, leveling to tolerance of 1/8" in 12'-0".
 - 2. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing, countersplaying or other equally effective means.
 - 3. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.
- D. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

3.3 ADJUST AND CLEAN

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.4 EXTRA STOCK

- A. Standard materials, readily available through the manufacturer's standard lines, do not require extra stock.
- B. Special order materials shall be ordered with 2.0% additional of amount required for installation.
- C. Deliver extra stock of special order materials to Owner with protective covering for storage and identified with appropriate labels.

SECTION 10 21 13.13 – METAL TOILET COMPARTMENTS

1.01 SUMMARY

- A. This Section includes toilet compartments and screens as follows:
 - 1. Type: - Steel, color-coated finish.
 - 2. Compartment Style - Overhead braced and floor anchored.
 - 3. Screen Style: - Wall hung.
 - 4. See Toilet and Bath Accessories for toilet paper holders, grab bars, and similar accessories.

1.02 SUBMITTALS

- A. Product Data shall be provided.
- B. Shop Drawings shall include plans, elevations, sections, details, reinforcements, and attachments to other work.
- C. Submit Samples using manufacturer's color charts consisting of sections of actual units showing the full range of colors, textures, and patterns available for each type of compartment or screen indicated.

1.03 PROJECT CONDITIONS

- A. Field verify measurements in areas of installation before fabrication.
- B. Indicate field verified measurements on Shop Drawings

2.01 MANUFACTURERS

- A. Manufacturers shall be subject to compliance with requirements.
- B. Provide products by one of the following:
 - 1. Accurate Partitions Corporation.
 - 2. Hadrian, Inc. – Metal Toilet Partitions
 - 3. Bradley Corporation – Mills Partitions

2.02 MATERIALS

- A. Steel Sheets for Color-Coated Finish:
 - 1. Steel Sheet shall be of the following minimum thicknesses:
 - a. Pilasters (Overhead Braced): 0.0359 inch (0.9 mm).
 - b. Panels and Screens: 0.0359 inch (0.9 mm).
 - c. Doors: 0.0299 inch (0.75 mm).
 - d. Tapping Reinforcement: 0.0747 inch (1.9 mm).
- B. Core Material for Metal-Faced Units:
 - 1. Manufacturer's standard sound-deadening honeycomb of resin-impregnated kraft paper in thickness required to provide finished thickness of 1 inch (25 mm) minimum for doors, panels, and screens and 1-1/4 inches (32 mm) minimum for pilasters.
- C. Pilaster Shoes and Sleeves (Caps):
 - 1. ASTM A 666, Type 302 or 304 stainless steel, not less than 0.0312 inch (0.8 mm) thick and 3 inches (75 mm) high, finished to match hardware.
- D. Stirrup Brackets:
 - 1. Manufacturer's standard ear or U-brackets for attaching panels and screens to walls and pilasters of one of the following materials:
 - a. Chrome-plated, nonferrous, cast zinc alloy (zamac) or clear-anodized aluminum.
 - b. Stainless steel.
 - c. Chrome-plated brass.
- E. Hardware and Accessories:

SECTION 10 21 13.13 – METAL TOILET COMPARTMENTS

1. Manufacturer's standard design, heavy-duty operating hardware and accessories of one of the following materials:
 - a. Chrome-plated, nonferrous, cast zinc alloy (zamac) or clear-anodized aluminum.
 - b. Stainless steel.
 - c. Chrome-plated brass.
- F. Overhead Bracing:
 1. Manufacturer's standard continuous, extruded-aluminum head rail with anti-grip profile in manufacturer's standard finish.
- G. Anchorages and Fasteners:
 1. Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match hardware, with theft-resistant-type heads.
 2. Provide sex-type bolts for through-bolt applications.
 3. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

2.03 FABRICATION

- A. General:
 1. Provide standard doors, panels, screens, and pilasters fabricated for compartment system.
 2. Provide units with cutouts and drilled holes to receive compartment-mounted hardware, accessories, and grab bars, as indicated.
 3. Provide internal reinforcement in metal units for compartment-mounted hardware, accessories, and grab bars, as indicated.
- B. Metal-Faced Toilet Compartments and Screens:
 1. Pressure laminate seamless face sheets to core material and provide continuous, interlocking molding strip or lapped and formed edges.
 2. Seal corners by welding or clips.
 3. Grind exposed welds smooth.
- C. Overhead-Braced-and-Floor-Anchored Compartments:
 1. Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, fasteners, and anchors at pilasters to suit floor conditions.
 2. Make provisions for setting and securing continuous head rail at top of each pilaster.
 3. Provide shoes at pilasters to conceal supports and leveling mechanism.
- D. Wall-Hung Privacy Screens:
 1. Provide units in sizes indicated of same construction and finish as compartment panels.
- E. Doors:
 1. Provide 24-inch- (610-mm-) wide in-swinging doors for standard toilet compartments

SECTION 10 21 13.13 – METAL TOILET COMPARTMENTS

2. Provide 36-inch- (914-mm-) wide out-swinging doors with a minimum 32-inch- (813-mm-) wide clear opening for compartments indicated to be accessible.
 3. All operating parts shall be concealed within the door.
- F. Hinges:
1. Manufacturer's standard self-closing type that can be adjusted to hold door open at any angle up to 90 degrees.
- G. Latch and Keeper:
1. Manufacturer's standard surface-mounted latch unit with combination rubber-faced door strike and keeper designed for emergency access.
 2. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be accessible.
- H. Coat Hook:
1. Manufacturer's standard combination hook and rubber-tipped bumper for each door, sized to prevent door from hitting compartment-mounted accessories.
- I. Door Bumper:
1. Manufacturer's standard rubber-tipped bumpers at out-swinging doors or entrance screen doors.
- J. Door Pull:
1. Manufacturer's standard pull that complies with accessibility requirements of authorities having jurisdiction at out-swinging doors.
 2. Provide pulls on both sides of doors at compartments indicated to be accessible.

2.04 ZINC- OR ZINC-ALLOY-COATED STEEL SHEET FINISHES

- A. Color-Coated Finish:
1. Provide manufacturer's standard baked finish.
- B. Color:
1. Select from manufacturer's full range of colors.
 2. Select only one color in each room

3.01 INSTALLATION

- A. General:
1. Comply with manufacturer's written installation instructions.
 2. Install units rigid, straight, plumb, and level.
 3. Provide clearances of not more than 1/2 inch between pilasters and panels.
 4. Provide not more than 1 inch between panels and walls.
 5. Provide clearance of not more than 1/4 inch between doors and adjacent panels and/or pilasters
 6. Secure units in position with manufacturer's recommended anchoring devices.

SECTION 10 21 13.13 – METAL TOILET COMPARTMENTS

7. Secure panels to walls and panels with not less than 2 stirrup brackets attached near top and bottom of panel.
 8. Locate wall brackets so holes for wall anchors occur in masonry or tile joints.
 9. Align brackets at pilasters with brackets at walls.
 - B. Overhead-Braced-and-Floor-Anchored Compartments:
 1. Secure pilasters to floor and level, plumb, and tighten.
 2. Secure continuous head rail to each pilaster with not less than 2 fasteners.
 3. Hang doors and adjust so tops of doors are parallel with overhead brace when doors are in closed position.
 - C. Screens:
 1. Attach with anchoring devices according to manufacturer's written instructions and to suit supporting structure.
 2. Set units level and plumb and to resist lateral impact.
- 3.02 ADJUSTING AND CLEANING
- A. Adjust and lubricate hardware according to manufacturer's written instructions for proper operation.
 - B. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched.
 - C. Set hinges on out-swinging doors and swing doors in entrance screens to return to fully closed position.

SECTION 10 28 00 – TOILET AND BATH ACCESSORIES

1.01 General

- A. Refer to the "Toilet and Bath Accessories, Legend" for specific items to be provided.

1.02 Quality Assurance

- A. Inserts and Anchorages:
 - 1. Coordinate delivery of inserts and anchoring devices which must be set in concrete or built into masonry with other work to avoid delay in construction schedule.
- B. Manufacturer:
 - 1. Model numbers shown in "Toilet and Bath Accessories Legend" are listed to establish a standard of quality. Equivalent products of the other listed acceptable manufacturers may be acceptable if they meet the intent of the Specification in terms of design, function, materials, and quality of workmanship. Substitutions must be submitted to the Standards Committee for review and approval before they will be accepted as an alternate.
- C. Single Source Responsibility:
 - 1. Provide products of same manufacturer for each type of accessory unit and for units exposed to view in the same areas

1.03 Submittals

- A. Product Data:
 - 1. Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.
- B. Samples:
 - 1. Samples of units will be required if proposing an alternate. Acceptable samples will be returned and may be used in the work.
 - 2. Samples will not be required for equipment that is listed in the Legend.
- C. Setting Drawings:
 - 1. Provide setting drawings, templates, instructions, and directions for installation of anchorage devices and cut-out requirements in other work.
- D. Product Schedule:
 - 1. Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated in the Toilet and Bath Accessory Schedule and room designations indicated on Drawings in product schedule.

SECTION 10 28 00 – TOILET AND BATH ACCESSORIES

1.04 Project Conditions

A. Accessory Locations:

1. Coordinate accessory locations with Architectural, Mechanical, Plumbing, Electrical and other work, sequencing of operations to avoid interference and to assure proper installation, operation, cleaning and servicing of accessory units.

1.05 Product Delivery, Storage, and Handling

A. General:

1. Deliver items in manufacturer's original unopened protective package.
2. Store materials in original protective packaging to prevent soiling, physical damage, or wetting. Handle so as to prevent damage to finished surfaces.

B. Protection:

1. Maintain protective covers on all units until installation is complete.
2. Remove protective covers at final clean-up of installation, except as otherwise specified.
3. BA-70 Bed Pan and Urinal Cabinet shall be factory sealed. Factory seal shall be maintained and shall be intact at Project's Final Completion.

2.01 Products

A. Acceptable Manufacturers

1. American Specialties, Inc. (Bed Pan and Urinal Cabinet Only)
2. Bobrick Washroom Equipment, Inc.
3. Bradley Corporation.

2.02 Materials, General

A. Stainless Steel:

1. AISI Type 302/304, with polished No. 4 finish, 22 gage (.034").

B. Brass:

1. Leaded and unleaded, flat products, ASTM B 19; Rods, shapes, forgings, and flat products with finished edges, ASTM B 16; castings, ASTM B30.

C. Sheet Steel:

1. Cold-rolled, commercial quality, ASTM A 366, 20-gage (.040") minimum.
2. Surface preparation and metal pretreatment as required for applied finish.

D. Galvanized Steel Sheet:

1. ASTM A 527, G60.

E. Chromium Plating:

1. Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

SECTION 10 28 00 – TOILET AND BATH ACCESSORIES

- F. Mirror Glass:
 - 1. ASTM C 1036, Type I, Class 1, Quality q2, nominal 1/4" thick, with silvering, electro-plated copper coating, and protective organic coating.
- G. Galvanized Steel Mounting Devices:
 - 1. ASTM A 153, hot-dip galvanized after fabrication.
- H. Fasteners:
 - 1. Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.
- I. Keys:
 - 1. Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc.
 - 2. Provide minimum of six (6) keys to Owner's Representative and obtain receipt.
- J. Keying for Sanitary Napkin/Tampon Vendor:
 - 1. Coordinate Keying with the Owner's Project Representative.
 - 2. The lock cylinders on the outside of the boxes shall be keyed alike, using Best Brand, M Keyway with keying specifications as follows:
 - a) North Tower N1
 - b) Central Tower N2
 - c) South Tower / Addition N3
 - d) Campus (other than MOB) N4
 - 3. Each sanitary box shall have two (2) outside locks, and a separate inside lock and key for the money compartment. The money lock and key is standard, and does not need to be a Best key. Cylinders shall have one (1) key per combination, and the other keys should be left blank. The extra blank keys that come with the cabinets shall be given to the Owner.
 - 4. The coin slot shall be set to accept a quarter (25 cents) for the purchase of the product.

2.03 Fabrication

- A. General:
 - 1. Accessories shall be fabricated in accordance with good commercial practice, with welds ground smooth.
 - 2. Bending, flanging, drawing, forming, and similar operations shall be performed in a manner to insure that there are no ruptures, cracks, wrinkles, sharp exposed edges or other defects.
 - 3. Flanges of recessed accessories shall be designed to return to walls to provide a continuous, tight-against-the-wall installation.
 - 4. Doors shall be warp free and shall have double pan construction.
 - 5. No names or labels are permitted on exposed faces of accessory units.
 - 6. On either interior surface not exposed to view or on back surface, provide identification of each accessory item by either a printed, waterproof label or a stamped nameplate indicating manufacturer's name and product model number.

SECTION 10 28 00 – TOILET AND BATH ACCESSORIES

- B. Surface-Mounted Accessories, General:
 - 1. Fabricate units with tight seams and joints, exposed edges rolled.
 - 2. Hang doors or access panels with continuous stainless steel piano hinge.
 - 3. Provide concealed anchorage wherever possible.
- C. Recessed Accessories, General:
 - 1. Fabricate units of all welded construction, without mitered corners.
 - 2. Hang doors or access panels with full-length stainless steel piano hinge.
 - 3. Provide anchorage which is fully concealed when unit is closed.

3.01 Execution

- A. Install accessory units in accordance with manufacturers' instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of unit.
- B. Fasteners shall be concealed, except as otherwise permitted, and be secured to back plates or framing members in accordance with manufacturer's design and instructions and Codes or requirements of agencies having jurisdiction.
- C. Install units plumb and level, firmly anchored in locations and at heights indicated.
- D. Where fasteners are exposed, fasteners shall be tamper-proof and provided with finish to match units secured.
- E. Brackets, plates, anchoring devices and similar items used for mounting accessories in showers and bathtub areas shall be bedded in mildew resistant silicone, to provide a watertight installation.

3.02 Adjusting and Cleaning

- A. Adjust accessories for proper operation and verify that mechanisms function smoothly.
- B. Replace damaged or defective items.
- C. After removing temporary labels and protective coatings, clean and polish all exposed surfaces in strict accordance with the accessory manufacturer's recommendations.

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SECTION 10 28 00 – TOILET AND BATH ACCESSORIES

TOILET AND BATH ACCESSORIES LEGEND

ACCESSORIES LEGEND / REPRESENTATIVE PRODUCTS

| BA # | BA Name & Description | Manufacturer | Model No. |
|-------|---|--------------------|--------------------|
| BA-10 | Toilet Paper Holder - Double Roll | Bobrick Bradley | B-686 5241 |
| BA-11 | Twin Toilet Paper Holder – Recessed (Patient Room) | Bobrick | B-6977 |
| BA-14 | Recessed Soap Dish | Bobrick | B-4380 |
| BA-15 | Paper Tower Dispenser - Surface Mtd. (When not provided by Environmental Services) | Bobrick Bradley | B-262 250-15 |
| BA-16 | Paper Towel Dispenser and Waste Receptacle - Recessed (Single Occupancy Toilets) | Bobrick Bradley | B-3944 344 |
| BA-17 | Roll Paper Towel Dispenser and Waste Receptacle - Recessed (Large Public Toilets) | Bobrick Bradley | B-310394 227 |
| BA-18 | Paper Towel Dispenser – Recessed (Patient Room) | Bobrick | B-359 |
| BA-20 | Mirror with Frame - w/o Shelf | Bobrick Bradley | B-290 780 |
| BA-21 | Mirror with Frame - w/ Shelf | Bobrick Bradley | B-292 7805 |
| BA-22 | Robe / Coat Hook | Bobrick Bradley | B-672 9124 |
| BA-23 | Grab Bars | Bobrick Bradley | B-6806-99 812-2 |
| BA-24 | Shower Curtain Rod | Bobrick Bradley | B-6047 9531 |
| BA-25 | Towel Bar | Bobrick Bradley | B-205 (908) |
| BA-26 | Robe/Coat Hook Color: Biscuit (Patient Room) | HEWI | 520.50.2 |
| BA-27 | Fold Down Shelf | Bobrick Bradley | B-287 790 |
| BA-28 | Nylon Shower Curtain Rod Color: Biscuit (Patient Room) Nylon Shower Curtain Rings, Color to Match | HEWI | 33.2030 |
| BA-29 | Nylon Coated Grab Bar Color: Biscuit (Patient Room) | HEWI | 33.3010 |
| BA-31 | Sanitary Napkin Disposal - Surface Mtd. Located in Stalls | Bobrick Bradley | B-254 4722-15 |
| BA-40 | Sanitary Napkin / Tampon Vendor – Recessed (no substitution) | Bobrick | B-3500-25 |
| BA-50 | Fold Down Shower Seat – Accessible | Bobrick Bradley | B-5181 9563/4 |
| BA-60 | Utility Shelf | Bobrick Bradley | B-298 758 |
| BA-61 | Utility Shelf and Mop Holder | Bobrick Bradley | B-224 9983 |
| BA-70 | Bed Pan & Urinal Cabinet – Recessed* | ASI | 0551 |
| BA-80 | Baby Changing Station - Surface Mtd. | Bobrick | B-2210 |

*Maintain Factory Seal

SECTION 10 44 13 - FIRE EXTINGUISHER CABINETS

PART 1 - GENERAL

1.1 SUMMARY

- A. Fire extinguishers will be provided by the Owner.

1.2 QUALITY ASSURANCE

- A. Single Source Responsibility:
 - 1. Obtain products from one manufacturer.

1.3 SUBMITTALS

- A. Product Data:
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection specialties.
 - 2. Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
 - 3. Show location of knockouts for hose valves.
- B. Samples:
 - 1. Submit samples of each required finish.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturers:
 - 1. J.L. Industries, Inc.
 - 2. Larsen's Mfg. Co.
 - 3. Watrous; Division of American Specialties, Inc.
- B. Basis of Design:
 - 1. Larsen's Manufacturing Company

2.2 FIRE EXTINGUISHER CABINETS

- A. Construction:
 - 1. Manufacturer's standard steel box, with trim, frame, door and hardware to suit cabinet type, trim style, and door style indicated. Weld all joints and grind smooth. Miter and weld perimeter door frames.
- B. Cabinet Type:
 - 1. Basis of Design:
 - a) Fire Extinguisher Cabinet: Larsen's FS 2712-R full glass door.
 - b) Valve Cabinet: Larsen's VC 4016 full glass door.
 - c) Fire Extinguisher/Valve Cabinet: Larsen's VC 1818 full glass door.
 - d) Recessed: Cabinet box (tub) fully recessed in walls of sufficient depth to suit style of trim indicated.

SECTION 10 44 13 - FIRE EXTINGUISHER CABINETS

- C. Trim Style:
 - 1. Fabricate flat trim in one piece with corners mitered, welded and ground smooth.
- D. Door Construction:
 - 1. Manufacturer's standard door construction coordinated with cabinet types and trim styles selected.
- E. Door Material:
 - 1. Manufacturer's standard stainless steel finish, hollow steel door construction with tubular stiles and rails.
 - 2. Where existing painted cabinets will be reused, they shall be painted in a color that contrasts the finished wall color as selected by BSC Interiors and approved by WHB Safety.
- F. Door Glazing:
 - 1. Clear float glass complying with FS DD-G-451, type I, class 1, quality q3.
- G. Door Style:
 - 1. Manufacturer's standard design.
- H. Full-Glass Panel:
 - 1. Float glass, 1/8" thick.
- I. Lettering:
 - 1. Provide vertical style silk screen lettering or design as approved on shop drawings.
- J. Door Hardware:
 - 1. Provide manufacturer's standard door operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 - 2. Provide pull handle with self-adjusting roller catch.
 - 3. Provide concealed or continuous type hinge permitting door to open 180 degrees.
- K. Cabinet Box Construction:
 - 1. Manufacturer's standard steel box. Weld all joints and grind smooth.
- L. Door Material:
 - 1. Manufacturer's standard stainless steel finish

2.3 FACTORY FINISHING OF FIRE EXTINGUISHER CABINETS

- A. General:
 - 1. Apply finishes in factory after products are assembled.
- B. Painted Finishes:
 - 1. Extent of Painted Finish: Apply painted finish to both concealed and exposed metal surfaces of cabinet box components.
 - 2. Color: White
 - 3. Preparation: Clean surfaces of dirt, grease, and loose rust

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SECTION 10 44 13 - FIRE EXTINGUISHER CABINETS

- 4. Baked Enamel Finish: or mill scale.
Immediately after cleaning and pretreatment, apply cabinet manufacturer's standard baked enamel finish system.
- B. Stainless Steel Finishes:
 - 1. Extent of Finish: Exterior of cabinet door.
 - 2. Finish: No. 4 brushed finish

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.
- B. Securely fasten fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

3.2 IDENTIFICATION

- A. Identify existence of fire extinguisher in cabinet with lettering applied to door spelling "FIRE EXTINGUISHER".

END OF SECTION

SECTION 10 51 13 - METAL LOCKERS

- 1.01 General
 - A. This section includes metal lockers and related equipment, and movable benches.
- 1.02 Submittals
 - A. Submit shop drawings showing layout, caps, filler panels and end panels.
 - B. Submit Combination Listing for combination locks and their respective locker numbers. Coordinate with shop drawings submittal, if required.
 - C. Provide shop drawings and product data for movable Locker Benches.
- 2.01 Products
 - A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - 1. De Bourgh Manufacturing Co.
 - 2. Lyon Metal Products
 - 3. Medart Inc.
 - 4. Penco Products Inc.
 - 5. Republic Storage Systems
 - 6. American Locker Security Systems.
 - 7. List Industries
 - B. Design:
 - 1. Metal lockers shall have sloped tops, metal base, and louvered doors.
 - 2. Types include single tier, double tier and two person units
 - C. Basis of Design: Republic standard type lockers,
 - 1. "Single Tier Units" (Type L1) 12" x 24" x 72" size.
 - 2. "Double Tier Units" (Type L2) 12" x 18" x 72" size, with each locker 36" high.
 - 3. "Duplex Single Tier Units" (Type L3), 15" x 18" x 72" size, with each locker 7-1/2" wide.
 - 4. "Single Tier Purse (Box) Units", (Type L4), 12" x 18" x 72", with five boxes, each 14.4" high.
 - D. Specifications:
 - 1. Single-tier shall have hat shelf, one double-prong hook and not fewer than 2 single-prong wall hooks.
 - 2. Double-tier units shall have one double-prong hook and not fewer than 2 single-prong wall hooks.
 - 3. Two person units shall have private hat/hook compartment, one double-prong hook and one single-prong wall hook for each compartment.
 - 4. Locks shall be combination type.
- 2.02 Materials
 - A. Sheet Steel: Mild cold-rolled and leveled furniture steel, free from buckle, scale, and surface imperfections.
 - B. Fasteners: Cadmium, zinc, or nickel-plated steel; exposed bolt heads, slotless type; self-locking nuts or lock washers for nuts on moving parts.
 - C. Equipment: Hooks of cadmium-plated or zinc-plated steel in wardrobe lockers.
- 2.03 Fabrication, General
 - A. Construction:
 - 1. Fabricate lockers square, rigid, and without warp, with metal faces flat and free of dents or distortion.

SECTION 10 51 13 - METAL LOCKERS

2. Make exposed metal edges safe to touch.
 3. Weld frame members together to form rigid, one-piece structure.
 4. Weld, bolt, or rivet other joints and connections.
 5. Grind exposed welds flush.
 6. Do not expose bolts or rivet heads on fronts of locker doors or frames.
- B. Frames: Fabricate of 16-gage channels or 12-gage angles, minimum, with continuous stop/strike formed on vertical members.
- C. Finishing: Chemically pre-treat metal with degreasing and phosphatizing process. Apply baked-on enamel finish to all surfaces, exposed and concealed, except plates and nonferrous metal.
- D. Colors: Provide colors as selected by BSC Interiors.
- 2.04 Wardrobe Lockers
- A. Body: Fabricate back and sides of minimum 24-gage steel, with double-flanged connections extending full height. Form top and bottom of not less than 24-gage steel, with flanged edges.
1. Provide 24-gage steel sheet hat shelf in single-tier units.
 2. Form exposed ends of non-recessed lockers of minimum 16-gage steel.
- B. Door: One-piece, minimum 18-gage sheet steel, flanged at all edges, constructed to prevent springing when opening or closing. Fabricate to swing 180 degrees.
1. Ventilation: Provide stamped, louvered vents in door face.
 2. Hinges: Steel, full-loop, 5-knuckle, tight pin. Weld to inside of frame and secure to door with not fewer than 2 factory-installed fasteners that are completely concealed and tamperproof when door is closed.
 - a. Provide at least 3 hinges for each door over 42 inches high; at least 2 hinges for each door 42 inches high or less.
- C. Projecting Handle and Latch: Positive automatic, pre-locking, pry-resistant latch and pull with rubber silencers; chromium-plated, heavy-duty, vandal proof lift-up handle; and with latching action as follows:
1. Provide minimum three-point latching for each door more than 42 inches high; minimum two-point latching for each door 42 inches high or less.
- 2.05 Moveable Locker Benches
- A. Provide movable locker benches, 6' long units with maple tops.
- 2.06 Locker Accessories
- A. Locking: Fabricate lockers to receive the following locking devices:
1. Built-In Combination Lock: Key-controlled, 3-number dialing combination lock, with combination change made automatically by use of control key.
 2. Locker dial combination lock must reset to the locked position upon closing the locker door.
- B. Equipment: Furnish each wardrobe locker with the following items, unless otherwise shown:
1. Single-Tier Units: Hat shelf, one double-prong hook and not fewer than 2 single-prong wall hooks.
 2. Double-Tier Units: One double-prong hook and not fewer than 2 single-prong wall hooks.
- C. Number Plates:
1. Manufacturer's standard etched, embossed, or stamped, nonferrous metal number plates with numerals not less than 3/8 inches high.
 2. Number lockers in sequence.
 3. Locker numbering shall be coordinated thru the Hospital's Security Administration Department.

SECTION 10 51 13 - METAL LOCKERS

4. If reusing existing lockers, new locker numbers must start where old numbers stop for that specific locker room.
5. Attach plates to each locker door, near top, centered, with at least 2 fasteners of same finish as number plate.
- D. Continuous Metal Base: Minimum 20-gage cold-rolled steel, fabricated in lengths as long as practicable to enclose base of lockers without additional fastening devices. Flange bottoms inward 3/4 inch for stiffening. Factory finish metal base to match lockers.
- E. Continuous Sloping Tops: Not less than 20-gage sheet steel, approximately 25 degrees pitch, in lengths as long as practicable but not less than 4 lockers. Provide closures at ends. Finish to match lockers.
- F. Separators: Provide horizontal dividers of not less than 16-gage sheet steel between doors of multiple-tier lockers to ensure rigidity.
- G. Filler Panels: Provide filler panels where indicated, of not less than 18-gage steel sheet, factory fabricated and finished to match locker units.
- H. The dial combination lock shall be keyed to Master Lock Series F205. This master key shall be turned over to the Owner's Security Administration Department. They will coordinate with the departments for assignment of lockers. Override keys shall not be provided for the project or with the lockers.
- I. Locker Search Signs.
 1. The cost of must be included in the cost of the project.
 2. The signs can be obtained thru the BSC Signage Coordinator.

3.01 Installation

- A. Install metal lockers in accordance with manufacturer's instructions for plumb, level, rigid, and flush installation.
- B. Space fastenings about 48 inches o.c., unless otherwise recommended by manufacturer, and apply through backup reinforcing plates where necessary to avoid metal distortion, using concealed fasteners.
- C. Install trim, metal base, sloping top units, and metal filler panels and end panels, using concealed fasteners.
- D. Provide flush, hairline joints against adjacent surfaces.

3.02 Adjust and Clean

- A. Adjust doors and latches to operate easily without binding.
- B. Verify that integral locking devices are operating properly.
- C. Touch up marred finishes, but replace units that cannot be restored to factory finished appearance.
- D. Use only materials and procedures recommended or furnished by locker manufacturer.

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Section 11 24 00 – Building Maintenance Equipment

1.01 Window Washing Equipment

A. Exterior

1. All buildings over two stories in height will require tie-off rings for the safety anchorage of window washers and other related maintenance personnel for the exterior walls of the building.
2. These tie-off rings shall be physically anchored to the building's structure and designed to meet the requirements of MIOSHA. They shall be positioned as necessary to provide adequate anchorage for all faces of the building.
3. Locations of the tie-offs will be reviewed with the current window washing service during design.

B. Atriums

1. Where atriums are included in the design of the building, the method of interior and exterior maintenance and cleaning shall be discussed and established in the schematic phase so that the structural and equipment requirements can be determined as soon as possible to establish an appropriate budget.
2. Included for consideration in the design solution will be features that will require cleaning and maintenance such as fire suppression equipment, artwork, heating equipment, lighting, exposed structural members, etc.

1.02 Building Equipment Access

- A. In most projects that we do, there is usually at least one piece of building equipment that will require access to be built into the design. Examples of these are air handlers, fans, pumps, motors, UPS, air coolers, fire dampers, etc.

1. Definition of Accessible:

- a) The ability to remove any component of a particular piece of equipment without the removal of any other equipment or equipment supporting devices surrounding it, safely from a ladder or lifting platform per OSHA standards.

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Section 11 24 00 – Building Maintenance Equipment

- B. Access to building equipment must be reviewed with Facilities Services to verify its accessibility for maintenance and replacement during all stages of the design and construction documentation.

- C. During Construction field inspection must be scheduled with Facilities services to verify that the field installation is maintaining the required clearances.

SECTION 12 10 00 - ARTWORK

1.01 General

- A. Artwork included within project scope shall be selected as specified in the JLL@BHS Interiors **Furniture Standards Selection Guides**.

2.01 Products

- A. Glazing used in framed Artwork.

- 1. Tempered Glass

- a) All public and patient areas
- b) Laboratories

- 2. Regular Glass

- a) Private offices
- b) Low traffic staff areas

- 3. Plexiglas - Class C

- a) Areas and installations where frequent impact hazard can be a maintenance and safety issue. i.e.:

- 1. Ohmeda gallery walls
- 2. Corridors with heavy cart traffic
- 3. High traffic staff areas

- b) Plexiglas can also be used in the other areas listed above but the quantities must be monitored in public spaces and exit corridors so that we do not exceed the maximum allowable limits.

3.01 Installation

- A. In other than private offices, the artwork shall be secured to the wall with anchors that will prevent the piece from falling off of the wall and from going out of plumb.
- B. Artwork in public spaces, and pieces that are commissioned and/or donated, shall be anchored to the wall with security locks that require a special tool to be removed.